

# **‘Antipodean England’? A History of Drought, Fire and Flood in Tasmania from European Settlement in 1803 to the 1960s.**

by

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## **Abstract**

The influence of climatic variability on the European history of Tasmania has largely been neglected as a field of study. It is demonstrated here that severe weather events, such as drought, floods, storms, extreme cold and bushfires, have had a significant impact on that history. Drought affected farming operations, town water supplies, mining and industry, and later hydro-electric power generation. Floods and storms disrupted transport and communication networks and damaged property in towns and in the country. Bushfires also periodically wrought widespread property damage.

An environmental history approach is employed to explore the dominant images and perceptions of Tasmania's climate, the impacts of severe weather events on the population, the responses made to them, and how these changed over time from 1803 to the 1960s. For ease of analysis, the thesis is divided into four periods of post settlement history: early European settlement from 1803 to the 1810s; the period of pastoral expansion from the 1820s to 1855; from self-government in 1856 to 1900; and from Federation in 1901 to the 1960s. Scrutiny of a range of primary and secondary source material, including official despatches, government department records, meteorological data, emigrant guides, scientific papers, newspaper accounts, farm diaries and private correspondence, published and unpublished works on the histories of towns or regions, industries, government agencies, land settlement policies and Tasmanian identity and promotion, resulted in new insights into the role played by severe weather events on Tasmanian history. The thesis also advances knowledge of these events and their impacts on Tasmanian society, economics and politics.

From the first years of settlement Tasmania was widely promoted and regarded as an 'Antipodean England' – relatively free of the harsh climatic extremes of mainland Australia. It is argued here that this image was both inaccurate and inappropriate – inaccurate because drought, floods, storms and bushfires are all part of the natural weather cycles of Tasmania and

have, at times, severely affected the Tasmanian population; and inappropriate, because it downplayed the potential risks posed by climatic variability and contributed to a state of unpreparedness by government and the wider population.

The thesis demonstrates that severe weather events have long affected Tasmanian history, that they occur within a wider environmental, cultural and societal context that influences their human consequences, and that the nature and severity of these impacts changed over time.

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## Abbreviations

ANM	Australian Newsprint Mill
APPM	Australian Pulp and Paper Manufacturers
BOM	Bureau of Meteorology
BTGM	Briseis Tin and General Mining Co.
CT	Colonial Times
CC	Cornwall Chronicle
EZ Co.	Electrolytic Zinc Company
HEC	Hydro-Electric Commission

HRFPA Hobart Rivulet Flood Protection Authority

HTA Hobart Town Advertiser

HTC Hobart Town Courier

HTG Hobart Town Gazette

QVM Queen Victoria Museum and Art Gallery

LA Launceston Advertiser

LE Launceston Examiner

NEA North East Advertiser

RJCAT Royal Journal Council of Agriculture

RSVDLPP Royal Society of Van Diemen's Land: Papers and Proceedings

RSTPP Royal Society of Tasmania: Papers and Proceedings

SMH Sydney Morning Herald

TAAR Tasmanian and Austral-Asiatic Review

TC Tasmanian Cyclopaedia

TDAB Tasmanian Department of Agriculture Bulletin

TFSOA Tasmanian Farmers', Stockowners' and Orchardists' Association Annual Report

TJA Tasmanian Journal of Agriculture

TJNS Tasmanian Journal of Natural Science

TM Tasmanian Mail

TPP HAJ Tasmanian Parliamentary Papers: House of Assembly Journal

TTPC Tasmanian Tourist Promotions Committee

UTAS Archives University of Tasmania Archives

VDL Co. Van Diemen's Land Company

WC Weekly Courier

# Conversions

## Imperial – Metric Conversions

10 acres = 4 hectares

4000 feet (ft) = 1.2 kilometres (km)

10 miles = 16 kilometres

1 inch (“) = 25.4 millimetres (mm)

# Chapter One: Introduction

## 1.0 The Thesis

Europeans who came to Tasmania struggled to understand and adapt to the climate of this island situated at the southern-most tip of Australia, where British weather traditions and land use customs were not always appropriate. Tasmania's diverse landscapes and variable climate, subject to droughts, floods and bushfire, have challenged the settlement process from the early 1800s to the modern era. These themes are examined in the period of European settlement from 1803 to the 1960s.

Nostalgia for the 'Home Country' and an economic need to attract migrants, tourists and industry to the island saw Tasmania quickly gain the reputation as an 'Antipodean England'. Its climate was generally perceived and promoted as devoid of the climatic extremes experienced on mainland Australia. However, such perceptions were often in stark contrast to the reality. The social, economic and environmental outcomes of severe weather events are outlined, and how perceptions of climatic risk influenced preparedness and planning for the potential impacts of such events is demonstrated. Modification of the landscape over time, through land clearing, European fire practices, diverting and damming waterways, and the introduction of grazing stock, pests and weeds, increased the negative effects of severe weather events.



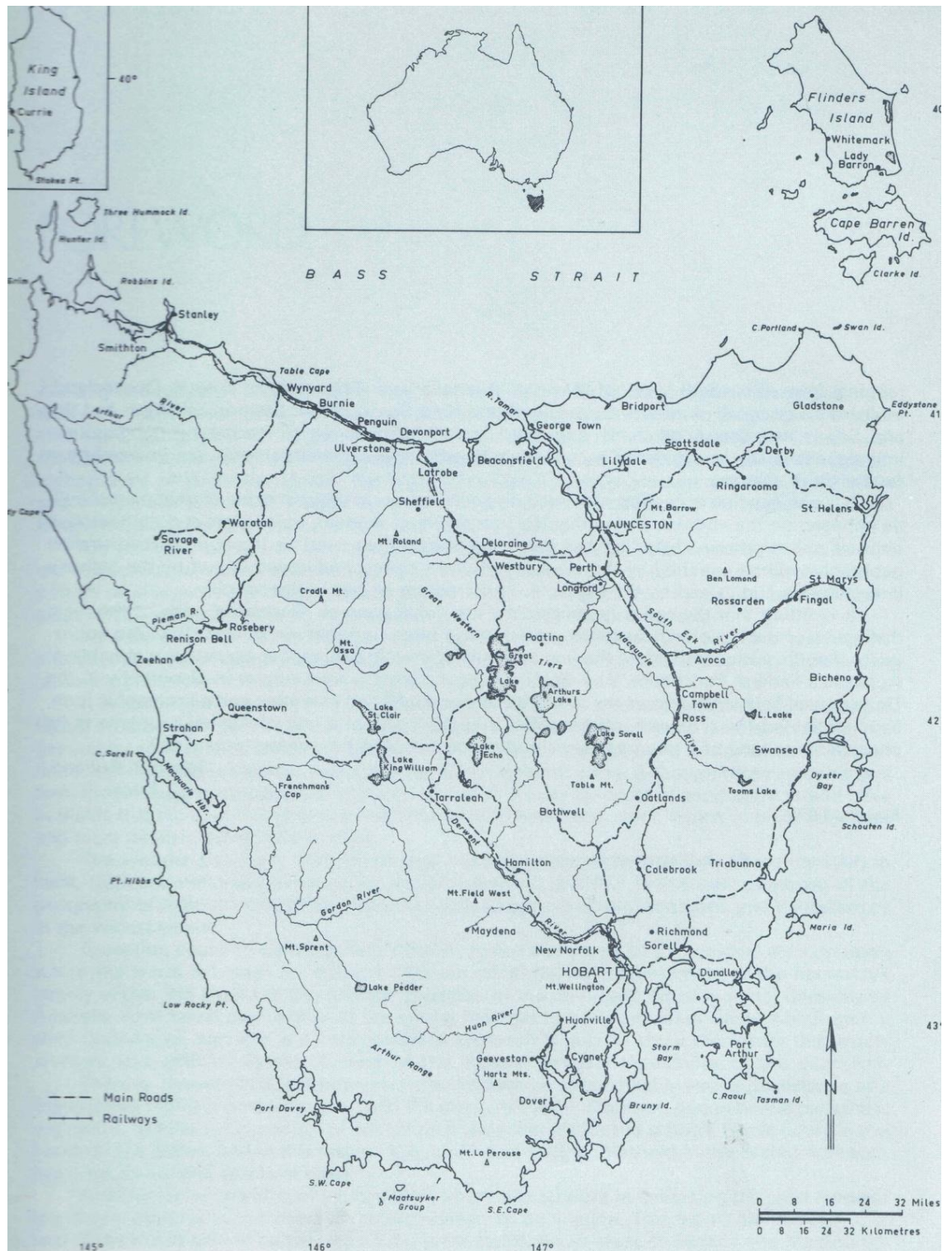


Fig. 1 Location Map of Tasmania (from Solomon 1972)

## **1.1 The Climate and Geography of Tasmania**

Tasmania is an island situated 240 km to the south of mainland Australia at a latitude between 40 and 43.5° S. The main island covers an area of 62 409 square kilometres. Tasmania's climate is classified as 'temperate maritime', but this generic description hides a range of diverse regional climates. In the west the landscape is dominated by ridge-like mountains, with the highest peaks reaching 1500m above sea-level. A strong westerly weather stream known as the 'Roaring Forties' causes high annual rainfall in this rugged region. Mean annual rainfall is over 2000mm in most of western Tasmania, and can exceed 3500mm in some areas (Bureau of Meteorology [BOM] 2008a, p. 29). Temperate rain forest and wet sclerophyll forest form the main vegetation types in this generally mountainous area, with sedgeland occupying much of the lower terrain. Rainfall on the north-west coast is, on average, 1000mm per annum, and increases as it moves inland (BOM 2008a, p. 29).

Situated inland from the western coast and highlands is the central plateau region. Much of the plateau lies between 600m and 900m above sea-level, with the highest peaks being over 1500m, including Tasmania's highest mountain, Mt Ossa (1618m). The central plateau region contains a number of large lakes, the waters from which drain northwards to the Mersey and Forth Rivers of the north-west, north-east to the Tamar River in the north and into the Derwent River in the south-

east. Vegetation is generally moorland in the upper regions and sclerophyll forest (mostly wet) on the lower slopes. Rainfall in the central plateau is generally less than on the west coast, but can still exceed 2000mm, particularly on the western side (BOM 2008a, p. 29).

After crossing the high altitudes of the central plateau from west to east, the rainfall drops off dramatically to an average of between 500mm to 600mm per annum for most of the midlands region (BOM 2008a, p. 29). This is due to a 'rain shadow' effect, whereby the rain-bearing westerly air streams drop their moisture on the western and central highlands, leaving the country beyond relatively dry. This is evident in much of the lower lying areas situated between the Derwent Valley in the south, the town of St Mary's in the north-east and the Tamar Valley in the north. This area includes the major population centres of Hobart and Launceston. The capital, Hobart, has an average yearly rainfall of 620mm, making it, after Adelaide, the second driest capital city in Australia (BOM 2008a, p. 43). Vegetation in this region tends to be dry sclerophyll forest or open woodland and grassland.

Highlands in the north-east of the island, including the Ben Lomond Peak at 1573m, have a rainfall of over 1500mm due to the effect of greater altitude (BOM 2008a, p. 31). This area is also noted for occasional very heavy downpours (BOM 1993, p. 3). Average rainfall along much of the east coast is generally much lower – 600-800mm per year (BOM 2008a, p. 31).

The above description relies upon the use of weather ‘averages’ to describe the climate of Tasmania, but these obscure as much as they reveal. They mask a high degree of variability from one year to the next, as well as over longer time scales. As Robin and Griffiths point out, in Australia, rainfall averages do not ensure a reliable amount of rain in any season or year (2004, p.455). The degree of variability in annual rainfall in Tasmania is greater than that experienced in Britain and Ireland (Scott 1956, p. 54), and this variability is particularly marked in the midlands, the Derwent Valley, the east and the south-east (BOM 1993, p. 3). For instance, the average annual rainfall for Hobart in the south is 620mm, but at times this has ranged from the very dry years of 1841 (354mm), 1843 (341mm), 1914 (394mm) and 1963 (395mm) through to very wet years such as 1916 (1104mm) and 1946 (1004mm) (BOM 2011).

Tasmania also experiences a moderately high variability in temperature conditions. Mountainous areas are often subject to below freezing temperatures, particularly in winter, whilst parts of the east and southeast are occasionally subject to excessive summer heat (over 40°C). Very hot days are usually associated with dry north-westerly winds that also exacerbate bushfire danger (BOM 1993, p. 9, 11). The use of average temperatures hides this marked degree of variability. For example, in Hobart, the average maximum monthly temperature for the hottest months of January and February is 21.6° C. However, on a number of occasions, such as in December 1897 and February 1899, the

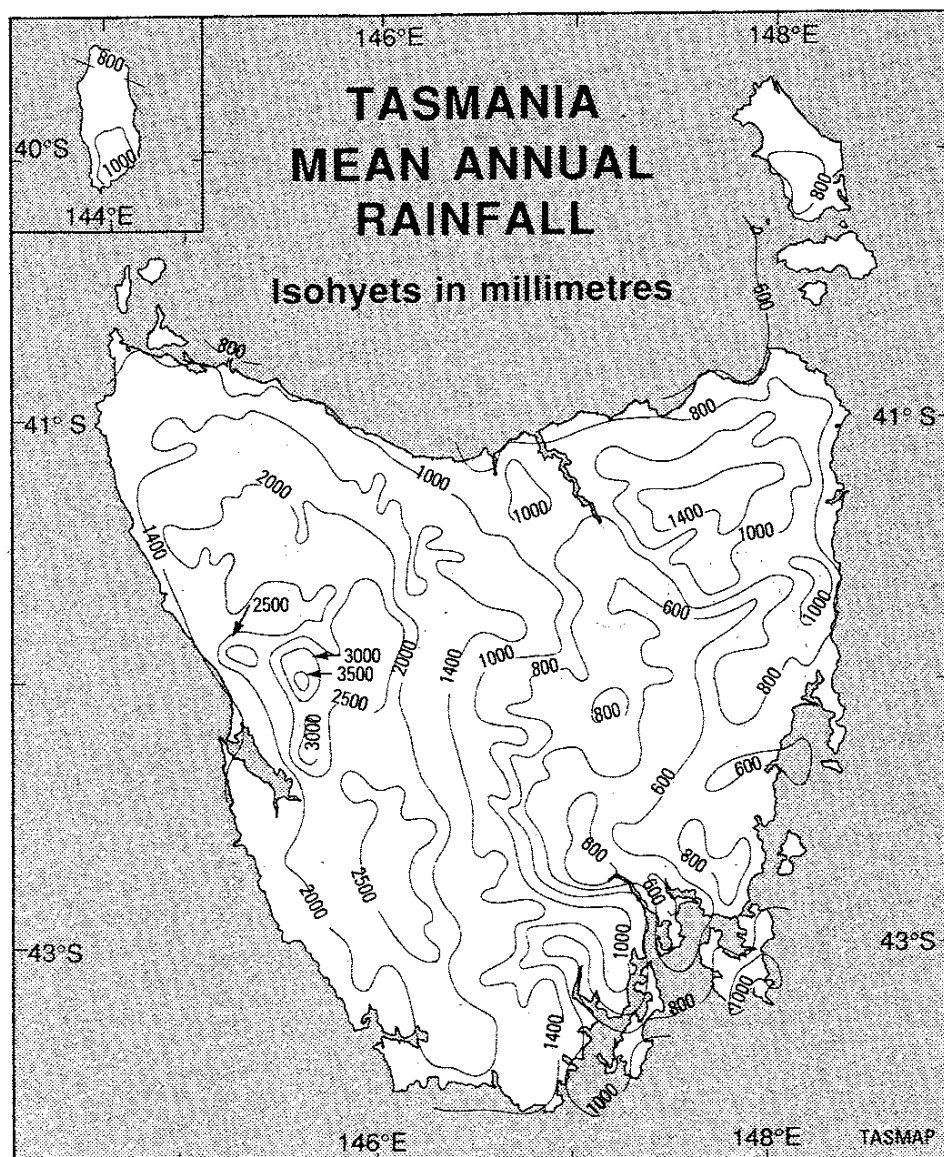


Fig. 2 Mean Annual Rainfall Tasmania (in mm) Base image by TASMAP  
([www.tasmap.tas.gov.au](http://www.tasmap.tas.gov.au)) © State of Tasmania.

temperature has exceeded 40° C (BOM 2011). At the other extreme, the coldest temperatures for Hobart have fallen below zero, such as -1.6° celsius in May 1902 (BOM 2011). It is now recognised that some of the inter-annual variation in rainfall and temperature experienced in eastern Australia (including Tasmania) is due to the El Nino-Southern Oscillation (ENSO) phenomenon (BOM 2008a, p. 52). ENSO refers to a major shift in atmospheric conditions over the Pacific Ocean, which can lead to excessive dryness in some years (El Nino) and excessive wet in others (El Nina). Some of eastern Australia's worst droughts have coincided with El Nino events (BOM 2008a, pp. 53-54; see Garden 2009). A history of ENSO events dating back to 1525A.D. is provided by Gergis and Fowler (2009).

Patterns of recurring drought, flood and bushfire have shaped the history of the continent of Australia. Tasmania has been no exception to this.

The following section outlines some definitions and the main features of severe weather events - drought, flood, storm, extreme cold and bushfire.

## **1.2 Severe Weather 'Events'**

Studies by Parker and Harding (1979) and Heathcote (1973) point out that 'natural' hazards (including severe weather events) are really defined by their human consequences. It is the pursuit of worldly comforts and livelihoods that have created what appear to be 'natural' hazards. For example, Heathcote takes the view that low rainfall in itself



does not constitute drought – there first needs to be some economic or social impact resulting from water shortage (Heathcote 1973, p. 18).

Burton and Kates (1964) and Parker and Harding (1979) demonstrate that the degree of awareness of any hazard will influence its outcome. Thus Burton and Kates argue: ‘Where disbelief in the possibility of an earthquake, a tornado, or a flood is strong, the resultant damages from the event are likely to be greater than where awareness of the danger leads to effective precautionary action’ (Burton and Kates 1964, p. 412). They also demonstrate how such perceptions can vary greatly in a population (Burton and Kates 1964, p. 432). Saarinen (1976) notes that places can be prone to more than one type of hazard, and that perceptions of risk may reflect a hierarchy of environmental concerns.

Numerous authors on natural hazard risk perception in Australia have noted the general failure of Australians to adequately assess the potential impacts of droughts, floods and fire. Heathcote (1973) notes the refusal of Australians to accept the significance of drought. He attributes this to a misplaced patriotism and reluctance to admit failure (Heathcote 1973, pp.34-35). Keating’s study of the history of water shortage in Victoria also notes that, despite the obvious frequency and negative outcomes of drought, there has been ‘a persistent and enduring reluctance to recognise drought as a permanent feature of Australian life’. She argues that in Victoria drought has not only been denied, but also actively ‘defied’ in the creation of exotic, water-thirsty gardens and the

promotion of the official image of the ‘Garden State’ (Keating 1992, p. 12). A study of floods in two Australian outback towns by Lambey (1996) demonstrates how, despite past episodes of severe and damaging flooding, the townspeople of Bourke and Nymgan in New South Wales remain blasé about the risk of floods (Lambey 1996). The importance of perceptions of risk in how people respond to bushfire hazard has also been highlighted, notably by Cheney (1979).

Such perceptions reflect a cultural bias originating from a European heritage, which denotes drought, severe floods and bushfire as events that are beyond the range of what is normally expected (see section 2.2). It is argued in this thesis that in Tasmania, widely considered the most ‘British’ of the Australian states, perceptions of climatic variability as ‘anomalous’ and ‘unexpected’ were particularly marked and contributed to an underestimation of the potential risks and, consequently, to an inadequate level of planning for their negative effects.

The following sections outline the severe weather events that typically occur in Tasmania, that is, drought, flood, heavy snow, frost, storm and bushfire.<sup>1</sup>

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<sup>1</sup> Although bushfires can be started by human activity as well as natural means (lightning strikes), they are referred to in this thesis as a ‘severe weather event’ as their occurrence is most often reliant on a combination of weather variables, such as high temperatures, strong winds and low humidity.



### 1.2.1 *Drought*

Drought is a prolonged period of below expected rainfall that has consequences for human wellbeing. It is a variable concept, depending upon the location and rainfall regime. For example, in Britain, where rainfall is abundant and mostly predictable, drought is defined as 15 days without rain, whereas the Australian meteorologist Henry Russell noted, in 1896, that the term ‘drought’ means something quite different in Australia, where ‘it is used to signify a period of months or years during which little rain falls and the country gets burnt up, grass and water disappear, crops become worthless and sheep and cattle die’ (Russell 1896, p. 71). Heathcote (1973), Gibbs and Maher (1966) and Foley (1957) outline the problems in defining and measuring drought in the Australian context. Drought is not just identifiable by a rainfall deficiency, but also by its consequences, such as water shortage, crop failure and pasture depletion. A number of factors may influence these effects, including temperature, wind strength and direction, soil moisture and evaporation levels, vegetative cover and land use. Heathcote details three different types of drought: ‘meteorological’ (a significant decrease in expected rainfall over a wide area); ‘hydrological’ (the drying up of rivers, streams and water storages); and ‘agricultural’ (when soil moisture and rainfall are insufficient for crop growth) (1973, pp. 19-20).

Today, the Australian Bureau of Meteorology defines a severe deficiency as a period of three months or more when rainfall is in the

lowest five per cent of historical records for a particular place (BOM 2008a, p. 153). Difficulties arise, however, in applying this definition to historical periods or locations where rainfall data is unavailable. Prior to the commencement of official meteorological records (1841 for Hobart) the evidence for drought periods is found primarily in descriptive or subjective accounts, rather than quantifiable rainfall data. Seasonal rainfall deficiencies over summer, for example, are referred to by some early commentators as ‘droughts’, when these are to be expected in Australia. For the purposes of this thesis, then, I define drought as a period of three months or more of below expected rainfall that has negative consequences for human activity.

Unlike floods and bushfires, which are dramatic and often short-lived, drought is a more insidious weather hazard, which may not always be immediately recognisable. Its effects tend to be cumulative and prolonged. It can also be difficult to pinpoint the full impacts of drought on a community. For example, drought may be just one of a range of factors which depress rural productivity. Others include low prices, stock disease and soil erosion (Heathcote 1973, p. 26). In Tasmania, droughts are often localised, but at times have been widespread and damaging. Some of the island’s worst bushfires have occurred during drought periods. Previous studies of drought in Tasmania include the work of meteorologists Foley (1957) and Gibbs and Maher (1966) and geographer Wadsley (1983). Foley and Gibbs and Maher outline the

meteorological aspects of known drought periods in Tasmania's history beginning from the commencement of official meteorological records in 1841. Accounts of particular droughts are brief, incomplete and focussed on how they affected the rural sector. How they depleted town water supplies, for instance, does not rate a mention. There is an absence of any analysis of contributing factors to the severity of droughts, such as the denudation of soils by land clearing, grazing livestock and rabbits, or the drought preparedness of farmers, town councils or other agencies. Wadsley (1983) takes a broader approach, but focuses particularly on the drought of 1979-1983, which is outside the time period for this study. While Wadsley provides some historical notes on earlier droughts, these are largely based on the works of Foley (1957) and Gibbs and Maher (1966) and suffer from the same limitations. In comparison, in this thesis I trace the history of drought back to the first years of European settlement, and draw on a wide range of sources to provide a more comprehensive account of the social and economic consequences in both town and country. I also assess how drought impacts changed over time with landscape modifications wrought by European land use practices, and how perceptions of climate influenced how Tasmanians prepared for, and responded to, drought.

### *1.2.2 Floods/Storms and Cold*

Floods can be categorised as localised 'flash' flooding, whereby streams rise rapidly in conjunction with a relatively short and intense period of

rain, or riverine floods, whereby inundations of normally dry land adjacent to rivers and streams occurs due to heavy rainfall in the catchment areas over a longer period (BOM 2008a, p. 146). Several factors may contribute to flooding, including the total rainfall over a catchment area, the intensity of rainfall, the degree and type of ground cover and the pre-existing level of saturation of the catchment (BOM 2008a, p. 146). In Tasmania, rain-laden, active cold fronts often trigger flooding events (BOM 2008a, p. 147). Snow melt can also contribute to flooding in Tasmania's rivers. Occasionally semi-tropical rain depressions from the east and south-east can also cause major flooding. The South Esk River basin is the most flood-prone in Tasmania, as it has the largest catchment area (8900km<sup>2</sup>) and includes the north-eastern highlands (Fallon, Fuller and Graham 2000a, p. 7). Flooding of the Derwent River catchment can also be extensive (Fallon, Fuller and Graham 2000b). The human consequences of floods depend on the land use activity in the catchment area of flood-prone rivers. For example, potential damage will be higher where there is a greater intensity of population and industry situated in flood-prone areas. Historical data on floods in Tasmania can be found in Fallon, Fuller and Graham (2000a), (2000b) and (2000c).

Snow can be experienced on the Tasmanian highlands at elevations of 900m or more at any time of year, but is generally greatest in August and September. Whilst snow is a relatively rare event in coastal or low-lying

areas, on occasions it has fallen at low elevations, including in the capital, Hobart (BOM 2008a, p. 166-167). Frosts can occur in any month (except on the coastal fringe) and are generally more frequent in valley bottoms (BOM 1993, p. 10). Winds of gale force (34 knots or more) are most likely to come from westerly air streams (BOM 1993, p. 11). Thunderstorms are relatively rare (less than 10 days on average in a year), are most likely to occur in mountainous regions, and are caused by moist, warm unstable air masses (BOM 1993, p. 13). Though most frequent in summer, thunderstorms can also occur in winter when they develop along active frontal systems which are influenced by mountain terrain (BOM 1993, p.13). Damaging hailstorms, and very occasionally tornadoes, tend to be associated with thunderstorms, and are most likely to occur in spring or summer (BOM 1993, p. 14).

Previous studies of floods and storms in Tasmania are scant. Flood data books by Fallon, Fuller and Graham (2000a) (2000b) and (2000c) provide relatively brief references to past floods along three of Tasmania's main river systems – the South Esk, the Derwent and the Jordan. Accounts of particular floods may appear in regional histories, such as Beswick's *Brothers' Home: the Story of Derby, Tasmania* (2003), which includes an account of the devastating flood at the Briseis Mine in the north-east in April 1929. Petrow and Alexander (2008) likewise outline a number of major flooding episodes in the capital, Hobart. However, there has, as yet, been no attempt to provide a more

comprehensive history of floods and flood impacts in Tasmania. In this thesis I attempt to address this deficiency, and to demonstrate how perceptions of a low risk climate contributed to a lack of preparedness for such events.

### *1.2.3 Bushfire*

The Australian environment has been shaped by fire for thousands of years – many of its native plants are fire-adapted and require fire for regeneration, making for considerable volatility under the right conditions.

The term ‘bushfire’ refers to a fire that is uncontrolled and unpredictable and potentially damaging to human land uses. While a small number are started by lightning strikes, most bushfires are the result of human activity. The south-west and south-east of Australia (including Tasmania) are particularly prone to bushfire, with the driest months of summer and autumn being the most likely to produce bushfire conditions (BOM 2008a, p. 156-157). While bushfire is most common in the drier areas of Tasmania where dry sclerophyll forest or woodland is the dominant vegetation type, even the usually moist temperate rainforest and moorland areas of the west coast of Tasmania can prove flammable in extremely dry conditions (Luke and McArthur 1978, p. 320).

A number of factors add to the risk of bushfire, including the amount of fuel in forest and grassland, and the dryness of the vegetation, as well as

meteorological conditions of high temperature, low humidity and strong winds (BOM 2008a, p. 158).

Previous studies of bushfire in Tasmania include Pyne (1991), Bond, Mackinnon and Noar (1967), Luke and McArthur (1978), Wettenhall (1975) and Marsden-Smedley (1998a) and Johnson and Marsden-Smedley (2002). Pyne (1991) documents the history of fire use in Australia from Aboriginal fire-use in pre-European settlement times to the modern era. He analyses the influence of European land-use and fire practices on the vegetation of Australia and outlines the struggle by Europeans to come to terms with Australia's legacy of fire. His account includes important insights into the Tasmanian situation. Bond, Mackinnon and Noar (1967) provide an account of the meteorological aspects of the 'Black Tuesday' fires of February 1967. Wettenhall (1975) provides a comprehensive study of the 1967 fires, focusing particularly on the administrative response in the wake of the fires. Luke and MacArthur (1978) provide a very brief account of major bushfires in Tasmania from 1912-1971 (including the 1967 fires), and a history of bushfire legislation. Marsden-Smedley's thesis (1998a) is a predominantly scientific study of bushfire occurrence in Tasmania's south-west button-grass moorland. He includes a comprehensive account of past fires in the region and their environmental outcomes. In conjunction with Johnson, he has also made a study of the fire history of the northern part of the Tasmanian Wilderness World Heritage Area

(Johnson and Marsden-Smedley 2002). These studies, however, have a narrow geographical focus in terms of study area, and assess the environmental effects rather than the human impacts of bushfire.

In this thesis I draw upon the work of all these authors to provide a history that focuses on the social and economic consequences of bushfire in Tasmania since European settlement to the 1960s, and which analyses how perceptions of climatic risk contributed to bushfire tragedies.

### **1.3 Significance of the Research**

In this thesis I highlight the importance of weather and climate as an agent in Tasmania's environmental, social and economic history.

Drought, fire and flood all shaped the early years of the colony as a British outpost, and later affected the growth of cities and suburbs, transport networks, the establishment and management of farms, the location, processes and technology of industry, as well as the development of community organisations and government policy. Such climatic events have largely been neglected by historians, who have generally considered weather and climate as incidental; merely a 'backdrop' to historical change.

Natural hazard research has traditionally been dominated by the physical sciences, which have focussed on acquiring greater knowledge of the meteorological factors that cause severe weather events, and on improving forecasting and monitoring. It is now recognised that natural



hazard risk is also related to human exposure and vulnerability to such events, and that there is a need for an interdisciplinary approach that also draws upon the social sciences, including history (see Mauch and Pfister 2009). Further study into human motivations and behaviour has been identified by the International Council of Science's (ICSU) Program on Integrated Research on Disaster Risk as essential to understanding and to addressing natural disaster risk (ICSU 2008). Hewitt has outlined the limitations of a reliance on a technocratic approach to 'natural' hazards whereby 'disasters' or 'events' are treated as abnormal occurrences that are removed from the ongoing contexts of ordinary life (1983, pp. 3-29). An historical approach, by contrast, offers a means of locating such events within a wider time-frame and allows a discussion of the environmental, socio-economic and political contexts.

#### **1.4 Methodology**

The methodology for the study involves a review of relevant literature, the formulation of a set of research questions and the development of a theoretical framework for the research. As outlined in section 1.5.2, an environmental history approach seemed most appropriate for this study.

A broadly chronological approach is taken to the research and writing of the thesis and this is reflected in the thesis structure. The rationale for this is outlined in section 1.5.3. The source material which provided the basis of the research is outlined in section 1.5.4.

#### 1.4.1 Research Questions

After a review of relevant literature, a number of research questions were drawn up to guide the research phase of the study. These are:

- What have been the main perceptions of Tasmania's climate and the risks associated with severe weather events? How have these changed over time? How have these perceptions influenced preparedness and planning for future events?
- When have severe weather events occurred, and what have been the social and economic impacts? How have these impacts changed over time?
- How have people responded to severe weather events? Have the events been the catalyst for long-term change?

#### 1.4.2 An Environmental History Approach

An environmental history approach is taken to the role that climate, particularly severe weather events, has played in the history of Tasmania. While traditionally historians have treated nature (including climate) as incidental to historical change, environmental history challenges this notion, arguing that the natural world and climatic factors are active agents in history. Environmental history is a relatively new field of historiography. The French *Annales* movement in historical thought, active from the 1930s, focussed on the role of a range of factors,

including environment, in human history.<sup>2</sup> More recently, concern for environmental history developed in America in the 1970s out of a growing awareness of environmental issues (see Worster 1988, pp. 290-291; Cronon 1992; Crosby 1995). The work of American scholar Donald Worster was influential in this development. His study, *Dustbowl: The Southern Plains in the 1930s*, outlines the devastating ecological consequences of European land use on the drought-prone plains of south-west USA during the Depression era (Worster 1979).

As a field of study environmental history explores the interaction between humans and the natural environment over time. This necessarily requires a multi-disciplinary approach – drawing upon sciences such as ecology, agricultural science, geography and climatology. Worster identified three main levels of inquiry that underpin environmental history. These are: a knowledge of the natural world and its systems; an appreciation of the socio-economic factors and politics that influence and direct human interactions with the environment; and an understanding of the perceptions, values and laws which people have in relation to nature. These aspects of the human-nature interaction form a dialectic that changes over time (Worster 1988, p. 289-307).

Cronon (1993) also outlines what he considers to be the fundamentals of environmental history. These are that:

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<sup>2</sup> The Annales movement was named after the journal *Annales d'histoire économique et sociale*, which was founded by Marc Bloch and Lucien Febvre in 1929. The Annales school of thought rejected the preoccupation with politics, war and government in traditional history, and instead focused on social, geographic and economic aspects of historical change.

- All human history has a natural context.
- Neither nature nor culture is static.
- All environmental knowledge is culturally constructed and historically contingent (including our own).
- Historical wisdom usually comes in the form of parables, not policy recommendations or certainties.

By this last point he means that the ‘usefulness’ of environmental history lies in its ability to tell stories that reveal the complexities of human-nature interactions over time. As a field of enquiry it is less concerned with solving environmental problems or predicting the future than with offering parables that help to interpret what may happen.

An environmental approach also developed in Australia from the 1970s.

A seminal work in Australian environmental history is Hancock’s

*Discovering Monaro: a study of man’s impact on his environment*

(1972), a regional study of the ecological disruption caused by European land clearing, and the introduction of weeds and pests and grazing stock into the Monaro district of southern New South Wales. Bolton’s *Spoils and Spoilers: A History of Australians Shaping Their Environment*, first published in 1981, also outlines the negative impacts of European settlement on the Australian environment (Bolton 1992; see also Blainey 1983).

Forest and forest management histories have received considerable attention in more recent decades of Australian environmental history

(Robin and Griffiths 2004, p. 452). Examples include Griffiths (2001) and Dargavel (1995).

In the Tasmanian context, environmental histories of a regional nature include Jetson's study of the central plateau (1989) and Breen's *Contested Places: Tasmania's Northern Districts from Ancient Times to 1900* (2001). More recently, Boyce's *Van Diemen's Land* explores the influence that the Tasmanian 'bush' environment had on the early convict and emancipist settlers (Boyce 2008).

The environmental history of urban areas is a largely neglected field of investigation (Melosi 1993). This especially holds true for Australia where the 'bush' has been the predominant area of interest (Robin and Griffiths 2004, p.454). One exception to this is Coward's *Out of Sight: Sydney's Environmental History 1851-1981* (1988), which charts the development of environmental policy in Sydney, dealing particularly with waste disposal, public health and sanitation, water supply and pollution. In the Tasmanian context, Petrow's *Sanatorium of the South? Public Health and Politics in Hobart and Launceston 1875-1914* (1995) and Petrow and Alexander's *Growing with Strength: a History of the Hobart City Council 1846-2000* (2008) include elements of urban environmental history.

A growing interest in the El Nino phenomenon and a concern about the impacts of climate change in recent decades has seen an increase in

Australian studies with a particular focus on past climatic events. Some of this investigative history has been done by meteorologists and climate scientists (for example, Nicholls 1988). A multi-disciplinary team of researchers at the University of Melbourne is also undertaking a major research project to uncover documents and other archival material relating to the recent climate history of south-eastern Australia (Gergis, Garden and Fenby 2010).

A number of environmental history publications have explored wider issues of human impact, and human responses to, such events. These include Sherratt, Griffiths and Robin's *A Change in the Weather: Climate and Culture in Australia* (2005), Pyne's *Burning Bush: A fire history of Australia* (1991) and Garden's *Droughts, Floods and Cyclones: El Ninos that shaped our Colonial Past* (2009). Others have focussed on issues of water within the Australian context (Powell 1989; Cathcart c2009). Those taking a broader global perspective to the history of extreme weather include Grove (1997; 2005), Lamb (1982), Fagan (1999) and Doe (2006).

Central to an environmental history approach (as outlined above) is the study of environmental perceptions and images. Robin explores the connections between the Australian landscape and climate and national identity (Robin 2007). The role played by 'image-making' in the process of European settlement of the New World (including Australia) has been highlighted by Powell (1978). He argued that the dominant images that

directed European settlement policy and patterns included ideals of ‘Arcadia’ and the yeoman farmer, ‘Elysium’ and the search for health, as well as notions of ‘wilderness’. In this thesis I explore the role of the ‘image-making’ process and identity as it relates to climate in Tasmania.

To conclude, in this thesis I draw on the theoretical framework provided by environmental history in exploring the role of climatic events in the interaction of humans and environment in Tasmania. I examine the predominant ‘images’ of Tasmania’s climate and how these may have influenced the impacts of, and adjustments to, severe weather events in Tasmania from the beginnings of European settlement to the 1960s, as well as how modification of the landscape over time influenced the outcomes of these events (in both rural and urban contexts).

#### *1.4.3 A Broadly Chronological Approach*

A broadly chronological approach has been taken as this allows for comparison between the prevailing images of Tasmania’s climate that have been articulated at different eras, and the ‘reality’ of the situation in terms of the effects of severe weather events. A broadly chronological approach also provides opportunities for a discussion of the historical context of particular events and a comparison between different types of events for each era. How people perceive, are affected by, and respond to events is influenced by a range of factors at any particular time, such as regional demographics, the economic situation, politics, and such external developments as war or economic depression. Modification of

the landscape over time and changes in demographics may also increase the impact of events of similar magnitude – floods in cities, for example. At any particular time, individuals and communities may have a range of potential hazards to which they need to respond.

Each of several periods of Tasmanian history are discussed, along with the main perceptions and images of Tasmania's climate, the impacts of drought, fire, flood, storm and severe cold, and the responses to them. The eras studied are 1803-1810s, 1820-1855, 1856-1900 and 1901-1960s. The first period, 1803-1810s, covers the often precarious formative years of British settlement in Tasmania, and the first impressions and adjustments to climatic features. In the next period, 1820s to 1855, society becomes more stable and is characterised by a rapid increase in the free population of the colony and a spread of settlement throughout the island. The period 1856-1900 begins when Tasmania was granted responsible government in 1856 and concludes on the eve of Federation. The last period commences with Tasmania becoming a state in a federated Australia in 1901 and continues through to the modern era of the 1960s. These chronological divisions were chosen as they mark key turning points in the history of Tasmania and were accompanied by a high degree of reflection about the island's past and future prospects. The 1960s were chosen as the end point for the study as this decade saw the beginnings of a move away from the 'Antipodean England' view. Evidence for this is found in the growing



interest in, and appreciation of, Tasmania's distinctive flora and fauna and local history, and the promotion of Tasmania as being 'like no other country in the world'. According to Curran and Ward, the 1960s saw a weakening of ties between Britain and Australia due to processes of global decolonisation, Britain's declining industrial and military power and its forging of ties with Europe. This marked the beginning of an era, which is still ongoing, characterised by a search for new ways of defining Australian national identity (Curran and Ward 2010). Concluding this study at the end of the 1960s also allowed for a discussion of three important events: the February 1967 bushfires and their aftermath; the severe drought of 1967-1968; and the Launceston floods of 1969 (the first major flood to occur after the completion of the flood levee system).

#### 1.4.4 Sources

Secondary source material was located in a variety of published and unpublished works (including theses) on Tasmanian history. These included histories of local and state government agencies, regional areas, farming and land settlement, irrigation and water supply, and mining and industry, as well as biographies of key individuals. Sources of a scientific nature included Bureau of Meteorology bulletins and publications, the *Tasmanian Journal of Agriculture*, the *Research Bulletin* of the Tasmanian Department of Agriculture and the *Papers and Proceedings of the Royal Society of Tasmania*.

Primary source material included meteorological records (both official and private), local newspapers, emigrant and tourist guides, diaries, letters, parliamentary papers and government correspondence. Some caution needs to be exercised in the use of weather data taken from unofficial sources such as newspapers, letters and diaries – the means of measurement (of, say, temperature or rainfall) may have been unreliable or not made clear, making comparisons difficult. Often such sources are imprecise in their descriptions of weather, leaving them open to interpretation. Perceptions of what constitutes a drought may also vary depending on the person and location. Even the official records contain some irregularity, as weather stations may have moved location. For example, the Hobart observatory was moved from its original site near the Royal Botanical Gardens to Murray Street, Hobart in 1855 and again to Anglesea Barracks in 1882.

## **1.5 The Case**

Tasmania, the most southerly state of Australia, and an island surrounded by the moderating influence of the surrounding oceans, has gained a reputation since European settlement as having the most ‘English-like’ climate in Australia – one characterised by an absence of the searing heatwaves, bushfires, severe floods, and crippling droughts that have affected settlement on mainland Australia. Over the years the island has been promoted as having a bountiful, congenial and well-watered climate by governments, companies and individuals, in order to

attract migrants, tourists and industry. Such images have been remarkably resilient, and to this can be attributed the tendency to downplay risks associated with severe weather events. While there have always been those who have disagreed with the prevailing views – including scientists, farmers, miners and surveyors with first-hand experience of such events – their concerns were rarely reflected in public policy.

Despite the dominance of the ‘idyllic climate’ perception, from the very beginnings of European settlement Tasmanians have suffered considerably from severe weather events. It is argued that perceptions of a low risk climate often left Tasmanians under-prepared for these events. Severe weather occurrences were widely regarded as ‘abnormal’ and adjustment usually only occurred when a crisis situation was reached. Even then responses were not always effective or long-term. Official support and resourcing for changes was often lacking, or was aimed at alleviating the crisis and returning to the ‘status quo’. Responses often failed to keep pace with the times, or interest gradually waned (until the next crisis). Individuals and/or companies with means tended to be more effective in implementing measures to reduce risks than were the government or local councils. For example, hop farmers and wealthier pastoralists developed the use of irrigation schemes on their own properties to combat drought, whilst the government consistently failed to invest in public irrigation schemes.

## 1.6 Synopsis

The following is a brief synopsis of the thesis:

**Chapter 1: Introduction:** this section includes a brief account of the thesis and its significance. It includes an outline of the argument, the methodology, and a synopsis of the contents. The chapter also includes a description of the climate and geography of Tasmania, and definitions of severe weather events.

### Part 1: Van Diemen's Land

#### **Chapter 2: 'Like a Nobleman's Park in England'?: First settlements**

**1803-1810s:** this chapter includes sections on the Tasmanian Aborigines and climate, on British weather traditions and on the background of the British occupation of Australia. In it are outlined some of the first European impressions of the island's climate and landscape, particularly the early comparisons that were made with Britain. The early impacts of droughts, floods, fire, severe cold and storms on the small, isolated and predominantly 'convict' outposts are traced. It is argued that severe weather events in the early years of settlement induced a 'crisis' situation requiring some innovation and adjustment, notably re-location of settlement sites, government regulation, experimentation and the use of bush resources.

#### **Chapter 3: 'Antipodean England'?: Pastoral Expansion 1820s-1855:**

In this chapter I trace the development of the 'Antipodean England'

myth and its influence on public perceptions of climatic risk. The rapid changes made to Tasmanian society at this time are outlined – with the dramatic rise and diversification in the ‘free’ population, development of the wool industry, the spread of settlement into the interior, and the displacement of the Aboriginal population. Convict labour and funding from the British government allowed some substantial public works to be undertaken. The impacts of, and responses to drought, floods/storms/cold and fire in this period are assessed. It is argued that ‘crisis’ situations often had to be reached for change to occur. Examples include the use of irrigation in the drought of the early 1840s and the Bushfire Act of 1854.

## Part II Tasmania

### **Chapter 4: ‘Sanatorium of Australia’?: Creating a New Tasmania**

**1856-1900:** In this chapter I explore the development of the ‘Sanatorium of Australia’ myth, in which Tasmania was widely promoted as having the healthiest climate of the Australian colonies. This image developed alongside that of the ‘Little England’ myth which remained persistent (outlined in chapter 3). In this era droughts, fires, floods and storms all affected the expanding mineral industry and associated mining towns in the rugged west and north-east, the settlement of the island’s forests under the ‘waste lands’ acts, and the burgeoning timber and tourism industries. The cities of Hobart and Launceston continued to expand, creating pressure on water supply, which led to epidemics during

drought periods. Unregulated city growth along waterways also increased the hazards of flooding. It is argued that the failure of government to keep pace with the provision of such infrastructure as roads, town drainage and water supplies added to the suffering caused by severe weather events. Widespread perceptions about the benefits of fire for mining and farming and an apathy towards potential danger led to a lack of preparedness for large bushfire ‘events’.

### **Chapter 5: ‘Lancashire of the South’? A Federated State 1901-**

**1960s:** In this chapter I trace the development of hydro-electricity in Tasmania and the political aspiration for an industrial state based on the island’s water power and climatic features. In the effort to attract heavy industry the island’s climate and water resources were promoted as cheap and abundant. Tourism continued to rely upon the ‘Little England’ image, and also a growing interest in ‘wilderness’ and outdoor recreation. Transport networks expanded with road development and air travel.

It is argued that the industrial vision was often at odds with reality as droughts led to power rationing for mining and heavy industry; bushfires diminished timber resources for the pulp and paper industry and threatened isolated timber and hydro communities; and floods and storms caused disruption and loss of production. In the major cities and outlying suburbs water supply failed to keep pace with development and floods became increasingly catastrophic. Bushfires also invaded the city

of Hobart in 1967. Agriculture generally took a ‘backseat’ to the industrial vision in government policy on water resources and irrigation. Closer and soldier settlement schemes continued to ensure the vulnerability of farming to drought, fire and flood risks. The Great Depression and two world wars sapped state finances until the 1950s. It is argued that a lack of preparedness and planning increased the impacts of all types of events.

By the close of the 1960s, however, a change in perceptions became more evident. There is a move away from the ‘Antipodean England’ myth towards a more distinctively Tasmanian perception of landscape and nature.

**Chapter 6: Conclusions:** This section provides a summary of the findings, a discussion of the significance of the research and its limitations, and suggests avenues of further research.

## **PART I: VAN DIEMEN'S LAND**

### **Chapter Two: 'Like a Nobleman's Park in England'? First Settlements 1803-1810s**

#### **2.0 Introduction**

*'The Anglo-Saxon reproduces his country wherever he hoists his country's flag' (Strzelecki 1845, p. 3).*

The creation of outposts of the British Empire in New South Wales in 1788 and Van Diemen's Land in 1803 involved not only the transfer of people to a new continent, but also a conscious decision by the British parliament to transfer plants and animals from the Home Country to form the basis of a self-supporting European-style agriculture – in effect, a neo-Europe (Raby 1996, p. 20). The British colonists also brought with them certain cultural traditions relating to the weather, land use and property that influenced the way that they responded to the Australian climate and landscape. European traditions and perceptions were not always appropriate in a land characterised by oscillating periods of drought, bushfire and floods. The transplantation of a British-style of settlement in the Australian colonies was, at times, exceedingly difficult. As Raby points out, it was not simply a matter of replicating British stock, plants and practices in a new setting – much had to be learned about the soil, native flora and fauna, and climate. This required



creativity, a process of trial and error, perseverance and a willingness to adapt traditional tools and methods and to experiment with different breeds of stock and varieties of crops from around the globe (Raby 1996, p. 21). The process of adapting to a variable climate is still ongoing today.

A variable climate, with cycles of drought, floods and fire, was as alien to the first British occupants of Australia as the indigenous flora and fauna. Van Diemen's Land proved no exception. First appearances of abundance and fertility could be deceptive. At another season or year the same locality might prove drought or flood-prone. On arrival at Risdon Cove in the lush spring of 1803 John Bowen<sup>3</sup> had claimed the country along the eastern banks of the Derwent River as being 'more like a Nobleman's park in England than an uncultivated Country; every part is beautifully Green, and very little trouble might clear every Valley I have seen in a Month' (*HRA* ser. 3, vol. 1., p. 198). But by November the country was drying out fast as a season of drought encroached. By the summer of 1803-1804 creeks had run dry, the country was parched and Bowen's party had failed to produce any crops on government ground. This chapter argues that, despite the early comparisons made between the climate of Van Diemen's Land and the mother country and a belief in its greater

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<sup>3</sup> Lt. John Bowen (c1780-1825) was born in Devon and entered the navy at an early age. He served on *HMS Glatton* which carried convicts to New South Wales in March 1803. At the age of 23 he was commissioned by Governor King of New South Wales to form a settlement at Risdon Cove on the Derwent, arriving there on 11 September 1803. In May 1804 he handed over command of the settlement to David Collins and returned to England (E. Flinn, 'Bowen, John (1780 - 1827)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 4/8/2009; <http://www.adb.online.anu.edu.au/biogs/A010125b.htm>).

suitability for a ‘British-style’ of agriculture compared with mainland Australia, the historical evidence demonstrates that even in Van Diemen’s Land the climate proved difficult and uncertain. Drought in the formative years of 1803-1807 contributed significantly to crises in water supply, farming and food supply. Floods and fire were also natural phenomena to be reckoned with.

This chapter explores the process of settlement in the early years of the colony of Van Diemen’s Land from its inception in 1803 to the end of the 1810s. It outlines the first impressions made by British officers and settlers, and juxtaposes these against the reality, that is, that drought, floods, severe cold and bushfire all hindered attempts to reproduce ‘another England’ in this island of the Antipodes. Climatic variability shaped the formative years of the colony and helped produce distinctive ways of living on the land that were in sharp contrast to the ways of the ‘old country’.

The need to adapt, innovate and experiment in settling Van Diemen’s Land involved more than the mere ‘transplantation’ of Britain into a new land, as Strzelecki implies in the chapter’s epigraph. In section 2.1 of the chapter I discuss the Tasmanian Aborigines’ adaptation to climatic factors prior to European settlement; in section 2.2 I provide background on British weather traditions; in section 2.3 I give historical background to the settlement of New South Wales in 1788 and accounts of early incidents of drought, fire and flood, as well as background to the

decision to settle Van Diemen's Land; in section 2.4 I describe the first impressions of European explorers and settlers to Van Diemen's Land's climate and landscape; and in section 2.5 I provide details on how drought, flood, fire, storms and severe cold affected the settlement process. Conclusions are outlined in section 2.6.

## **2.1      Tasmanian Aborigines and Climate**

Over thousands of years of occupation, prior to British settlement, the Aborigines of Tasmania gained an intimate knowledge of the island's weather patterns, its seasonal changes and their impacts on the flora and fauna and availability of water. A detailed knowledge of wind directions and behaviour would have informed their decisions of where and when to build campsites, when to travel and when to light fires for controlled burning purposes (Simpson 1997, p. 20). They were keen observers of the natural world and understood the connections that existed between weather patterns and the availability of resources within their territories. They had evolved ways of living that suited the variability of the climate and its successive periods of drought and flood.

The Tasmanian Aborigines lived in bands, each of which was allied with a larger political group, or tribe, which inhabited a specific territory. Movement through another tribe's territory was made possible through agreements between them. The Aborigines lived a semi-nomadic lifestyle, moving about their country and making temporary camps, depending upon the seasonal availability of food and other resources.

Their movements were intimately tied to changes in the seasons and weather, and the shifts that these brought to the plant and animal life of their country. George Augustus Robinson<sup>4</sup> instanced a *Tyrellore* woman who could judge when the mutton birds would return, claiming that it was at the same time that the lightwood tree would come into blossom (Plomley 1997, p. 43). Robinson made several observations on the Aborigines' knowledge of the weather. He recorded in his journal on 25 December 1830:

Meteorology: The aborigines have considerable knowledge of the signs of the weather and had attained to such celebrity that my people would consult them on this subject, and always appeared satisfied at what the natives told them. If the clouds or scud fly swiftly along it is the sign of, they say, there will be no rain. If a circle is round the moon it's a sure sign of bad weather, plenty of wind. If they see light clouds it's a sign of fine weather. Indeed they have numerous signs by which they judge and I have seldom found them to err. Thus

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<sup>4</sup>George Augustus Robinson (1791-1866) was born in London and migrated to Hobart Town, arriving in January 1824. He established a building business before being appointed Conciliator of Aborigines in March 1829. In this position he travelled extensively throughout Van Diemen's Land, even to the remote western districts, and kept detailed journals of his encounters with Aborigines. By August 1834 he had managed to persuade the remaining Aborigines to accompany him to Flinders Island in Bass Strait where a mission was established for them. He later went on to be appointed Chief Protector of Aborigines at Port Phillip (no author given, 'Robinson, George Augustus (1791 - 1866)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 24/3/2010, <http://www.adb.online.anu.edu.au/biogs/A020340b.htm>).

they are enabled to know when to build their huts, go to the coast for fish, travel, &c. They also judge by the stars and have names by which they distinguish them (cited in Plomley 1997, p. 43).

At times, Aborigines were known to try to influence the weather. Burning hair cut from the head or a fragment of human bone, the making of baskets and spears, and the noise of making *ballywinne* stones were believed to promote rain (Plomley 1997, p. 45).

There were regional differences between the tribes and how they responded to climatic factors. Each tribe's territory was different in climate, terrain and resources, and required different patterns of movement and responses to the environment. Aborigines of the west coast and north-west tribes who lived in a relatively hostile environment in the path of the prevailing westerly winds and heavy rains, tended to form 'semi-permanent' villages that could provide shelter from the weather at all seasons (Ryan 1996, p. 10; McFarlane 2008, pp. 24-26). The coastal regions of the north-east, by comparison, were relatively mild and resource rich all year round, and could support a high Aboriginal population. The north tribe avoided the highland areas of their territory in winter, as the weather was often severe there; and the north-west tribe tended to adhere to the coastal strip in that region, as the dense vegetation, rugged terrain and high rainfall of the inland formed a barrier to their movements (Ryan 1996, pp.7-46).

Aborigines constructed a number of different types of shelter to protect them from the elements. These included break-winds made from curved branches of trees and covered with bark to provide shelter. More substantial and enclosed 'huts' consisted of a circular framework of boughs which were covered with bark, ferns and leaves. Aborigines also took shelter in the hollow bases of large trees or caves (Plomley 1983, pp. 184-185). According to Plomley the type of shelter used most likely depended on the weather and were built according to the need at the time (1983, p. 185).

Aboriginal fire was universally used to keep parts of the country free of scrub and undergrowth in order to encourage grazing animals, and to flush them out for hunting. It was also used for warmth, cooking, for signalling others, for opening up access tracks, and for exposing and curing edible roots (Pyne 1991, pp. 85 -104). The use of fire was central to the Aboriginal lifestyle and an intricate knowledge of its use and of wind directions and fire behaviour was passed down through the generations. Beating with green boughs was used to control the extent and direction of the fires (Pyne 1991, p. 97). Aboriginal fire practices were adapted to the natural world, with eucalypts and acacia species reliant on fire for regeneration.

Many of the early explorers of Tasmania, such as Abel Tasman (1642), Marc-Joseph Marion du Fresne (1772), Tobias Furneaux (1773), James Cook (1777), William Bligh (1788 and 1792), Bruni D'Entrecasteaux

(1792 and 1793), George Bass and Matthew Flinders (1798-99) and Nicholas Baudin (1802) recorded Aboriginal fires along the island's coast line. Most were campfires, but other fires were more extensive, such as that witnessed by Marion du Fresne on the western and southern coasts in March 1772 and by Baudin in the south-east in the late summer of 1802. Plomley points to a coincidence between dry seasons (when explorers had difficulty finding fresh water) and larger scale Aboriginal fires intimating that Aboriginal firing of the bush depended less on the season than on the dryness of the vegetation (1983, p. 202).<sup>5</sup> Pyne has also argued that during dry years firing could be used to extend Aboriginal occupation into the usually wetter rainforest regions (1991, p. 128). There is some evidence to suggest that fire was used selectively – to burn some species while protecting others that were more fire-sensitive and possibly useful, such as the Oyster Bay Pine (*Callitris rhomboidea*) (Pyne 1991, p. 95; Duyker 1994, p. 134).

## 2.2 British Weather Traditions

When the British arrived in Van Diemen's Land to form convict outposts at the River Derwent in the south in 1803, and at Port Dalrymple in the north in 1804, they brought with them their own preconceptions and traditions regarding the weather. British folklore, beliefs and prophecies

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<sup>5</sup> Thomas, however, warns against drawing hasty conclusions from the reports of early explorers. He argues that the very presence of Europeans may have influenced Aboriginal fire regimes at times of contact – with more extensive burning being made for signalling purposes or as a defensive reaction to an alien presence (Thomas 1991, p. 100).

regarding weather had developed over a long period of time. Such beliefs predicted weather according to observations of the sun, moon, astronomical events, cloud formations and even the behaviour of animals (Golinski 2007, pp. 79-101). However, such British 'weather-lore' was of little use in settling a new land, such as the Antipodes. In any case, scientific traditions of meteorology had also developed in late eighteenth and early nineteenth century Britain. Measuring and recording meteorological information became a preoccupation of British scientists in this period, and the data collected was used to discern patterns and formulate laws. Thus, the weather became subject to a degree of regularity and order, though extreme weather events, such as droughts and floods, still defied explanation and presented troubling anomalies to the laws of weather averages (Golinski 2007, p. xii; pp.77-79; see also Janković 2000). Lamb has pointed out that the rise in popularity of recording meteorological information coincided with a hundred year period of relative climatic stability in Europe (1982). In Australia, where 'extremes' are part of a natural cycle, climate posed particular problems for meteorological study.

British cultural traditions regarding the weather have remained persistent to this day. Arthur (2003) outlines how Australian language reflects this cultural bias. Our 'default' country, it is argued, is set along the British lines of a green, hilly and wet land where rivers run all year round. She cites the example that the word 'river' in the 1997 edition of the



*Australian Concise Oxford Dictionary* is defined as ‘a copious stream of water flowing in a channel to the sea or a lake’. Yet, in reality, Australian ‘rivers’ are prone to long dry periods, and often reduced to a series of ponds (Arthur 2003, pp. 18-20). Extremes of weather are regarded as ‘abnormal’ and are often described in war-like terms – as something to be fought against. Arthur gives the example of drought, which is widely regarded as a violent interruption to ‘normality’ and its impacts often described in terms such as drought ‘stricken’ or ‘ravaged’. Such over-blown terms fly in the face of the fact that drought is part of the ‘normal’ cycle of weather in Australia (2003, pp.138-141).

### **2.3 Hoisting the Flag: British Occupation of Australia**

The British Government decided in 1786 to establish a permanent British settlement at Botany Bay in New South Wales. Australia was primarily colonised as a ‘dumping ground’ for convicts who could no longer be sent to America after the War of Independence. Also of importance was its strategic position in relation to the major trading ports of Asia (particularly China), the Pacific and north-west America; its naval resources, such as timber for ships’ masts and flax for sail-making; and its proximity to lucrative whaling grounds. Australia’s strategic position meant that it could become an important re-supply location and assist

England in her quest for dominance of the world's oceans and commerce (Dallas 1969; Martin 1981).<sup>6</sup>

The first fleet of eleven ships, carrying over a thousand people, most of whom were convicts, arrived at Botany Bay on 26 January 1788 under the command of Arthur Phillip. Explorer James Cook and botanist Joseph Banks had described this location favourably following their exploratory survey in April 1770. However, the 'first fleeters' found it a barren and unsuitable place, and it was soon abandoned in favour of nearby Sydney Cove (Blainey 1966, p. 33). The first few years saw many hardships, not least of which was the ever-present prospect of starvation.

Australia's distance and isolation from Europe plagued the fledgling settlement from the beginning. The vast and often mountainous seas of the Southern Ocean had to be crossed by every ship carrying new arrivals of convicts, military personnel and much-needed food and other supplies. Shipping was not only irregular in those early years of settlement, but also hazardous. Tempestuous storms, hurricane-force gales and drifting icebergs all took their toll. Valuable cargo, livestock, foodstuffs and seed could become damaged or lost *enroute*.

Correspondence and requests for assistance by the Governor could take many months to reach England, and the response even longer.

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<sup>6</sup> For a detailed account of the arguments advanced by historians for the reasons behind the British settlement of Australia see Martin (1981).

Increasingly, the Governor of New South Wales turned to Asian ports for supplies in times of need (Blainey 1966, pp. 50- 51).

Two long, miserable years passed before the arrival of the first food supply ships from England. With poor soils, damaged seed, unreliable rainfall and inadequate equipment, growing food for the inhabitants proved difficult, and by 1790 the colony experienced famine (Blainey 1966, pp. 46-48). This situation was compounded by severe drought conditions in the years 1791-1793.

Nicholls traced the early droughts of New South Wales through the reports of the colony's first Governors. The first indication of a devastating drought was given in a letter from Governor Phillip to the Right Honourable W. Grenville on 4 March 1791, which stated:

From June until the present time so little rain has fallen that most of the runs of water in the different parts of the harbour have dried up for several months, and the run which supplies the settlement is greatly reduced, but still sufficient for all culinary purposes... I do not think it probable that so dry a season often occurs. Our crops of corn have suffered greatly from the dry weather  
(*HRA* ser.1, vol.1, p.248 cited in Nicholls 1988, p. 4).

In November of that year Phillip wrote further that the crops had 'greatly failed', with 'very little rain falling from the beginning of July, 1790, to

August, 1791' (*HRA* ser. 1, vol. 1, p. 268 cited in Nicholls 1988, p. 4).

According to Grove this drought was caused by an extreme El Nino event that began in 1788 and lasted until 1795, and which was of 'exceptional strength and length', with far-reaching global ramifications (Grove 2005 p. 129). More recently, researchers, using a combination of palaeoclimatic data and historical sources, have contradicted Grove's analysis, arguing that predominantly wet conditions (La Nina) were experienced in New South Wales from 1788-1790 and that an El Nino event then occurred in the years 1791-1793 (which would have included the 1791 drought referred to by Nicholls above) (Gergis, Garden and Fenby 2010). Other dry periods occurred in the summers of 1796-97, 1798-1799, 1802-03 and in 1803-1804 (which coincided with the first years of the settlement on the Derwent River in Tasmania) (*HRA* ser.1, vol. 4, p.73 and 491; Nicholls 1988, pp. 4-5). El Nino conditions existed in the years 1798-1799 and 1803-1804 (Gergis and Fowler 2009, p. 369).

Destructive bushfires accompanied the dry periods of 1796-97 and 1798-99. In June 1797 Governor Hunter wrote:

...we have this last summer experienc'd the weather so excessively sultry and dry that from the very parch'd state of the earth every strong wind has occasioned conflagrations of astonishing extent, from some of which much public and much private property has been destroy'd (*HRA* ser.1, vol. 2, p. 19).

Floods, too, caused devastation to crops and property along the Hawkesbury River periodically. Between October 1800 and May 1801 four destructive floods were experienced in that locality. Other inundations were reported in September 1795, May 1799 and July 1801 (*HRA* ser.1, vol. 1, p. 529; *HRA* ser.1, vol. 2, p. 354, *HRA* ser.1, vol. 3, p. 426 and p.112).

Following the 1789 discovery of Bass Strait by Matthew Flinders and George Bass the British Government decided, in 1802, to form an outpost at Port Phillip (now Victoria) or King Island to protect British shipping interests in the Strait. The presence of the ships of French explorer Nicholas Baudin in Tasmanian waters early in 1802 added urgency to this decision. David Collins<sup>7</sup> was commissioned to lead the expedition to form such a settlement. Apparently unaware of Collins' commission by the Home Government, Governor King of New South Wales appointed John Bowen to establish a settlement on the River Derwent in Van Diemen's Land in 1803. The reasons he gave were:

...the necessity there appears of preventing the French  
gaining a footing on the East side of these islands; To  
divide the Convicts; To secure another place for

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<sup>7</sup> David Collins (1756-1810) was born in London. He joined the Royal Marines and in 1787 was appointed deputy judge advocate to the new colony to be established in New South Wales. He returned to England before being commissioned to lead the expedition to form a new settlement at Bass Strait. He left England aboard the *HMS Calcutta* in April 1803, and after an aborted attempt at settlement at Port Phillip he removed to the Derwent, arriving there on 15 February 1804. He died suddenly on 24 March 1810 (No author given; 'Collins, David (1756 - 1810)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A010226b.htm>).

procuring Timber, with any other natural productions  
that may be discovered and found useful: The advantage  
that may be expected by raising Grain; and to promote  
the Seal Fishery (*HRA*, ser. 1, vol. 4, p. 249).

Bowen's small party of military officers, convicts and settlers, arrived at Risdon Cove in September 1803 aboard the *Lady Nelson* and *Albion*. In February 1804 Collins, having abandoned the Port Phillip settlement, arrived at the Derwent to take command of the small settlement established by Bowen.

A further settlement was established at Port Dalrymple in northern Tasmania late in 1804. William Paterson<sup>8</sup> was put in charge of that expedition. Paterson's party of 180 people (including 64 NCO's and privates of the NSW corps and 76 convicts) departed Sydney on the 14 and 15 October aboard the *HMS Buffalo*, *Lady Nelson*, *Francis* and *Integrity*. This was the third attempt at sailing, two previous attempts having been aborted due to bad weather. The *Buffalo* arrived at Port Dalrymple on 4 November 1804, the *Integrity* on the following day, but the arrival of the *Lady Nelson* and *Francis* was delayed by over two weeks by stormy weather encountered in Bass Strait.

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<sup>8</sup> William Paterson (1755-1810), born in Scotland, was a soldier and explorer, and a keen amateur botanist. In 1789 he was made a Captain in the New South Wales Corps, arriving at Sydney in October 1791. He acted as administrator at New South Wales for a short time, before returning to England on sick leave. He returned in 1799 and in May 1804 received instructions to lead an expedition to form a settlement in northern Tasmania. He retained command of the settlement there until January 1809. He died at sea off Cape Horn in June 1810 (David S. Macmillan, 'Paterson, William (1755 - 1810)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020284b.htm>).

## 2.4 First Impressions

A generally cooler, maritime climate and first appearances of green, fertile plains and open, 'park-like' country all contributed to early comparisons being made between the country and climate of Van Diemen's Land with that of Britain. On first appearances Van Diemen's Land was calculated to be well-suited to a British style of agriculture.

### 2.4.1 *Openness of Country*

Most accounts by early explorers and settlers make reference to the 'openness' of the country that they encountered in Van Diemen's Land. Kept clear of undergrowth by Aboriginal firing, the island's open woodlands and grasslands appealed to European sensibilities and were well-suited to the grazing of livestock. In 1642 Tasman commented upon the country in general being 'thinly scattered with trees', making travel across land relatively easy and allowing a view to the far distance. He also noted that in the interior many trees had been burnt (in Walker 1989 p. 234). George Bass similarly wrote of the Tamar River hinterland in January 1799:

In sailing up the river, the points and shores present an appearance of fertility that astonished an eye used to those of the rocky harbours of New South Wales. They are mostly grassed as well as wooded close down to the water side, the wood, perhaps, thin; the grass everywhere thick, every where a dark luxuriant

vegetation, that, either from the thinness of the wood, or the gradual rounding of the hills and points, is visible to a very considerable extent of ground (in Collins 1975 [1802], vol. 2, p. 120).

After Bowen arrived in September 1803 he described the banks of the Derwent near Risdon as ‘more like a Nobleman’s Park in England than an uncultivated Country’ (*HRA* ser 3 vol. 1, p. 198). Paterson made similar observations about the country at the Cataract (now Launceston) in the north in December 1804 – ‘The Wood is in general very Lofty, but the Trees thinly dispersed, which gives a beautiful Appearance to the Eye’ (*HRA* ser. 3 vol. 1, p. 614). Along the North Esk River in 1806 he noted also: ‘the Ground on its Banks extending on both sides into Considerable Plains without a Tree, and in many places farther than the Eye can reach’ (*HRA* ser. 3, vol. 1p. 664).

#### 2.4.2 *Englishness*

First impressions pointed to a greater similarity between the climate of Van Diemen’s Land and that of the Home Country than was experienced in New South Wales. In terms of temperature, Van Diemen’s Land was generally cooler than the mainland colony. Paterson wrote to Lord Castlereagh of the Home Government in 1806:

The Climate is in every respect highly favourable for all the purposes of Agriculture, and most particularly for the Stile [sic]





Fig. 3. G.P. Harris, [section of] *Map of Part of New South Wales and Van Diemen's Land*, 1804, showing Port Dalrymple in the north, and the River Derwent, Sullivan's Bay camp, Risdon Cove settlement and Table Mountain (Mt. Wellington) in the south. (C) British Library Board, Harris Papers 45156, Manuscripts Collection.

followed in Great Britain, to which it much nearer approaches than the temperature of Port Jackson, being, however, somewhat warmer in the Summer than the Former, with none of those severe Months of Snow and Frost that are experienced there in the Winter (*HRA* ser. 3, vol. 1, p. 665).

The conferring of British place names on the island's features by English explorers and early government officials also created the illusory impression of a close association existing between Van Diemen's Land and the Home Country. For instance, the River Derwent was named by John Hayes after the river of the same name in his native Cumberland in England (Tardif 2003, pp. 18-19). The River Tamar in the north was named after the river which divides the counties of Cornwall and Devon in England and on which is situated the town of Launceston (the birth place of Gov. King of New South Wales) (*HRA* ser.3, vol.1, p. 838, note 300). The use of British place names not only had nostalgic appeal, but also strategic significance. In 1804 Governor King of New South Wales ordered David Collins to change any place names given by French explorers to the ones used by such English explorers as Cook, Furneaux, Hayes and Flinders. This was a clear assertion of British sovereignty over the island (*HRA* ser. 3 vol.1, p. 285). Such early impressions of 'Englishness', however, were largely deceptive. Experience would soon demonstrate that the island's climate could be highly variable, and was very different in important ways to that of the British Isles. In the

following sections I outline the impacts of drought (section 2.5), floods, storms and severe cold (section 2.6) and fire (section 2.7) on early settlements.

## **2.5 Drought: ‘All Parch’d Up’**

Traditional histories of the early period of Van Diemen’s Land history have neglected the role that drought played in augmenting the difficulties faced by the first settlement parties, emphasising instead the troublesome nature of the military and convicts, and the poor quality of seeds and tools (for example West 1852, Walker 1989, Giblin 1939 vol. 2). In this section the evidence for the impacts of, and responses to, drought in the early years of British occupation of Van Diemen’s Land is outlined.

### **2.5.1 *Risdon Cove 1803-1804***

Risdon Cove, situated on the eastern shore of the River Derwent, was the first settlement site for the British in Van Diemen’s Land. The country presents as low rolling hills of mudstone/siltstone supporting open eucalypt woodland. The annual average rainfall is approximately 500-625mm pa (Dept. of Agriculture 1988, region 6, p. 83). At the time of British settlement it formed part of the territory of the Moomairremener band of the Oyster Bay tribe of Aborigines. The ‘parkland’ appearance commented upon by Europeans was a result of the country being kept open by Aboriginal firing. The area provided a rich resource for indigenous kangaroo hunting (Ryan 1996, p. 73).

Explorers George Bass and Matthew Flinders had found Risdon Cove appealing in December 1798 during their circumnavigation of the island. Bass wrote in his journal:

The land at the head of Risdon creek, on the east side [of the river], seems preferable to any other on the banks of the Derwent. The creek runs winding between two steep hills, and ends in a chain of ponds that extends into a fertile valley of great beauty (Collins 1975 [1802], pp. 132-134).

He was impressed by the long grassy slopes gently rising to the nearby hills and by the fertile soils of the valleys, which then supported ‘a large quantity of thick, juicy grass’ (Collins 1975 [1802], pp. 132-134). This account influenced the decision taken in 1803 by John Bowen to offload his settlement party at Risdon Cove.

Accounts by French explorer Nicholas Baudin, whose expedition of 1802 had prompted the British to establish a presence in Van Diemen’s Land, were far less glowing. He had found the country around the Derwent severely parched by drought. Hot winds were experienced in February 1802, Aboriginal fires were extensive, creeks were dry and the banks of the River Derwent marshy and inaccessible due to insufficient water (Plomley 1983, p.35; 29; 47-48; 117). This drought was also experienced in other parts of Australia (Nicholls 1988, pp. 4-5).

When John Bowen arrived at the Derwent on 12 September 1803, however, there had been a return to more ‘lush’ conditions. Arriving with a small party of 49 people, including eight military officers and their families, 24 convicts and three free settlers and their families, he considered Risdon Cove to be a highly eligible spot for settlement. On 20 September, in a letter to Governor King of New South Wales, he wrote:

...there are so many fine Spots on the borders of the River that I was a little puzzled to fix upon the best place, but there being a much better Stream of fresh water falling into Risden Cove than into any of the others, and very extensive Valleys laying at the back of it, I judged it the most convenient, and accordingly disembarked all the Men and Stores, and have been since wholly employed in securing ourselves from the Weather (*HRA*, ser.3, vol.1, p. 197).

Spring growth was evident as Bowen described the country as then being ‘beautifully green’ (*HRA* ser 3, vol. 1, p. 198). However, by the following summer the country was drying out fast. Surviving survey books – the work of convict surveyor, James Meehan – hold a number of references to the dryness experienced in the summer of 1803-1804. In explorations on the western shore of the Derwent in late January 1804 Meehan noted that fresh water was scarce, gullies were mostly dry and most creeks had been reduced to a run of ponds (*LSD* 355/2 in Tardif 2003, pp. 107-109).

When David Collins arrived at the Derwent in February 1804, with the intention of taking over the command of the settlement from Bowen, dryness and excessive summer heat had altered the landscape dramatically. Collins, originally commissioned to form a settlement at Port Phillip, had abandoned that location primarily due to the dearth of fresh water, although the hostility of the Aborigines, poor soil and the dangerous entrance to the harbour had also been important considerations (*HRA* ser. 3, vol. 1, p. 28). Mineralogist Adolarious Humphrey <sup>9</sup> who arrived at the Derwent with Collins' party aboard the *Ocean* on 11 February 1804, noted the dryness of the season. After suffering a severe gale the vessel took shelter in Frederick Henry Bay and Humphrey, together with five others, set off on foot to the Risdon settlement (Humphrey 1984, pp.89-90). Many of the watercourses were then reduced and the party suffered severely for want of fresh drinking water in the heat of the day:

At ten we began to be very thirsty, as the sun was powerful. The places in which there was fresh water in the rainy season were all dry. At twelve we had passed some steep high hills and the men were tempted to drink at a salt-water inlet. I had never

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<sup>9</sup> Adolarious Humphrey (1782?-1829), an English-born mineralogist, sailed from England with David Collins' expedition to Port Phillip (and later Van Diemen's Land) in 1803. He served as government mineralogist until 1812, and was later appointed as coroner, superintendent of police, chief magistrate and a member of the first Legislative Council. He settled in the Derwent Valley (G. H. Stancombe, 'Humphrey, Adolarious William Henry (1782? - 1829)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 11/2/2010, <http://www.adb.online.anu.edu.au/biogs/A010528b.htm>).

suffered so much for want of drink and was almost unable to walk (Humphrey 1984, p. 91).

During an exploratory survey of the Derwent and Jordan Valleys in early February, Meehan noted that the country was very dry and that the native pastures on the plains were bare – ‘the whole of it nearly perished from the Great Drought’. The Jordan River had been reduced to ‘a circular range of ponds’ (LSD 355/3 in Tardif 2003, pp. 110-112). Rev.

Knopwood,<sup>10</sup> who also arrived with Collins’ party, recorded in his diary on 18 February 1804 that at Risdon Cove ‘they have not had a good shower of rain for 4 months’ (Nicholls 1977, p. 44). The Risdon Creek was much reduced and unimpressive (*HRA*, ser.3, vol. 1, pp. 222-223; Nicholls 1977, pp. 44-45). Aboriginal fires had scarred much of the surrounding landscape (*HRA*, ser. 3, vol. 1, p. 489). This drought extended into the winter, as Collins wrote at the end of July 1804:

When the small Establishment which was sent to Risdon Cove by Governor King arrived there in September last, they found sufficient fresh Water in the Cove to deem it a permanent Supply. Upon my arrival, the fresh Water, which, in September was a running Stream, was then confined to a few Pools of dirty

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<sup>10</sup> Rev. Robert Knopwood (1763-1838) was born in Norfolk, England, and ordained a priest in 1789. He joined Collins’ expedition to Port Phillip in 1803, before arriving at the Derwent River in February 1804. He served the religious needs of the colonists before retiring in 1823 due to ill-health. From 1826 until his death in 1838 he was rector at Clarence Plains (Rokeby) where he resided (Linda Monks, ‘Knopwood, Robert (1763 - 1838)’, *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020057b.htm>).

standing Water, and ... are now little better (*HRA*, ser.3, vol. 1, p. 247).

On his arrival at Risdon, Collins had found that no government ground had been prepared for the planting of crops. Including those who arrived in his own party, the settlement now had over 270 people to support (*HRA* ser. 3, vol. 1, p. 224, 227). He made immediate plans to make camp at Sullivan's Cove on the western shore (now Hobart), where a stream sourced from mountain springs had been located. Meehan had first surveyed the watercourse in late January. Given the very dry conditions at the time, the stream (the Hobart Rivulet) was considered to be 'permanent' and reliable (LSD 355/2 in Tardif 2003, pp.107-109). One of Collins' first measures was to issue a General Order cautioning against polluting the stream or destroying the underwood adjacent to it (*HRA*, ser. 3, vol. 1, p. 219). Collins proceeded to establish a settlement at Sullivan's Cove and a government farm at nearby Farm Cove (Cornelian Bay) (*HRA* ser.3, vol.1, p. 265). The new settlement site lay within the territory of the Mouheneenner band of the South East Aboriginal tribe (Ryan 1996, p.76).

The following summer of 1804-1805 was also characterised by dry conditions that extended into the autumn months. In April 1805 Rev. Knopwood noted that at his farm everything was at a standstill for want of rain, and the grass and all the garden were 'parch'd up' (Nicholls 1977, p. 81).



### 2.5.2 *Port Dalrymple 1804-1805*

Dry conditions were also experienced in the early months of settlement at Port Dalrymple in the north. In January 1804 William Collins was despatched from Port Phillip by David Collins to undertake exploratory surveys of the island's northern port. He noted the dearth of water at that time – lagoons were dry and streams and watercourses obviously reduced from former capacities (*HRA* ser. 3, vol. 1, pp. 583-585). A further account of this exploratory journey by Thomas Clarke also makes it clear that fresh water was very difficult to obtain at that time (*HRA* ser. 3, vol. 1, p. 585).

When Paterson arrived at Port Dalrymple in November 1804 he selected York Town on the western arm of the Tamar estuary as the most likely spot for a settlement. York Town lay in an area of undulating hills with a covering of open woodland dominated by swamp gum and paperbark in the lower-lying areas and an open forest of black peppermint and stringybark in the upper regions. The annual average rainfall is in the order of 750-1000mm pa (Dept. of Agriculture, 1980, region 4, p.126). It formed part of the territory of the North Midlands Aboriginal tribe (Ryan 1996, p. 15).

Dry conditions experienced at the time of Paterson's arrival indicated that the stream at York Town would afford a 'permanent' supply. As these conditions continued into the summer of 1805 Paterson resolved to search for new sources of fresh water with the understanding that 'where fresh

water is found now there can be no doubt of its being permanent' (*HRA* ser. 3, vol. 1, p. 629). In January 1805 he was disappointed to find that the water in the river where the North and South Esk met was not fresh, when two months previously it was found to be fresh for upwards of seven miles down the Tamar. This, he concluded 'was owing to the very dry season we have had, and which still continues' (*HRA* ser. 3, vol. 1, p. 655). At the end of February he wrote to Governor King of New South Wales:

I am sorry to inform you that the lagoons are at present all dry, but the grass does not seem to suffer. I therefore suppose the dryness is of short duration, and by digging, that objection, I am in hopes, may be removed... I don't know what kind of weather you have had at Port Jackson; but from my observations, which I enclose, you will perceive we have had very little rain ever since the departure of the Buffalo. I therefor [sic] conclude that this is our dry season (*HRA* ser. 3, vol. 1, p. 631).

Arriving during a dry period had assisted Paterson's party in identifying the most suitable places to meet their water requirements. However, before the end of the year they would also experience an episode of flooding. The first camp at York Town would be forced to re-locate due to flood-proneness, rather than drought.

### 2.5.3 *'A Kangarooing': 1806-1807*

Aspirations of the early Lt. Governors' of growing grain and vegetable crops by settler and convict labour failed miserably in these formative years, prompting a 'famine' of traditional foodstuffs with which to feed the burgeoning populations at Sullivan's Cove and Port Dalrymple. As we have seen, Risdon Cove was aborted as a settlement site at an early stage due to insufficient water in dry periods. Drought, no doubt, also contributed to the 'famine' years of 1806-1807 which were characterised by an abandonment of traditional agricultural pursuits in favour of the hunting of native game. This section outlines the evidence for a severe drought in this period that contributed to the food 'crisis' and the adoption of a 'hunting and gathering' response.

Fishing and the hunting of native birds and animals were popular pastimes amongst the officers of the early settlement and added variety to their diet. Hunting game had a long tradition in Britain. On first stepping ashore for the first time at Frederick Henry Bay in February 1804, Knopwood commented upon the great number of wild sea birds, as well as an emu, quails, bronze-wing pigeons and parrots. The party collected a 'great quantity' of oysters. He concluded that the Aborigines must have been well-supplied with fish and native birds (Nicholls 1977, p. 43). Further upstream on the Derwent River black swans were very numerous. Killing of swans and collecting their eggs provided sport and food to such an extent that, in early March 1804, David Collins issued an order

banning their disturbance during the breeding season (*HRA* ser.3, vol.1, p. 264). Larger game, such as native emus, kangaroos and wallabies, proved palatable also. Native plants which formed part of the Aboriginal diet, such as the fern root and 'native potato', were also, at times, consumed by British settlers and convicts (Boyce 2008, pp. 115-117). On 4 March 1804 David Collins wrote to Secretary of State Lord Hobart on the abundance of fish in the Harbour:

...I have never yet failed in procuring enough to supply the Officers, upon any Day on which I issued Provisions, I saved One hundred and Sixty four Pounds of Beef at the Store, by serving two Pounds of Fish, in lieu of one Pound of Salt meat (*HRA* s3, v.1, p. 230).

The hunting of native game, practised from the outset, became a matter of survival when periods of extended drought in 1806-1807 caused wheat and potato crops to fail. Anticipated food supplies from England and New South Wales were not forthcoming.

Some successes were gained in agricultural and horticultural pursuits at Sullivans Cove and Port Dalrymple in the years 1804-1805. As Raby has argued, experimentation with different crops, planting times and methods, as well as breeds of livestock, was necessary in these early years of colonisation (1996, pp. 28-34; see also Morgan 1992, p. 59). By July 1804 the government farm at the Derwent had 19.5 acres of wheat, 1.75

acres of oats and 2.25 acres of rye in cultivation and the harvest of early 1805 was favourable (*HRA* ser. 3, vol. 1, p. 249; *HRA* ser. 3, vol. 1, p. 309). Collins noted that the best crop growth was made on patches of land which had been burnt prior to planting (*HRA* ser. 3, vol. 1, p. 290). Paterson had also established a government garden at York Town, where trials were made with various ornamental and food plants. By February 1805 he could also record success in growing peas, French beans, turnips and salad vegetables (*HRA* ser. 3, vol.1, p. 633).

However, uncertainty of results plagued the settlements. Droughts, pests and disease made agriculture very precarious. In February 1806 Knopwood made several references in his diary to excessive summer heat and dryness (Nicholls 1977, p.101, 103). The dearth of rain extended at least until early autumn (Nicholls 1977, p. 103). By November that year insufficient rain was once again causing problems for settlers, with Knopwood recording: 'The weather very dry. Nothing grows for want of rain' (Nicholls 1977, p. 119). Pests compounded the problem. As he attested: 'the ground very much in want of rain and the grubbs [sic] destroy all our vegetables' (Nicholls 1977, p. 119). Aboriginal fires were also very prevalent that summer (Nicholls 1977, p. 123). As the excessive heat and drought continued for many weeks a weary Knopwood penned in his diary on 18 February 1807:

...the day so very hot, scarce able to stir out. We have not had any rain for a very long time. No grass and the country on fire

by the natives who are very trouble-some to the man out a-  
kangarroing [sic] (Nicholls 1977, p. 127).

When a shower of rain at last descended on 15 March 1807, Knopwood stated that it had been the first to fall for five months (Nicholls 1977, p. 129). The drought experienced in 1806-1807 coincided with a very strong El Nino event (Gergis and Fowler 2009, p. 369).

Under such trying conditions the crops had largely failed and the colony was in 'very great distress' for want of wheat and potatoes (*HRA* ser. 3, vol. 1, p. 685, 395; Nicholls 1977, p. 127; *Statistics of Tasmania* 1807, p. 5).<sup>11</sup> The dire situation prompted the first overland expedition between the two population centres in the north and south. The population of officers, convicts and settlers was by this time close to 500 at the Derwent in the south and 300 at Port Dalrymple in the north (*HRA* ser.3, vol.1, p. 384, 666). On 3 February 1807 military officer, Thomas Laycock, and a party of four men set out from Port Dalrymple to the River Derwent in search of food supplies. They arrived on 11 February, but found relief was not forthcoming (*HRA* ser.3, vol.1, p. 745). On the return journey Laycock noted on 16 February: 'the weather was so hot, And the Country on fire, that on the third day I could not proceed at all' (*HRA* ser. 3, vol. 1, p. 747).

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<sup>11</sup> As Boyce points out, this 'distress' was largely cultural. The absence of traditional British foodstuffs, such as bread and potatoes, was at this time easily overcome by the hunting of native game, such as kangaroo (Boyce 2008, pp. 50-51). Boyce also argues that the native game was of more nutritional value than the imported flour, sugar and salted meats which the colonists craved (2008, p. 44).

With supplies in both centres hopelessly low, colonists hunted native game, particularly kangaroo, to fill the void. The government had first used fresh kangaroo meat in the winter of 1804 to make a soup for people suffering scurvy (*HRA* ser. 3, vol.1, p. 251). The remedy proved successful (Boyce 2008, p. 45). Some months later, in September 1804, the Governor officially sanctioned kangaroo hunting to augment the government meat ration, again as a response to the prevalence of scurvy (*HRA* ser. 3, vol. 1, p. 308). Such measures became increasingly necessary in the years 1805-1807, not just as a means of treating the sick, but for providing essential food to all (*HRA* ser.3, vol.1, p. 330; *HRA* ser. 3, vol.1, p. 332). In 1806, with starvation looming, nearly 50 000lbs of kangaroo and emu meat was received into government stores in the eight months from January to August (*HRA* ser. 3, vol.1 p. 361, p. 378). By April 1807, with the drought worsening, colonists in the north had abandoned attempts at traditional agriculture altogether. They had become so reliant on kangaroo for food that Paterson wrote:

...From last Jan'y the Colony have existed entirely on the precarious chance of the Chase, and Kangaroo was the only food they depended on. In consequence Labour stood still, and the Inhabitants became a set of Wood-Rangers (*HRA* ser. 3, vol.1, p. 668).

As kangaroo became scarcer around the settled districts, convicts were forced into remoter areas. This caused grave security problems as

convicts armed with guns and let loose in the bush were often disinclined to return to servitude in the settlements (Boyce 2008, p. 55). Bushranging became a major social problem. The scarcity of kangaroo also brought settlers into conflict with the Aboriginal people who were deprived of their traditional hunting grounds (Fels 1982, pp.47-79). As the crisis wore on and Europeans had to travel further afield to catch their prey, it became obvious that relying on native game alone was not a long-term proposition for feeding a growing settlement.

Despite the problems it caused, kangaroo hunting proved vital to the survival of the fledgling settlements. In a report on the settlement at the Derwent written in 1810, Collins claimed:

...we know that the Country possesses within itself a Supply of Animal Food, of which, during some of the years in which we have settled, Necessity compelled us to avail ourselves, and Experience has taught us it may be looked upon as a Resource in time of Scarcity (*HRA* ser. 3, vol. 1, p. 433).

Collins regarded the hunting of native game as an emergency measure and largely looked upon it as a 'last resort' – the longer-term aim being to establish a European style of agriculture that could feed the growing population. However, the hunting of native game to augment food supplies would continue to be a feature of Van Diemen's Land culture, particularly for struggling small-scale farmers living close to the bush.



Despite the difficulties of these early predominantly dry years, a return to more plentiful seasons followed allowing agriculture to become more firmly established. Although dry periods were experienced in the summers of 1808-1809 and 1817-1818, there appears to have been a return to generally wetter conditions by the 1810s (*HRA* ser. 3, vol. 1, p. 695; *HRA* ser.3, vol.2, p.310; *HRA* ser. 3, vol. 3, p. 253). Evidence for this can be found in descriptions of floods in Hobart and Launceston in 1809, as well as in Meehan's surveys of the North and South Esk Rivers in flood in early November 1812 (*HRA* ser. 3, vol. 1, p. 761: LSD 355/1/9). Further widespread flooding occurred in the years 1816, 1818 and 1819 (see section 2.6).

#### 2.5.4 *Summary*

In this section I have outlined the evidence for drought in the early years of settlement in both the south and the north of the island. Drought in 1803-1804 prompted a water supply crisis that led to the re-location of the southern settlement from Risdon Cove to Sullivans Cove on the western shore of the Derwent. The 'famine' years of 1806-1807 led to an abandonment of attempts at a traditional British style of agriculture in favour of the hunting of native game. By the 1810s, however, there was a return to more favourable seasons, and much progress was made with agricultural pursuits. In the next period, 1820s-1855, settlement spread throughout the open woodlands and grasslands of the island with an influx of free settlers lured to the island by promises of bountiful pastures

for pastoral pursuits. The towns grew from mere ‘camps’ to well-established centres. Droughts continued to hinder European settlement periodically.

## **2.6 ‘Extraordinary’ Floods, Tempest and Winter Cold**

The capacity of Vandemonian rivers and streams – which could be reduced to stagnant pools in dry periods – to rise up dramatically following heavy rain or snow melt drew comment from a number of early colonists. David Burn, in a *Picture of Van Diemen’s Land* [1842] wrote:

The rise of all the Van Diemen’s Land rivers is as rapid as it is dangerous, a circumstance more or less observable in every mountainous region, where the melted snows or accumulated falls of rain pour in furious currents down the steeps, ploughing the valleys and augmenting the violence of the angry flood  
(Burn 1973 [1842], pp. 103-105).

Over hundreds of years the British had subdued their own waterways by the building of levees and weirs to control and direct water flow (Cathcart 2009, p. 33). While floods were periodically experienced in Britain,<sup>12</sup> the rapid rise of Antipodean rivers under flood conditions caught many new settlers by surprise. It is argued in this section that, although evidence for past flooding was found during early exploratory surveys, the risks associated with flooding events were under-estimated

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<sup>12</sup> For a history of floods in Britain see Doe 2006.

or ignored in this period. The first settlements in the south and north were located along flood-prone waterways and the destruction caused by flooding events would increase as settlement intensified.

### *2.6.1 Early Evidence of Floods*

In the first year of settlement in the south various trips were made up the Derwent River, to the Coal River and Sorell and to the Huon and evidence for past floods was found at a number of locations. When surveyor James Meehan explored the western shore of the Derwent in 24-27 January 1804, although the country was then dry, he noted at the Hobart Rivulet that there were signs of past ‘moderately high floods’ (LSD355/2 in Tardif 2003, p. 108). This mountain stream was referred to in another early account as being impassable due to the thick undergrowth, huge gum trees and large amounts of prostrate and dead timber that lay across it (*Walch’s Almanac* 1959, pp. 30-31). Evidence for floods was also found in other locations. On examining the Derwent and Jordan Rivers in early February 1804 Meehan discovered some falls on the Derwent (past the current site of New Norfolk) and here, too, he noted evidence of earlier floods which he estimated had been ‘about 20 feet high’ (LSD355/3 in Tardif 2003, p. 110).

Soon after his arrival in February 1804, David Collins, together with G. P. Harris,<sup>13</sup> Capt. Mertho (of the *Ocean*) and Rev. Knopwood, examined tracts along the Derwent for a suitable site on which settlers could establish farms. At a plain on the river's western shore (most likely the current site of Glenorchy) they found evidence of past flooding – the ground having been at some time much broken up by 'torrents of rain' (Nicholls 1977, p. 44; Tardif 2003, p. 116). John Oxley, in his report on the southern settlement in 1810, also noted that at the Huon River in the south a 'violent Flood' in the past was most likely responsible for bringing down huge Huon Pine trees and depositing them at the entrance of the river (*HRA* ser.3, vol.1, p. 572).

After the arrival of the first settlement party in the north in November 1804, further exploration was undertaken by Paterson. Although the country was then dry, Paterson found evidence of past flooding along the North Esk River. Some evidence of past floods was also found on examination of the South Esk River (*HRA* ser. 3, vol. 1, p. 619). Paterson believed, however, that the risks of flooding were small and that the extent of higher ground would provide refuge for cattle should any inundations occur (*HRA* ser.3, vol. 1, p. 616).

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<sup>13</sup> George Prideaux Harris (1775-1810) was appointed as Deputy-Surveyor to David Collins' expedition to Port Phillip and later Van Diemen's Land in 1803-1804. He undertook a number of early surveys in the colony. His interest in natural history also led him to paint a number of water-colours of local bird life. He died on 16 October 1810 (E. R. Pretyman, 'Harris, George Prideaux Robert (1775 - 1810)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 24/4/2010, <http://www.adb.online.anu.edu.au/biogs/A010475b.htm>).

Despite the evidence for past flooding events, it was largely ignored or under-estimated as settlement proceeded around flood-prone rivers and streams.

### *2.6.2 Port Dalrymple Floods*

Although Paterson's party had arrived at Port Dalrymple during a dry period, by the winter and spring of 1805 the new settlement at York Town in the north was adversely affected by cold and flooding rains. Spring floods destroyed the newly planted crops on low-lying land fronting Anderson's Creek (south of York Town), the settling spot for store-keeper Alexander Riley and five settlers who had been re-located from Norfolk Island. Riley, who had previously lost all his crops in a devastating flood on the Hawkesbury River in New South Wales, had nearly twelve acres of crops destroyed by the flooding. Paterson recommended that the flood-affected settlers be remunerated for their losses and that their grants of land should be changed to land along the South Esk (*HRA*, ser. 3 vol. 1, p. 639, 651, 749).

The susceptibility of York Town to flooding, together with problems of access by ships, and the discovery of more fertile plains in the Cataract area to the south, led Paterson to move the greater part of his establishment to the present site of Launceston in the latter part of 1806 (*HRA* ser.3, vol. 1, p.759). The new settlement site was located adjacent to a vast floodplain where the North and South Esk Rivers converged on the Tamar River. When a flood was experienced in the new location in

the winter of 1809 it was largely dismissed as insignificant. John Oxley's report on the Port Dalrymple settlement in 1810 refers to the flood covering the low grounds around the North Esk River to a depth of two or three feet. He argued that, since only one flood had yet been experienced and that it had actually done more good than damage (by turning up new land), Launceston was unlikely to suffer the devastating floods and fatal losses that had been experienced along the Hawkesbury River in New South Wales (*HRA*, ser. 3, vol. 1, p. 761).

### 2.6.3 *Hobart Floods*

Despite early measures taken by David Collins to protect the Hobart Rivulet as a source of water, it was not long before houses, gardens and mills were established along its banks. The Hobart Rivulet was prone to flash flooding during heavy rain or snow melt conditions, and major flooding was experienced by Hobart's inhabitants in March 1809 and July 1816 (*HTG* 13 July 1816, p. 2). In a further flood in September 1819 inadequate wooden bridges that had been built across the rivulet were swept away and some houses were damaged. A new brick and stone bridge under construction in Argyle Street was also washed away by the force of the current and by drifting logs that had been carried downstream at the height of the flood. A ferry boat on the Derwent was sunk during the tempestuous weather and three men drowned (*HTG* 25 September 1819, p.2).

Following the floods in Hobart in 1816 and 1819 a number of landowners built retaining walls in a piecemeal fashion along sections of the rivulet. This provided not only a measure of flood protection, but also allowed owners to fill and extend their usable land even closer to the stream (Button 1978, p. 64).

In the following decades as the towns of Hobart and Launceston grow substantially with an influx of free settlers to the island, and as industries, houses and businesses spring up adjacent to the waterways, the risks of periodic flood damage become greatly increased.

### *2.6.3 Roads and Bridges*

In the early years of the colony spring and winter rains routinely cut off any land communication between the population centres. In 1810 Oxley reported:

The open country between Port Dalrymple and the River Derwent affords an easy communication between the Two settlements for at least nine Months in the Year; in the winter season, the rains swell the Brooks, and render them impassable; but this difficulty might be easily obviated by Wooden Bridges, the construction of which would neither require much labour or Expence [sic] (*HRA* ser. 3, vol. 1, p. 771).

In the following year Governor Macquarie of New South Wales visited the island. He ordered that a road between Port Dalrymple and Hobart be surveyed and that military posts be established along its route (*HRA* ser.3, vol.1, p. 520). Work on the new road was directed at first by Major Thomas Bell, and later Richard Turton, G. W. Evans and Roderic O'Connor (Stancombe 1953, p. 77). Many of the first bridges were of log or timber construction and proved susceptible to damage during floods. In the winter and spring of 1818 the transport of male convicts from Hobart to Port Dalrymple had to be delayed because of inclement weather (*HRA* ser. 3 vol. 2, pp. 332-333; *HRA* ser. 3 vol. 2, p. 482, 484). The following year further delays were experienced in the passage of convicts between the major settlements, and general musters<sup>14</sup> were postponed due to heavy flooding in the spring (*HRA* ser 3 vol. 2, p. 423; *HTG* 23 October 1819, p. 1; *HRA* ser. 3 vol 2, p. 429; *HTG* 30 October 1819, p. 1). Governor Sorell wrote to Governor Macquarie of New South Wales on 4 October 1819: '...a portion of these [prisoners], which had been intended for Port Dalrymple, have been unavoidably kept here for the present by the very heavy rains and extraordinary Floods' (*HRA* ser. 3, vol. 2, p. 423).

The necessity for crossing the Derwent River by ferry on the route between Hobart and Launceston caused further difficulties, particularly in stormy or otherwise inclement weather.

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<sup>14</sup> Convict musters were carried out annually in the island's districts to keep an account of the numbers of convicts in each location, to keep track of individual convicts and to update their details.



#### 2.6.4 *Tempest and Winter Cold*

The first settlement parties were beset by stormy weather from the outset, causing shipping delays across Bass Strait and loss of livestock (*HRA* ser.3, vol. 1, p.197; *HRA* ser. 3, vol.1, p. 608). Even once the first ‘camps’ were established communication with New South Wales and the Home Country was difficult and long delays to shipping caused by bad weather hampered progress. Much-awaited supplies often failed to arrive, leaving the small and isolated settlements in despair.

Storms or strong gales also caused property damage. On 1 October 1804 Rev. Knopwood recorded in his diary:

AM at 1 it blew a perfect hurricane; many trees and a store tent upon Hunter’s island was blown down. At 4 I expected every moment that my marquee would have been blown down (Nicholls 1977, p. 62).

Severely cold winters were intolerable at first. Adolarious Humphrey complained in August 1804:

The weather is in Winter very cold, the Table Mountain<sup>15</sup> is at this time covered with snow, and I have suffered greatly from cold and rain, which latter falls very heavy in the wet season, and a marquee is but a poor protection from it. I have

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<sup>15</sup> Mt. Wellington had a number of early names including Table Mountain. It was re-named Mt Wellington by 1824 (de Quincey and Cannon 2005, p. 245).

frequently slept with the water a considerable depth (six inches) under my bed (Humphrey 1984, pp. 123-124).

When this first winter proved much colder than expected, David Collins had to request that supplies of rugs and blankets be sent out. He suggested that new arrivals of prisoners should only be landed in the summer months, to allow time for huts to be prepared for them before the onset of winter. He also concluded that shipping should be avoided in winter due to the prevalence of gales (*HRA*, ser. 3 vol. 1, p. 247, 257). Native resources, such as kangaroo skins, were utilised to provide shoes and clothing for convicts, bush workers and poorer settlers (*HRA* ser.3, vol.1, p. 320; Boyce 2008, pp. 118-119).

Itinerant bush workers, kangaroo hunters, shepherds and sealers, as well as convict escapees, often copied Aboriginal shelter techniques, such as the use of rock caves and hollowed trees, and the construction of temporary A-frame shelters made from boughs and bark (Boyce 2008, p. 120). When settlers erected more robust huts, Boyce argues that the English tradition of wattle and daub construction was quickly abandoned in favour of log and split-log huts built from local stringybark eucalypts. Such rough 'bush' huts were generally condemned by European commentators as 'mean' or 'wretched' when compared with houses of the English countryside (Boyce 2008, pp. 123-124). Wealthier settlers were eventually able to progress to substantial stone and brick houses

and mansions, which were more in line with their British traditions and aspirations.

Gradually, as settlers built more robust huts and houses, cold winters became more bearable, and even a source of delight for some.

Knopwood recorded in his diary on 30 June 1814:

This morn the snow was ankle deep on the ground; we never see so much before... the scene is beautiful beyond description; the beauty of the shrubs through the white snow and the water looking so very cold (Nicholls 1977, p. 182).

However, storm and wind damage was still occasionally suffered. On 14 May 1815 Knopwood wrote again:

This morning a dreadful scene presented; scarce a house but suffered the severe gale of Saturday aft and night and Sunday morning. Some houses entirely blown down; others unroofd [sic] (Nicholls 1977, p. 204).

Storms, severe cold and frost also killed or weakened livestock and crops. The coldness of the first winter at Port Dalrymple, in 1805, took a heavy toll – just as the first winter experienced in the south had done the previous year. The cattle, which had been imported from Calcutta, and accustomed to a much warmer climate, perished in alarming numbers in the cold, leaving the settlement short of stock (*HRA* ser.3, vol. 1, p. 640-641). The Bengal sheep also suffered that winter (*HRA* ser. 3, vol.1, p.

644). The remaining cattle were later removed to the fertile plains near the Cataract (the present site of Launceston). Winter frosts also led settlers to abandon maize crops which failed to thrive in the cold (*HRA*, ser. 3, vol. 1, p. 287).

#### 2.6.5 *Summary*

Although evidence was found early on in the life of the settlements for past flooding events, some of which were described as ‘violent’, few precautions were made when establishing towns or farms on the banks of waterways. Both York Town and Launceston in the north proved highly flood-prone. Floods in Hobart, caused by the rapid swelling of the rivulet, periodically caused property damage and disruptions to city life. Communications between centres and to shipping were also frequently experienced during floods and storms. Severe cold led to heavy losses in livestock, particularly at Port Dalrymple.

In the following period, 1820s-1855, the largely unregulated growth of town centres and farms along key waterways increased the effects of flood hazards.

### 2.7 **Bushfire: ‘Burnt Grounds and Black Bushes’**

Many early commentators noted the presence of Aboriginal fires in the landscape. European settlers too, developed a passion for fire – for clearing land and encouraging fresh pasture and crop growth, as well as for cooking and warmth. Construction of timber dwellings and fences

and the cultivation of crops and grazing of livestock in or near bush land, however, increased their vulnerability to damage by escaped fires, especially under hot, dry and windy conditions.

### 2.7.1 *Aboriginal Fires*

As we have seen in section 2.1 Tasmanian Aborigines were adept at using fire to shape the countryside for ease of hunting and travelling, as well as to defend their territory. Numerous early explorers commented upon the presence of Aboriginal fires, particularly under hot, dry conditions. The first years of British settlement were also noted for extensive Aboriginal fires.

In February 1804 botanist, Robert Brown, was dismayed to find that extensive Aboriginal burning had destroyed much of the local flora: ‘the ground in the vallies and even hills so much burnt, that without ascending the more distant mountains I cannot hope to make many botanical acquisitions’ (*HRA* ser.3, vol. 1, pp. 489-490).

Aboriginal fires were also observed by Paterson at Port Dalrymple in December 1804 (*HRA* ser 3, vol.1, p. 618, p. 621). According to scientific evidence, c1805 was characterised by widespread bushfires in the tall forests of southern Tasmania.<sup>16</sup> In the summers of 1805-1806 and

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<sup>16</sup> Based on scientific data on eucalypts in the tall forests of southern Tasmania Gilbert has deduced that c1805 was a year of huge bushfires in the south that covered the Styx and Florentine Valleys, the Gordon River area and parts of what is now known as the Mt. Field National Park. The fires referred to by Gilbert were in areas remote from European settlement at the time and are likely to have been caused by Aborigines or natural causes (1978, p. 8).



Fig. 4.' G. P. Harris cottage, Hobart Town, V.D. Land, Aug. 1806' showing a fire on Mt. Wellington in background Rex Nan Kivell Collection NK 145, National Library of Australia).

1806-1807, also noted for their dryness (see section 2.5), bushfires of Aboriginal origin were again very prevalent and caused much anxiety amongst the British colonists at the Derwent (Nicholls 1977, pp.101-102; 123-127). Christmas Day of 1806 was so hot that Knopwood recorded that the temperature reached 105 ° Fahrenheit (over 40° Celsius) in the shade and the heat was so intense that it bent the glass of his thermometer (Nicholls 1977, p. 123, 529). John Pascoe Fawkner<sup>17</sup> also found that Christmas a memorable one:

Christmas Day this year was the hottest that the writer ever felt here. It was a hot day, and a very windy one; the north wind raged wildly, and towards 10 o'clock A.M. clouds of smoke obscured the sky for miles, and we found that a large extent of the country to the windward was on fire. In fact, the fire razed over an extent of the country upwards of thirty by twenty miles square, and the heat was close, and very oppressive (Fawkner 2007, p.62).

On New Year's Eve 1806 Knopwood observed extensive fires to the westward which were also encroaching upon Mt. Wellington (Nicholls 1977, pp. 123-124). Despite the terrifying scenes that bushfires

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<sup>17</sup> John Pascoe Fawkner (1792-1869) was the son of a convict transported in 1801 for fourteen years. Fawkner arrived in Van Diemen's Land aboard the *HMS Calcutta* in 1804 via Port Phillip. By 1806 the family had acquired a 50 acre farm just outside Hobart. In 1835 he re-located to Victoria (Hugh Anderson, 'Fawkner, John Pascoe (1792 - 1869)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A010351b.htm>).

presented, Europeans also quickly came to recognise the value of fire – for clearing ground prior to building or planting crops and for encouraging crop and pasture growth (Pyne 1991, p.180). It was believed that the ash caused by fires added to the fertility of the soil (Raby 1996, p. 56).

### 2.7.2 *Fire Prevention*

Europeans burnt native vegetation prior to building huts and establishing farms as a standard protective measure in early Van Diemen's Land. At the proposed township site at York Town, Paterson ordered that 40 acres of bush be cut down and the ground burnt off before building operations commenced, in order to reduce the risk of fire damage to the huts and their thatched roofs (*HRA* ser. 3, vol. 1, p. 627).

Government orders were also issued promptly at times of high fire risk. In April 1804 Collins cautioned his people to take great care with fire, due to the high winds of the season. Again in November 1804 he issued regulations regarding the use of fire. He demanded that neighbours be warned before fires were started on farms and in the bush, and prohibited the smoking of pipes or making fires near haystacks. Anyone disobeying these regulations was liable to pay compensation or be punished if a damaging fire resulted from their carelessness (*HRA*, ser. 3, vol. 1, p. 267; *HTG* 4 February 1825). Further orders were issued during the oppressively hot summer of 1806 (*HRA* ser. 3, vol. 1, p. 538).



Alternative pastures and watering places were also sought at such times. In January 1809 Captain Brabyn, Paterson's replacement, wrote to Paterson about the difficulties he was experiencing on account of the exceedingly dry weather and its companion – bushfire: 'We have had very dry weather since you left; the whole Country has been burn'd up, so that, ride which way I will, I see nothing but burnt grounds and black bushes'. He and Dr Mountgarrett made use of the Launceston town swamps to keep the cattle in feed and water (*HRA* ser. 3, vol. 1, p. 695).

### 2.7.3 *Summary*

European settlers keenly observed Aboriginal fire use in the early years of British settlement. They quickly came to value fire as a tool for clearing land, but at times the dangers became evident as crops, houses and stock and pasture were consumed by unruly fires. Burning off before building, and the issuing of government regulations during high fire danger periods were some of the precautions taken. In the following period of the 1820s to 1855, as settlement spread rapidly throughout the island with pastoral expansion, the use of fire became a standard tool by European settlers in their efforts to transform the indigenous landscape to one of settled farms and stock runs according to British ideals. However, the increase in the free population and rapidity of land occupation also made it more and more difficult for the Governor to maintain control over fire usage. Changes in the island's vegetative

cover as Aboriginal fire regimes were replaced by European ones, led to shifts in bushfire frequency and intensity.

## 2.8 Conclusions

First impressions of the ease with which settlers would be able to replicate traditional British modes of agriculture in Van Diemen's Land were over-optimistic. The variable climate, in particular, proved very challenging to the new arrivals. At times, such as in the severe drought of 1806-1807, the pursuit of native bush resources to provide food for the colony was much easier than attempts at the implantation of traditional European-style agriculture. Floods, storms and bushfires also had the potential to threaten life and property.

Despite the difficulties of the first years, by the end of the 1810s the settlements at Hobart and Launceston were well-established, such that Thomas Davey,<sup>18</sup> Collins' replacement, held out great promise for the future of the colony. He wrote to Secretary of State, Lord Bathurst on 13 April 1816:

I have great pleasure in reporting to Your Lordship that  
the abundant Crops of Grain and the numerous herds

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<sup>18</sup> Thomas Davey (1758-1823) was born in England. He served with the marines in America and the West Indies before becoming a volunteer guard with Phillip's first fleet to New South Wales in 1787. He later returned to England and on hearing of Lt. Governor Collins' death in 1810 applied for the position. He arrived in Van Diemen's Land in 1813 and held the position of Lt. Governor until 1817 (P. R. Eldershaw, 'Davey, Thomas (1758 - 1823)', *Australian Dictionary of Biography*, Online Edition updated continuously, published by Australian National University, <http://www.adb.online.anu.edu.au/biogs/A010273b.htm>).

and flocks of Horned cattle and Sheep, which it now affords, render it fully capable of maintaining any increase of Population that could be poured into it; and I am happy further to state that I have already been enabled to relieve the Settlement at Port Jackson with large supplies of the necessities of life, which from the inferiority of the Climate and Soil to the Northward, they are themselves unable to raise in sufficient quantities for their present population' (*HRA* ser. 3, vol. 2, p. 148).

The colony had certainly turned a corner. In October 1815 there were 2800 acres of wheat, 276 of barley and 169 of potatoes in the colony (*HRA* ser. 3, vol. 2, p. 137). In 1817, following floods on the Hawkesbury River in New South Wales, 24 000 bushels of wheat were exported from Van Diemen's Land to relieve the distress of colonists in that colony (Morgan 1992, p. 76).

By the close of the 1810s the population of Hobart Town was approaching 2000. At the general muster of October and November 1819 the population of the south was 3292 (1576 free and 1716 convict) and in the north was 1068 (498 free and 570 convict). Over 8000 acres were in cultivation and there were over 200 000 stock in the colony (*HRA* ser. 3, vol. 2, p. 585). Farms were being settled around the major towns, along the Rivers Derwent (in the south) and the North and South Esk (in the

north) and in some outlying areas, such as Pittwater (Sorell) and the Coal River (Richmond). The government granted land to settlers according to the applicant's capacity to 'improve' it – a term which refers to the process of 'Europeanising' the landscape through the erection of buildings, fences and the cultivation of the land (see Robin and Griffiths 2004, p.444). By this time the colonists were actively, and more confidently, transforming the landscape to match their ideals of an 'Antipodean England' in Van Diemen's Land.

In the next chapter, the evolution of the 'Antipodean' England myth is outlined, as are the rapid increase in the free settler population, the expansion of the pastoral industry and accelerated growth in the major towns for the period 1820s to 1855. Droughts, floods, fire, storms and severe cold continued to make the settlement process difficult at times, and the process of colonial adjustment to climatic factors was ongoing.

## PART I: VAN DIEMEN'S LAND

### Chapter Three: 'An Antipodean England?': Pastoral Expansion 1820s-1855

#### 3.0 Introduction

Louisa Anne Meredith,<sup>19</sup> in her work *My Home in Tasmania* published in 1852, applauded the 'Englishness' of Van Diemen's Land. Meredith had migrated from England to New South Wales with her husband Charles in 1839, before re-locating to Van Diemen's Land the following year. She wrote that the capital, Hobart, had a 'home-like English aspect' which had won her preference over Sydney as a place to live:

I am often glad that I spent the first year of my antipodean life in New South Wales, for now many things which I should not have observed had I arrived here in the first instance, are sources of great delight to me, as being so much more English than in the larger colony, and I could fancy myself some degrees nearer home (Meredith 2003 [1852], vol. 1, p. 27).

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<sup>19</sup> Louisa Ann Meredith (nee Twamley) (1812-1895) was born in Birmingham. She married Charles Meredith on 18 April 1839 before emigrating to New South Wales. In 1840 they moved to Oyster Bay on Tasmania's east coast and built 'Springvale', which they moved in to in August 1842. In 1844 Charles was appointed police magistrate at Port Sorell and they resided there until 1848 when they returned to the east coast at 'Cambria'. Louisa published a number of works on her observations of colonial life and the bush flora and fauna (Sally O'Neill, 'Meredith, Louisa Ann (1812 - 1895)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009; <http://www.adb.online.anu.edu.au/biogs/A050526b.htm>).

Part of the 'Englishness' to which Meredith refers related to the fact that English fruits, such as mulberries, cherries, raspberries, apples and pears, as well as English ornamental trees and flowers, all grew in Van Diemen's Land. The popularity of English garden and landscaping plants in this era reflected a nostalgic longing for the familiar plants of home and a desire to re-create something of the old country in Van Diemen's Land (Brisbane Civic Art Gallery 1979, p.9). Meredith described the government gardens at Regatta Point near Hobart as 'English-looking gardens... full of sweet homely faces and perfumes'. In the country hawthorn hedges and gorse also reminded her of home (Meredith 2003 [1852], vol. 1, pp. 22, 27-29, 90).

In some ways Meredith found the climate of Van Diemen's Land better than that of England. The settled summer skies made picnics in the countryside delightful, compared to England where the fickle weather could easily spoil such outings (Meredith 2003 [1852], vol. 1, p. 100). As the summer of 1840-1841 progressed, however, she soon realised that the continuing blue skies were not appreciated by all, and that her new island home shared more climatic features with the mainland colonies than she had at first thought:

I found that my admiration of this particular summer *as* a summer, was by no means echoed by those interested in the growth of crops, for it was unusually dry, insomuch that I began to see visions of New South Wales in the dusty road and

yellow fields, that, when I first came, lay like emeralds in the spring sunshine (Meredith 2003 [1852], vol. 1, p.101,emphasis in original).

Meredith's narrative goes on to describe in detail the crippling drought years of 1840-1841. Terrifying bushfires and spectacular floods are also described. Such experiences were in direct contrast to the home country and her postulations about the 'Englishness' of the island colony.

In this chapter I explore the development of the 'Antipodean' England myth in the period 1820s-1855, as well as the impacts of, and responses to, drought, floods and severe cold, and bushfires. It is argued that the view of Van Diemen's Land as another 'England' was erroneous. The brown parched pastures of long dry summers, dramatic changes in river flows following heavy rain or snow melt, and terrifying forest infernos were all 'alien' features of the climate and landscape that faced Van Diemen's Land settlers in this era.

The period 1820s-1855 was characterised by rapid pastoral expansion, a sharp increase in the 'free' population and unprecedented town growth. The wool industry, encouraged by the Home and colonial governments, transformed the social and physical make-up of the island. Prior to this livestock had been predominantly kept for meat and hides for the domestic market (Raby 1996, p. 22). By contrast, wool offered the opportunity for an export industry to supply the burgeoning woollen

mills of England. It spurred a period of rapid growth in the 'free' population in the 1820s and early 1830s, many of the immigrants being highly capitalised and lured to Van Diemen's Land by promises of cheap, abundant land and convict labour. The island's climate was widely promoted as superior to that of the mainland, lacking in extremes of drought and flood, and ideally suited to the British constitution, farming methods and way of life. Emigrant guides, such as that published in 1823 by Godwin, provided glowing reports of the bounty of land available for pastoralists:

Whatever may be the extent of emigration, there will for ages to come be more land than can possibly be required; and although the breeder may not possess as much land of his own as he may require for his flocks, if he is a large stock-holder, still the Wilderness is so immense, that he has only to desire his shepherds to remove the hurdles to the Common, beyond the Farmers' boundaries, and he will have pasturage in abundance (Godwin 1823, p. 27).

Despite such claims of an equable climate and bountiful pastures, drought, flood, severe cold and fire all hindered pastoral and agricultural pursuits (Evans 2010, pp. 28-39). In the towns, water supply failed to keep pace with unprecedented demand from commercial, industrial and residential developments. In a period characterised by rapid town growth, the colonial government and local



councils struggled to maintain control over vital waterways for water supply and flood control purposes. With dispossession of the Aboriginal population, changing fire regimes led to less frequent, but increasingly catastrophic bushfires. As small-scale settlement extended into the heavily forested parts of the Huon Valley in the south and the north-west, bushfire events became even more terrifying and deadly.

In section 3.1 I explore the genesis of the ‘Antipodean England’ myth, as well as alternate views; in sections 3.2. 3.3 and 3.4 I discuss, in turn, the impacts of, and responses to drought, floods and cold, and bush fires, and conclusions are contained in section 3.5.

### **3.1 The ‘Antipodean England’ Myth**

By the 1850s it was commonplace for locals and visitors to comment upon the ‘Englishness’ of the island – a view that continued on well into the twentieth century (Staples 2002, p.194). Staples cautions, however, that early accounts of the climate and countryside need to be scrutinised carefully to consider the motives of the author. Some were written by people with little expertise in geography and travel. In other cases the information used is meagre or erroneous, and in still others the accounts are no more than propaganda (2002, p.195). A nostalgic longing for home would have added to the desire to seek similarities between Van Diemen’s Land and the old country. A more practical incentive was the need to attract new migrants. Whatever the motive, the result of such accounts was a tendency to down play climatic factors such as drought,

bushfires and floods, creating a picture of Van Diemen's Land as a virtual 'paradise' when compared to New South Wales.

Charles Jeffreys'<sup>20</sup> guide to Van Diemen's Land, published in 1820, draws a clear contrast between the extremes of climate in New South Wales with that of Van Diemen's Land:

There are in that island, no extremes of heat or cold, of wet or dry; as the ground is never inundated by the rains of heaven, so it is never deprived of its verdure through drought.

Sometimes the minor rivers will overflow their banks, and lay the surrounding plains under water, for a short time; but these inundations... are a benefit and not a detriment to the soil...

Neither is the land ever rendered unfruitful by excessive drought; at all times the seasons are regular, the crops certain, and the climate salubrious (Jeffreys 1820, pp. 146-147).

Jeffreys travelled to the Australian colonies in the period 1814-1817.

His account was aimed at encouraging emigration to Van Diemen's Land and contained some obvious untruths. Another influential account was that of James Dixon in his *Narrative of a Voyage to New South Wales and Van Diemen's Land in the ship Skelton during the year 1820*

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<sup>20</sup> Charles Jeffreys (1782-1826) was a naval officer who arrived in New South Wales in January 1814. He made several trips with convict transport ships to Hobart Town, before returning to England in 1817 where he published his *Geographical and Descriptive Delineations of the Island of Van Diemen's Land* (1820) – most of which is believed to have come from a manuscript by surveyor George William Evans. In May 1820 Jeffreys and his wife returned to Hobart and established a house and farm at Pittwater (Sorell) (E. Flinn, 'Jeffreys, Charles (1782 - 1826)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020016b.htm>).

(published in 1822). He compared the climate of Van Diemen's Land with that of mainland Australia:

The climate [of Van Diemen's Land] is more natural to an Englishman, and neither the heats of summer, or cold in winter, will prevent the operations of agriculture, or impair or depress the physical powers of man (Dixon 1822, p. 51).

W. C. Wentworth,<sup>21</sup> in the first edition of his account of the colonies of New South Wales and its dependent settlements (published in 1819), also drew a distinct contrast between the climates of New South Wales and Van Diemen's Land:

...neither the summers, nor winters are subject to any great extremes of heat, or cold... the industrious colonist may settle on the banks of a navigable river, and enjoy all the advantages of sending his produce to market by water, without running the constant hazard of having the fruits of his labour, the golden promise of the year, swept away in an hour by a capricious and domineering element. The seasons are more

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<sup>21</sup> William Charles Wentworth (1790-1872) was the son of a convict (Catherine Crowley) transported in July 1788 and Dr D'arcy Wentworth, who arrived on the convict transport *Neptune*. William Charles was educated in England and returned to New South Wales in 1810. He published his emigrant's guide to New South Wales and Van Diemen's Land in 1819, and it was revised and enlarged in 1820 and 1824. He was outspoken about colonial issues, notably free press, trial by jury and self-government. He died in England in 1872 (Michael Persse, 'Wentworth, William Charles (1790 - 1872)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020531b.htm>).

regular and defined, and those great droughts which have been so frequent at Port Jackson are altogether unknown (Wentworth 1819, pp. 148-149).

A period of intense colonial rivalry between New South Wales and Van Diemen's Land in the 1820s saw the emergence of a number of erroneous claims. In July 1823, Justice Barron Field, the President of the New South Wales Agricultural Society, delivered an address in which he claimed New South Wales was superior to Van Diemen's Land in regard to the availability of water, its climate, the suitability for growth of tropical commodities, and the extent of grazing land. In a fiery response the President of the Agricultural Society of Van Diemen's Land, defended his island, denying that New South Wales was superior in regards to water, and claiming:

We have in equal perfection, and with greater facility, all the fruits and vegetables of the mother country... To hot winds, and their destructive blights, we are nearly strangers... and our winter is never severe... I deny, therefore the claim to superiority for the climate of New South Wales; and I am prepared to say, that for general purposes of man, our climate has the advantage (in Wentworth 1824, p. 106).

The *Hobart Town Gazette* also entered the argument. In an editorial in November 1824 the paper extolled the virtues of Van Diemen's Land,

claiming that it was an ideal place for the emigration of hard-working labourers from Britain (*HTG* 22 October 1824, p. 2). A further pitch for a larger slice of the emigration pie in 1825 saw the *Hobart Town Gazette* doing battle with the *Sydney Gazette*. The local paper drew attention to the precarious harvests, deluges, droughts and caterpillars that plagued mainland Australia, all of which, it pointed out, were bound to disappoint an immigrant arriving there. In Van Diemen's Land, although a 'diminutive dependency' of the sister colony, the immigrant was, it was argued, unlikely to experience the same host of perils (*HTG* 15 April 1825, p. 2). Rivalry between the two settlements culminated in Van Diemen's Land settlers successfully petitioning the King for a separate government from New South Wales in 1825. The differences in location, climate and soil had been given as major reasons for the need for separation – it was argued that the true interests of the colony were best served by a government with intimate local knowledge, experience and understanding (*HRA* ser. 3, vol. 4, p. 579).

As inter-colonial rivalry intensified, the *Launceston Advertiser* went even further in 1830, outlining a scenario of war between the two colonies. It compared Van Diemen's Land with England and New South Wales with France, and argued that the superiority of the climate of Van Diemen's Land and the character of its people would hold it in good stead if a war erupted:

One thing is most certain, that the Straits which part us will enable each country to rear many good seamen; but the unfruitfulness of the land of New South Wales generally will prove an insuperable obstacle to her attaining to any exalted power, and the very enervating effects of hot climates will no doubt dispose her sons to the calm and quiet of peaceful habits, while our *English-like* climate will fit its sons at all times and at all ages, to stand manfully in defence of their homes and hearths (*LA* 19 July 1830, p. 2).

Such views linking character to the physical environment had ancient origins, but were revived in the eighteenth century Enlightenment. The British climate was the source of national pride – its maritime setting, abundant rain, frequent atmospheric changes and prevailing winds were believed to have helped forge a great maritime power, and a race of people that were hardy, active and industrious (Golinski 2007, pp. 57-58). As Britain's empire extended into other parts of the globe – to India, Africa, North America and Australia - the impact of differing climates on civilisation and character became a cause of much speculation (Golinski 2007, pp. 4-5).

Claimed similarities between Van Diemen's Land and England were not only pronounced in terms of climate alone. Associations were also identified in the 'English' style gardens and country plantings commented upon by Meredith and others. For Prinsep, even the capital

Hobart, held ‘a thousand English associations, carts and cottages, ships and shops, girls in their pattens [sic], boys playing marbles; above all, the rosy countenances, and chubby cheeks and English voices’ (Prinsep 1833, p. 51).

### 3.1.1 *Alternative Views*

Not everybody extolled the benefits of the Van Diemen’s Land climate and environment. Edward Curr,<sup>22</sup> who had first arrived in the colony in 1820, knew the harsh realities from personal experience. In his account of his three year residence in Van Diemen’s Land (published in 1834) he wrote:

Let no one... deceive himself with ideas of a terrestrial paradise; he will scarcely find it in the world, certainly not in Van Diemen’s Land. Every place has its disadvantages... Van Diemen’s Land is half bush and barrenness (Curr 1834, p. 12).

In reference to York Plains (and other plains on the island) he attested to the fact that those which appeared to be thriving ‘English meadows’ in one season could be changed quickly by drought or floods: ‘the drought of summer, and the rains and cold of winter, destroy this

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<sup>22</sup> Edward Curr (1798-1850) first arrived in Hobart Town from England in February 1820 with the intentions of establishing a business. He was granted land at Cross Marsh in the midlands. In 1825 he was appointed chief agent to the Van Diemen’s Land Company and was involved in the surveying of land for inclusion in the company’s grants in the north-west. He later settled in Victoria. No author given: Curr, Edward (1798 - 1850), *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 9/3/2011: <http://www.adb.online.anu.edu.au/biogs/A010258b.htm>).

beautiful appearance, and the season of verdure is as short in Van Diemen's Land as in any other temperate climate' (Curr 1834, p. 22).

Henry Walter Parker, in his emigrant guide published in 1834, was another who found the island's climate both 'capricious' and 'uncertain' (Parker 1834, p. 70). Similarly, novelist Charles Rowcroft,<sup>23</sup> who settled in Van Diemen's Land in 1821, was disappointed and dismayed at Hobart's weather:

The distinguishing feature of the Climate of Van Diemen's Land are: Constant cold violent winds, and very frequent Hurricanes; and most astonishingly rapid variability from extreme warmth to frosty cold, and from a sultry calm to an Icy Hurricane (*HRA* ser.3, vol. 4, p. 472).

Rowcroft wrote a number of novels set in Van Diemen's Land during the early years of the colony. Both his *The Perils and Adventures of Mr William Thornley* and *Brandon the Bushranger*, published in the 1840s, highlighted the often adverse weather conditions experienced in the colony, and feature parched landscapes and threatening bushfires (Rowcroft 1843, p. 8; Rowcroft n.d., p.215).

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<sup>23</sup> Charles Rowcroft (1798-1856) was educated at Eton in England. He arrived in Hobart in August 1821 and was granted 2000 on the Clyde River. However, after being successfully sued by Edward Lord for 'criminal conversation' he became nearly destitute and, in 1825, left Van Diemen's Land for Brazil. He returned to England in 1827. His first novel, *The Perils and Adventures of William Thornley*, was published in 1843, and *Brandon the Bushranger* in 1846. He wrote five further novels between 1846 and 1852 (J. C. Horner, Cecil Hadgraft, 'Rowcroft, Charles (1798 - 1856)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 15/2/2010, <http://www.adb.online.anu.edu.au/biogs/A020357b.htm>).



The number of native-born in the colony was growing by the 1840s and 1850s and they, in particular, were very defensive about their island. In 1847 Surveyor J. E. Calder<sup>24</sup> observed that those born on the island were deeply biased in their opinions. He mused:

The press of the country and the writings of idly  
complimentary or ignorant strangers have deluded them into  
the preposterous notion that no soil is so productive, no  
climate so salubrious, no atmosphere so pure, no skies so blue  
and beautiful as their own... (Calder 1987 p. 25).

Concerns about climatic extremes led some people to adopt ‘climate improvement’ theories. The anthropogenic capacity to change climate is a notion extending back to antiquity, but acquired new meanings in the colonial context of the New World (Powell 1978, p. 109). Grove has shown how deforestation in the tropical colonies of Britain and France from the mid-eighteenth century raised early concerns about the links between forest clearing and drought (Grove 1997, pp. 5-8). Climate concerns were the reverse in the Americas where it was widely advocated that by clearing forests, draining swamps and cultivating the land, the climate could be ‘improved’ and climatic extremes ‘softened’,

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<sup>24</sup> James Erskine Calder (1808-1882) emigrated from England to Van Diemen’s Land to take up the position of assistant surveyor in 1829. He worked tirelessly on exploratory surveys of the island and in 1859 was promoted to Surveyor-General. He served in that role until 1870 when the position was abolished. He was a prolific writer and contributed a number of articles to the local press and published several official reports (John B. Thwaites, 'Calder, James Erskine (1808 - 1882)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A010179b.htm>).

so that over time it would become aligned with that of the more temperate Britain. In the plains of west America, it was widely believed that the 'plough' and irrigation would bring increased rainfall to the prairie 'sod' (Golinski 2007, pp. 196-197; Kollmorgen and Kollmorgen 1973, pp. 424-441; Powell 1978, pp. 108-111).

Such beliefs were also applied to the Australian colonies, including Van Diemen's Land. Some believed that by promoting 'better' methods of farming the uncertain climate of the island could be improved and stabilised. A letter to the editor of the *Hobart Town Courier* in November 1837 extolled this view:

... It is cultivation, and cultivation only, that tempers the chilling blasts of winter, softens the gentle breathings of the zephyr, renders the heats of summer unstifling and salubrious, and crowns the year with the joyous and ample stores of autumn. Cultivation arrogates to itself a sort of omnipotence – controls the laws of nature – and stamps the character of climate.

... it is not the fickleness of our seasons nor the barrenness of our soil, which lays us under a dependence on other countries, but the absence of active skill and persevering industry amongst ourselves (*HTC* 10 November 1837, p. 4).

### 3.1.2 *The ‘Science’ of the Weather*

Scientific inquiry added further to the debates about climate. From the beginnings of British settlement in Van Diemen’s Land in the early 1800s weather observations were carried out on an ad hoc basis by interested individuals and officials – for example, William Paterson at York Town in 1804-1805; at Macquarie Harbour penal settlement by the Commandant’s Clerk, I. Douglas in the 1820s; at the Van Diemen’s Land Company’s Hampshire Hills from 1835 by Joseph Milligan; and at Port Arthur from 1837 by the Deputy Assistant Commissariat General, Thomas Lempriere (CO201 reel 51, p. 63; Lempriere 1954 [1839], p. 37; *TJNS* 1842, vol.1 p.78, p. 225). A number of farmers also kept meteorological records for their own purposes (for example, those compiled by William Pike at *Park Farm* Jericho from 1826-1840) (UTAS archives RS38/1). Local newspapers also often published articles and observations on the weather.

In 1839 the British Admiralty initiated the first official weather recording station in Van Diemen’s Land – the Rossbank Observatory near Hobart. The Rossbank Observatory was the first to be fully equipped to take hourly readings which could be compared with similar stations around the globe. The equipment, which consisted of barometers, thermometers and rain-gauges, arrived in August 1840 aboard the *Erebus* and *Terror* (Sir James Ross, Commander), and the

station was officially opened in October, under the naval command of Joseph Kay RN.<sup>25</sup>

With data available from the Rossbank Observatory established in 1840, local and visiting scientists began to take an active role in researching meteorological phenomenon (see Dobson 1854, pp. 394-423). Scientist Count Paul Strzelecki travelled extensively through Van Diemen's Land and New South Wales in the early 1840s, and in 1845 published his book *Physical Description of New South Wales and Van Diemen's Land*. Using information from the Rossbank and other observatories he came to the startling conclusion that the annual rainfall of both New South Wales and Van Diemen's Land was greater than that of England, and that despite beliefs to the contrary, Van Diemen's Land had less annual rainfall than New South Wales (Strzelecki 1967 [1845], pp. 192-194). Strzelecki argued that cultivation had actually had a deleterious effect on the climate of the Australian colonies. The clearing of underwood and forest, he argued tentatively, had made the climate drier and hotter (Strzelecki 1967 [1845], p. 239). Such 'dessication'

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<sup>25</sup> Joseph Henry Kay (1815-1875) was a naval officer and scientist. He arrived aboard the *Terror* in August 1840 as part of Capt. James Ross' expedition to establish magnetic observatories around the globe. Lt. Kay operated the Rossbank Observatory until it was taken over by the colonial government in December 1853, before being closed at the end of 1854. From that point until June 1880, a private citizen, Francis Abbott, began taking regular meteorological readings from his residence in Murray Street (Ronald Green, 'Kay, Joseph Henry (1815 - 1875)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020031b.htm>; BOM 2008b, pp. 3-4).

theories became more popular in the 1860s and 1870s (see chapter four).

Despite attempts to subjugate the island's climate through regular recordings and dedicated study, its periodic cycles of drought and flood continued to confront and confound. In 1848, after eight years of recording and measurement, Kay claimed with some confidence that the weather of Van Diemen's Land was dictated by alternating wet and dry years. However, his theory had to be discounted when 1849 proved to be the second very wet year in a row (Kay 1851, p. 257). For those who settled on the land, the scientific calculation of long term averages was often meaningless. As Dunlap points out, it only took one unseasonal sharp frost during the growing period or patch of inclement weather at harvest time and whole crops could be ruined (1999, p. 75).

### 3.1.3 *Summary*

Although there were a number of outspoken advocates for a 'realistic' view of the island's climatic variability, the emergence of the 'Antipodean England' myth during this period had a profound and long-lasting influence on the way in which many locals and visitors perceived the island's environment and climate. In the following sections I examine the accuracy of this myth and document how severe weather events impacted on the pastoral frontier and on the towns.

### **3.2 Drought: ‘We Never Wanted Rain So Much’**

In this era the boundaries of British occupation in Van Diemen’s Land were thrust forward at a great rate. It is argued that drought contributed to this process as pastoralists sought out fresh pastures to feed hungry stock. During the drought years of 1837-1842, however, the customary response of acquiring or leasing additional grazing runs became less feasible and some farmers began experimenting with irrigation, fodder crops and other drought mitigation methods.

In addition to pastoral expansion, the major towns of Hobart in the south and Launceston in the north, mushroomed with an influx of new settlers. By the early 1830s Hobart’s population had exceeded 8000 people (Solomon 1976, p. 59). The Hobart Rivulet, by this time was not only the main water supply for the residents, but also provided motive power for industry. It became built over, diverted, choked and polluted. Town water supply in both Hobart and Launceston struggled to keep pace with demand. By the end of this period it was becoming clear that major water storage and distribution systems in the main towns would be necessary to provide fresh water for its citizens during dry periods.

Predominantly dry periods occurred in 1820, 1823-1825, 1830-1832, 1833-1836 and 1837-1842, 1843, 1845, 1847, 1850 and 1853. Evidence for these date ranges has come from a variety of sources, including official reports, newspaper accounts, farmers’ journals and company records. From 1841 rainfall data from Hobart are available, adding

greater reliability to the analysis (BOM 1936, p. 120). For the years prior to 1841 the evidence is mostly of a descriptive or subjective nature and, therefore, must be treated with a degree of caution. The reliance on first-hand accounts alone makes it difficult to ascertain when a drought began or ended, what region/s it covered and what the severity of it was (in quantifiable terms). Where possible I have tried to garner evidence from a variety of documentary sources in identifying when these dry periods occurred. Details of the references used are outlined in appendix 3.

### 3.2.1 *The Quest for Fresh Pastures*

When the ship *Eliza* docked in Hobart on 27 March 1820 with a load of merino rams for the settlement, the colony was afflicted by a widespread drought that had caused pastures to suffer and crops to fail (*HRA* ser. 3, vol. 4, p. 4; *HTG* 6 January 1821, p. 2; *HTG* 20 October 1821, p. 2). Governor Sorell<sup>26</sup> remarked that the pasture was so dried that the rams, which had lost condition *en route*, did not recover quickly (*HRA* ser.3, vol. 3, p. 15).

The arrival of the rams heralded a new era in Van Diemen's Land's history – an era of rapid pastoral expansion. The promise of riches to be made in the wool industry attracted many new free settlers to the island

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<sup>26</sup> William Sorell (1775-1848) was most likely born in the West Indies. He joined the army, being promoted to Major in 1804. He was appointed to replace Thomas Davey as Lt. Governor of Van Diemen's Land, assuming office in April 1817. He held this position until 1824 (John Reynolds, 'Sorell, William (1775 - 1848)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 1/6/2011, <http://www.adb.online.anu.edu.au/biogs/A020424b.htm>).

in the 1820s and early 1830s. However, many arrived unprepared to face extended periods without rain. A prolonged drought stretching from 1823 to the winter of 1825 caused pastures to suffer and a disastrous harvest in 1825 (*HRA*, ser.3, vol. 4, p. 293). By the close of 1824 the situation was becoming so dire that Knopwood recorded in his diary:

We never wanted the rain so much; truly speaking, the earth quite dried up. The crops for want of rain, in very great measure destroyd [sic]; and the potatoes, the early sown crops, the weat [sic], the oats and barley destroyd [sic] for want of rain (Nicholls 1977, p. 438).

Patrick Wood<sup>27</sup> of 'Dennistoun', who had arrived in the colony in 1822 and taken up land in the Clyde River Valley also suffered. He resorted to taking an additional grant of land, leasing land and giving his sheep out 'on the thirds',<sup>28</sup> but was still found wanting for pasturage for his flocks. In October 1823 he wrote to Governor of New South Wales, Sir Thomas Brisbane, applying for an additional assigned servant, lamenting:

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<sup>27</sup> Capt. Patrick Wood was a native of Scotland and a retired officer of the East India Company's Madras army. He arrived in Van Diemen's Land in March 1822, and was an original partner of Phillip Russell of the Clyde Company which established the 'Dennistoun' estate (Jill Eastwood, 'Wood, John Dennistoun (1829 - 1914)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A060465b.htm>).

<sup>28</sup> The thirds system involved a land owner taking in stock from other farmers, and keeping one third of the increase of the flock as payment. This was eventually banned as it was thought to encourage sheep-stealing, a scourge which plagued the pastoral industry in the early years (Morgan 1992, p. 60).



I am not succeeding in improving my land so rapidly as might have been expected from the number of Free Men and Convicts and the capital that has been employed; but, in a new country, many unexpected circumstances occasion delay which steady perseverance will alone overcome; but, from the want of a sufficient quantity of rain in this part of the Island, there is some reason to fear that the introduction of artificial grasses will be very difficult and the natural pasture is so inefficient that, even with the additional grant, I am obliged to rent land and give out part of my Sheep to be kept by others (*HRA*, ser.3 vol. 4 p. 527).

Wood brought some temporary relief for his stock by being amongst the first in the colony to graze sheep and cattle on the highlands of the central plateau (Jetson 1989, p. 27). Occupation licences had been introduced by the 1820s to provide landholders with temporary access to such remote, seasonal areas of pasture for sheep and cattle when needed (Bigge 1966 [1823], p.25; Cubit 1987, p. 9). During the particularly dry summer of 1825 surveyor John Helder Wedge remarked that the central highlands were comparatively well-watered:

The Herbage has not that parched appearance as it has in every other part of the country that I have been in – in fact there has been no want of rain during the whole of summer (Crawford et. al, 1962, p. 12).

By the mid-1830s the use of highland grazing during the dry summer months had become a firmly entrenched method used by many of the wealthy farmers of the island. The *Hobart Town Courier* reported in January 1836:

The mode now generally adopted by sheep owners in Van Diemen's Land of grazing on the home farms during the winter and taking flocks to the higher regions about the lakes in summer is one... of the best that could have been devised. Both pastures enjoy a refreshing annual repose, the grass being eaten down and manured by the sheep, thickens and revives during the alternate fallow (*HTC* 22 January 1836, p. 2).

Pastoralists used the movement of stock (transhumance), crown land for grazing, the acquisition of additional grants and leases, and the thirds system, to ensure adequate feed for their rapidly growing flocks, particularly in times of drought (Raby 1996, p. 43). Some wealthy graziers acquired vast acreages. In 1826 the Land Commissioners<sup>29</sup> reported that Edward Lord<sup>30</sup> had amassed 30 000 acres, which they described as being 'nothing but Stock runs, occupied by ruffians of

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<sup>29</sup> Edward Dumaresq, Roderic O'Connor and Peter Murdoch were appointed to examine and report on the settled districts of the island in 1826-1828.

<sup>30</sup> Edward Lord (1781-1859) arrived in the colony in February 1804 with David Collins' party. By 1806 he was the largest stock holder in the colony. Over the years he continued to add to his business and stock interests, acquiring as well property in Hobart whilst he established a large estate, 'Lawrenny', near Ouse. He returned to England in 1828, but made a number of return visits to Van Diemen's Land (Thea Rienits, 'Lord, Edward (1781 - 1859)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020113b.htm>).

Stock keepers under no control, galloping after wild Cattle in every direction' (McKay 1962, p.12). The Land Commissioners commented on the practice of some settlers acquiring land in devious ways:

... when a Man obtains an additional Grant, he ought to be delighted to be allowed one would imagine, to take it adjoining his former grant, if for no other purpose, than to have his farm compact and easily fenced, but that has not been the policy here, One Grant here, another there, gives the Possessor a right of all the intermediate space, in fact, cutting and carving all the good Spots, renders the remainder totally unfit for any other person... (McKay 1962, p. 23)

Grants and stock runs with river frontage were particularly sought after. Riparian rights of landowners, well-established under English common law, gave property owners the right to use any waterways abutting their land (Jones 1989, p. 102). Whilst marshy or swampy land was generally considered inferior, in times of drought it was used to water and feed stock when surrounding grasslands had dried up (see *HRA* ser. 3, vol. 1, p. 695; *CC* 20 January 1841).

Bolton has shown how drought in 1810-1812 had provided the stimulus for exploration across the Blue Mountains in New South Wales (Bolton 1992, p.28). In Van Diemen's Land it was generally the stock-keepers and their herds that pushed the boundaries of European discovery into

new areas. They penetrated the bush and grasslands of the interior of the island before any official surveys, grants or leases could be organised. Fencing of stock was relatively unknown in these early years, and sheep and cattle were largely left to graze and roam freely (Boyce 2008, pp. 103-104). Staples has argued that the resultant farming style in Van Diemen's Land with its 'vast unsupervised herds' differed markedly from the enclosed runs of England (2002, p. 197).

Agricultural production was also carried out in an extensive manner. Crops were grown by small-scale farmers (many of whom were ex-convicts on relatively small grants of 30-100 acres) or as a side-line to pastoral pursuits by wealthier landowners (Raby 1996, pp. 40-56). The method used was to crop on one patch of land continuously until soil exhaustion forced the turning over of new land for cultivation. The original cropped land was then returned to 'bush fallow' (Raby 1996, pp.40-56). As Raby demonstrates, such methods were often frowned upon by British commentators as 'uncivilised and slovenly' when compared to the intensive methods of crop rotation and use of manures on British farms (1996, pp. 40-56, see also Boyce 2008, pp. 106-109).

The quest for fresh pastures, land for cultivation and permanent water supplies pushed the margins of European settlement forward at a great rate, causing conflict with the Aboriginal inhabitants, who were increasingly driven into marginal forest, mountain or swamp land. Seasonal migration patterns were disrupted and food sources and fresh

water became more difficult to obtain (Reynolds 1982, p. 66). Plomley has highlighted how seasonal variations in the availability of food contributed to the incidence of Aboriginal attacks after 1824, with clashes with Europeans being more numerous when food was short (1992, p. 15). Extended dry periods, as well as severe winters, would have both created such a situation. After several years of escalating violence and Aboriginal resistance, Governor Arthur declared a state of martial law in 1828. By the mid 1830s the government had forcibly captured most of the remaining Aborigines and incarcerated them in mission settlements on the Bass Strait islands (see Ryan 1996).

By 1832 over 2 million acres had been granted or sold and there were over 750 000 sheep and approximately 80 000 head of cattle in the colony (*Statistics of Tasmania 1824-1839*; Eastal 1971, p. 282; Hartwell 1954, p. 118, p.124). The island's population increased from 12 600 in 1824 to over 40 000 in 1835 (*Statistics of Tasmania 1824-1839*). Most of the grasslands and open woodlands stretching along the major rivers of the interior of the island and on the east coast had been turned over to grazing land and farms. These lands had appealed to pastoralists because of their ease of occupation and open, 'park-like' appearance which had been fashioned by a long history of Aboriginal burning (Lines 1991, p. 50; Pyne 1991, p. 179). Prinsep had noted in 1830 that 'not a single grant of fresh land' was to be had along the main

route between the two major centres of Hobart and Launceston (Prinsep 1833, p.82).

With a return to predominantly dry conditions extending from the summer of 1833-1834 to the autumn of 1836 many landowners suffered severely for lack of suitable pasturage. Crops and stock languished. George Russell remarked of his property near Bothwell that the summer of 1833-1834 was the driest that they had experienced for many years (Brown 1935 p. 67). The journals of George Augustus Robinson attest to a very dry summer in 1833-1834. Written during his travels in northern Tasmania he found that fresh water was then scarce ‘occasioned by the extreme drought’ (Plomley 2008, pp. 863-866, p. 876, p. 881). By August 1835 the southern paper, the *Tasmanian and Austral-Asiatic Review*, was lamenting ‘the dryness of the last 3 years’ (TAAR 21 August 1835, p. 271).

By this time, the increase in population and closer settlement had made restricted and enclosed runs necessary in the settled districts. Timber, log and brush fences made from the branches of cleared trees and scrub were far more prevalent than English-style hedgerows, giving the landscape a distinctly ‘Antipodean’ character (Meredith 2003 [1852], vol.1. p. 90). The fenced and limited pastures soon became overgrazed and susceptible to the extremities of the weather (Easteal 1971, p. 33, 282). On overstocked runs the eating habits and hard hooves of sheep denuded the native grasses beyond recovery, accelerating the process of

soil erosion (Beinart and Hughes 2007, p. 104).<sup>31</sup> Woody native plant species that were less palatable to sheep and cattle, such as native heath (*Epacridaceae*), increased causing changes in vegetative cover (Kirkpatrick 2007, p. 10).

As new pastures became increasingly more difficult to acquire, wealthy pastoralists began effectively locking small farmers and new immigrants out of the island's remaining pastures. The tightening up of licence systems for unallocated crown land forced the smaller landholder into more remote and marginal areas in search of additional grazing areas and bush resources (Boyce 2008, p. 182). Wealthy graziers began progressively buying up the land of their smaller neighbours (Boyce 2008, p. 220). As Boyce argues, the change in land regulations after 1831 to one of land sales by auction meant that large landowners were able to outbid those with less capital, thus cementing their economic and political power (Boyce 2008, p. 150).

During this drought a number of graziers began turning their attentions to the plains of the Port Phillip district (Victoria). Prior to this coastal regions of Port Phillip had been frequented by sealers, whalers and bark collectors (Boyce 2011, pp .9-15). John Batman and Joseph Gellibrand, together with John Helder Wedge and Charles Swanston, formed the Port Phillip Association in 1835. According to Easteal, it was not so

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<sup>31</sup> Beinart and Hughes (2007) cite New South Wales examples, but claim that this process of environmental change was experienced across all the sheep zones of Australia.

much the increased cost of land after 1832<sup>32</sup> that led to the emigration of pastoralists to Port Phillip (as has often been suggested), but rather the fact that all available land for extensive occupation had now been taken up (1971, p. 282). The vast pastures of Port Phillip certainly must have looked an attractive proposition in 1835 when pastures in Van Diemen's Land were languishing through the combined effects of overstocking and drought. During the summer of 1835-1836 the Association sent nearly 10 000 sheep across Bass Strait to Port Phillip. Others soon followed (Shaw 1989-1990, pp. 18-19).

The predominantly dry years of 1837-1842 accelerated the process of consolidation in the pastoral and agricultural industries. The crisis that this drought caused on the land also led to a greater degree of experimentation with irrigation, planting methods and the use of drought-resistant crops and introduced pasture grasses.

### *3.2.2 Irrigation and Experimentation 1837-1842*

While acquiring fresh land was the customary response to drought in the 1820s and 1830s, some farmers did dabble with irrigation and other

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<sup>32</sup> After 1831 the new Ripon Land Regulations, which replaced the old grant system with land sales by auction, came into effect.



drought mitigation methods. Governor Arthur,<sup>33</sup> for instance, stated in 1826, that deep-rooted grasses and fodder plants, such as saintfoin, lucerne, burnet, clover and mangel wurzel, were best suited to withstand the summer droughts of the island (*HRA* ser. 3, vol. 5, p. 367). On his own property at Black Snake (Grantton), north of Hobart, he had built an embankment and sluice gates to irrigate over 200 acres from the River Derwent (*HT Almanack and VDL Annual* 1830, pp. 186-187). Local newspapers also provided a plethora of possible antidotes to drought, such as the planting of deep-rooted and/or drought resistant grasses and advocating the proper preparation of soil prior to planting. The use of hardy indigenous plants, such as native tare for fodder, and mimosa, banksia and prickly box for use in hedges and live fences, was also suggested (*HTG* 28 January 1826, p. 3; *HTG* 25 February 1826, p. 4; *HTG* 25 March 1826, p. 3). The *Hobart Town Courier* recommended that in very dry weather (and also in times of frost) shepherds could use she-oak or black gum branches to feed their hungry stock. It was also suggested that it may be wise to reduce the size of the flock at such times (*HTC* 17 December 1831, p.4).

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<sup>33</sup> Sir George Arthur (1784-1854) was born in England. In 1804 he joined the army and in 1823 was chosen to as Lt. Governor of Tasmania, arriving in Hobart on 12 May 1824. His main legacy was the tightening up of the convict administration system and the removal of Aborigines to the Bass Strait islands. In 1837 he was appointed Lt. Governor of Upper Canada. He also served as Governor of Bombay, India for a time, before returning to England (A. G. L. Shaw, 'Arthur, Sir George (1784 - 1854)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/4/2011, <http://www.adb.online.anu.edu.au/biogs/A010034b.htm>).

It was not until the severe drought years of 1837-1842, however, when fresh land was no longer freely available and closer settlement had exacerbated the problems of overstocking, soil exhaustion and drought, that some farmers began turning to more intensive methods, such as the use of irrigation, fodder crops and manure. On 1 May 1837 Knopwood recorded in his diary: 'Rain very greatly wanted; the ploughing cannot go on for want of rain. The poor cattle in a dreadful state for want of food. No grass, all dried up – no feed for them' (Nicholls 1977, p. 663).

The summer of 1838-1839 was also very dry. In February 1839, C. H. Leake, a farmer at Campbelltown in the northern midlands, recorded in his diary that his waterholes had dried up, any grass that was left had turned white and sheep were 'falling off very fast' (UTAS archives L1 H/80). Phillip Russell of the Clyde Company in the Bothwell district reported in April, that there 'had not been a green leave here for several months'. Even the highland lake country, used by the company for summer grazing, was dry (Brown 1941-, vol. 2, p. 212). By June the *Hobart Town Advertiser* was predicting a state of starvation (*HTA* 28 June 1839, p. 3). The east coast was particularly suffering, having endured two years of drought (*True Colonist* 30 August 1839, p. 6). Although late winter and spring rains refreshed the country (Jevons 1859, p. 70), by the summer of 1839-1840 the spectre of drought had returned. In November 1839 William Russell of the Clyde Company

wrote to his brother George at Port Phillip complaining that ‘the pastures are quite brown and bare, and the crops are suffering very much’ (Brown 1941-, vol. 2, p. 288). Damaging hot winds were also experienced in several southern districts (Brown 1941-, vol. 2, p. 288; *True Colonist* 1 November 1839, p. 7). At the Clyde the drought continued into the winter of 1840 which was not only dry, but also frosty causing a scarcity of grass. Sheep were in low condition (Brown 1941-, vol.2, p. 385).

The summer of 1840-1841 continued dry and was characterised by extensive bushfires. By February 1841 the drought was being described in both the southern and northern newspapers as exceptional (*CC* 20 February 1841, p. 2; *HTC* 26 March 1841, p. 2). In Hobart, the annual rainfall for the year 1841 was just 13.95 inches, compared to an average of 23.97 (BOM 1936, p. 45, 95). The following summer of 1841-1842 offered no relief. Louisa Meredith claimed: ‘The summer of this year was particularly dry, and most of the watercourses were empty, save here and there...’ (Meredith, 2003 [1852], vol.1, p. 184).

Sir John Franklin, during his overland journey from Hobart to Macquarie Harbour in the west, noted as late as April 1842 that the rivers and lakes of the central highlands were greatly diminished ‘in consequence of the long prevailing drought’ (Burn 1977 [1842], p. 13). At Circular Head, in the usually moister far north-west, the Van Diemen’s Land Company referred to the drought as ‘extraordinary’ and

‘unprecedented’. The stock had suffered severely, and the sheep had to be sheared without first being washed (CC 19 November 1842, p. 4).

Many smaller farms folded in this period, their soil having been cropped to the point of exhaustion and decimated by drought. Hastened by an economic downturn such farms were increasingly bought out by larger concerns as the island’s farming operations were consolidated (Easteal 1971, p. 284). Larger property owners were often cushioned against the impact of drought and depression, as they had a diversity of other interests that could see them through difficult times. Many were speculators, involved not only in grazing, but also whaling, sealing, banking, industry or shipping (Morgan 1992, p. 36). By this time many had amassed substantial wealth and power in the colony, and had built grand houses on their estates (Boyce 2008, p.214). By 1840 they had little competition, especially given that a lack of available pasture land on the island had led to a sharp decline in immigration after 1837 (Boyce 2008, p. 224).

With possibilities for the movement of stock now more limited, and a shortage of available land for fresh pastures, some land owners were encouraged to invest in irrigation schemes to raise the carrying capacity and yield of their existing land (Raby 1996, p. 98). Such a crisis was reached earlier in Van Diemen’s Land than on the mainland. Irrigation promised a degree of control over an otherwise unpredictable climate, and was a practice that had its traditions in India, rather than Britain.

Examples of early irrigation works include those on the properties of 'Redlands' and 'Glenleith' at Plenty in the Derwent Valley; 'Lawrenny' near Ouse; 'Ratho', 'Norwood' and 'Hunterston' near Bothwell; 'Cheshunt' near Deloraine; 'Kingston' near Ben Lomond in the north; and 'Wetmore' and 'Somercotes' near Ross (Mason-Cox 1994, pp. 3-44). During the early 1840s convict labour was also used to build large reservoirs for irrigation purposes at the agricultural probation station at Victoria Valley (*HTC* 13 October 1843, p. 2; Burn 1977 [1842], p. 9). Perhaps the most notable irrigation work was the private scheme of William Kermode<sup>34</sup> at 'Mona Vale' (near Ross). In 1840 he drained and embanked a swamp of 500 acres on his property, then constructed a dam and reservoir on the Blackman River adjoining it. Sluice gates were used to control water flow. The former swamp was described by Mundy as: 'laid down in English grasses, divided by hedges into convenient enclosures, along each of which are water-ducts with dam-gates, whereby he is enabled to throw the whole or part under water in the driest season' (Mundy 2006 [1850], p. 236).

Kermode was also instrumental in the construction of Van Diemen's Land's first public irrigation scheme at Toombs Lake. He and several

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<sup>34</sup> William Kermode (1780-1852) was a merchant and native of the Isle of Man. He visited Van Diemen's Land in 1819 and 1821 with cargo for sale. In 1824 he was granted 1000 acres at 'Mona Vale' which he extended and improved over the years, with a substantial homestead and irrigation works. His wife and daughters joined him on the property in 1828. He also served on the Legislative Council (E. J. Cameron, 'Kermode, William (1780 - 1852)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University; viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A020046b.htm>).

other landowners in the district joined forces in April 1840 to petition the government to reserve a piece of land at Toombs Marsh on the Macquarie River for the purpose of building an irrigation dam. They enlisted the professional advice of Capt. Arthur Cotton,<sup>35</sup> an irrigation engineer with considerable experience in India and an outspoken advocate of irrigation. In a paper published in the *Tasmanian Journal of Natural Science* in 1841-1842 he argued:

Tasmania has peculiar facilities for irrigation... there are innumerable natural basins, where, by a very short bank, a very large body of water may be collected... The Derwent, the Ouse, the Clyde, the Lake, the Macquarie, and indeed, as I believe, every other river, is provided with these most invaluable natural basins... It must be observed, too, that these lakes and lagoons are generally situated very high up in the hills, where the land is of little value. In this respect, therefore, probably Tasmania stands unrivalled in its natural advantages for storing up water during the rains...

... Besides the water that may be thus stored up by embanking the lakes and lagoons, many of the rivers have a considerable body of water flowing down them throughout the summer,

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<sup>35</sup> Capt. Arthur Cotton was born and educated in England before moving to India where he became established as an irrigation engineer. He arrived in Van Diemen's Land in 1838 on sick leave from the Madras Engineers. He spent time touring the island and assisted with a number of irrigation projects. In 1841 he married Elizabeth Learmonth and settled at Longford. He returned to India in 1843, and then to Britain where he died at the age of 96 (Mason-Cox 1994, pp. 83-84).

which may be diverted merely by dams and channels, and spread over the lands (Cotton 1842, pp. 84-85).

Cotton also suggested that all water courses should be vested in the public interest (*TJNS* 1842, vol.1, pp. 177; Bourke and Lucadou-Wells 2006, pp. 22-44).

Scientists also took an active interest in irrigation during these years.

The Governor from 1837-1843, Sir John Franklin, was a keen advocate of the sciences, and under his patronage the Tasmanian Society of Natural History (1837) was formed. The Royal Society of Tasmania was established in 1843.<sup>36</sup> These societies fostered an interest in scientific inquiry and debate. A number of prominent scientists visited the island during Franklin's time, including Count Paul Edmund de Strzelecki, who made a tour of the island in the years 1840-1842. Strzelecki, too, was convinced of the need for irrigation. 'Irrigation', he claimed, 'becomes the first measure with which the agricultural improvements of Australasia must begin' (Strzelecki 1967 [1845], p. 443). He advocated legislation to appropriate water rights for irrigation schemes, and that workers from Chile and India with experience in dam construction be imported (1967 [1845], pp.381-387).

The success of the Toombs Marsh scheme helped create a more widespread interest in the value of irrigation throughout the colony (Mason-Cox 1994, p. 98). The largely unregulated use of rivers and

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<sup>36</sup> For more information on Tasmanian scientific societies in this period see Hoare 1969.

streams for private irrigation, however, also led to some disputes, as those situated downstream could have their supplies diminished. In April 1842 a *Cornwall Chronicle* reporter blamed the 'mania' for irrigation on the loss of water supplying the country mills (CC 9 April 1842, p. 2).

By 1842 a new public irrigation dam at nearby Long Marsh was also under construction. It was a result of collaboration between landowners in the district who used convict probationary labour provided by the government. Arthur Cotton also assisted in this project prior to his return to India in 1843, whence his brother, Hugh Cotton,<sup>37</sup> took on the role of consulting engineer. Like his brother, Hugh was a keen proponent of irrigation and improved town water supplies, and he published articles and delivered a number of public lectures on the topics. He also advocated that the government take control over the construction and management of a general system of irrigation for the colony. He submitted two reports, in 1844 and 1845 respectively, proposing ambitious irrigation schemes for the upper Macquarie, Lake and Elizabeth Rivers. However, whilst the Governor of the day, Sir

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<sup>37</sup> Hugh Calvely Cotton (1798-1881) was Arthur's older brother who arrived in the colony in 1842 to take up the post of Deputy Surveyor-General. He settled at Longford, and like his brother, took an active interest in irrigation, carrying out surveys and producing a number of reports on proposed schemes. He also advocated improved town water supplies. However, he returned to India in 1859 with none of his schemes having been adopted (Mason-Cox 1994, pp. 104-112; [no author given] 'Cotton, Hugh Calvey (1798 - 1881)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 28/9/2009, <http://www.adb.online.anu.edu.au/biogs/A010553b.htm>).



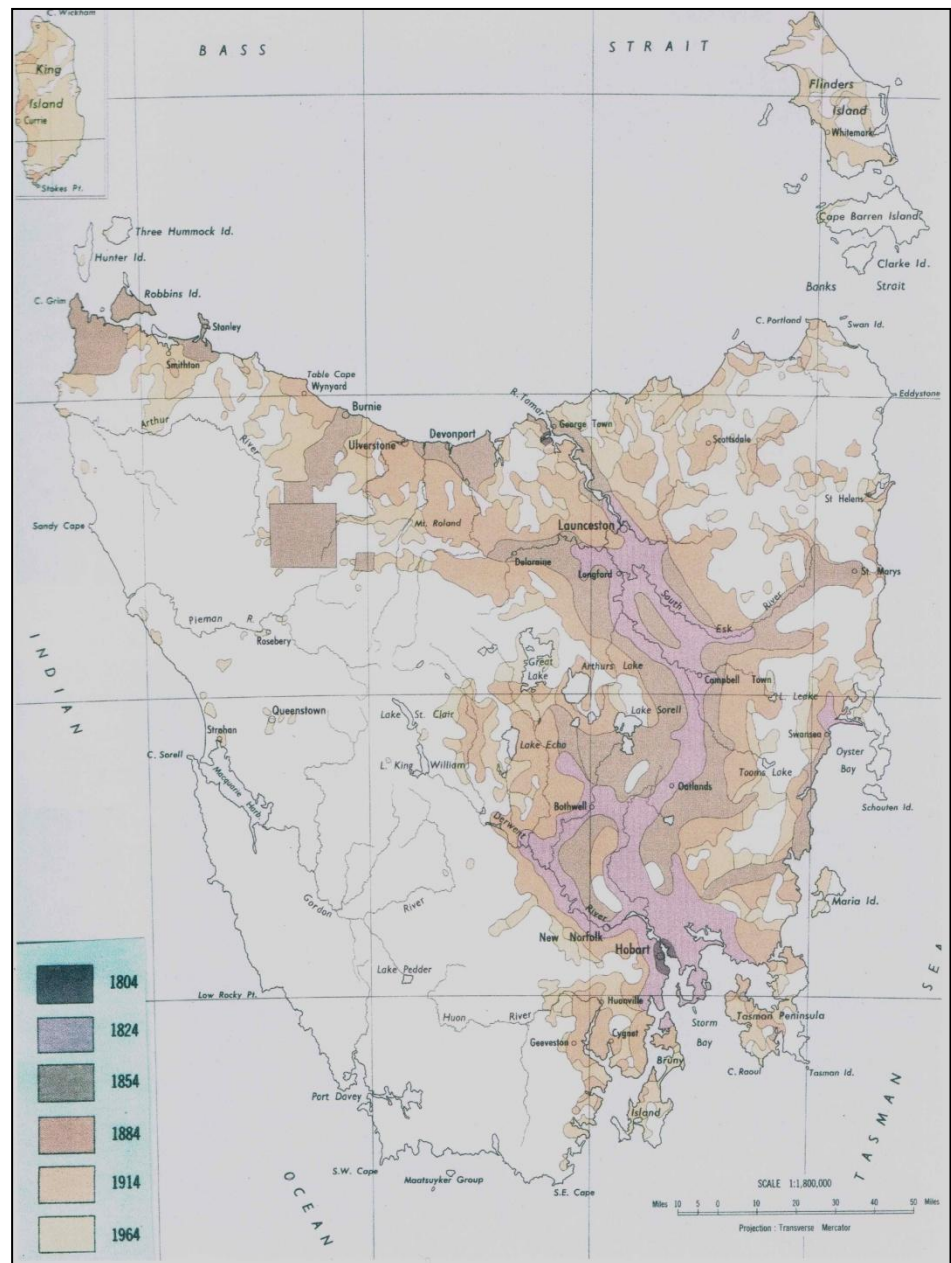


Fig. 5 Land Alienation Map (from Davies 1965)

John Eardley-Wilmot, supported such schemes, primarily as a means of employing probationary convicts, an economic downturn intervened and Cotton's plans were not adopted. The Long Marsh project was aborted when the British Government withdrew the convict labour for construction. Attempts to revive the scheme in subsequent years were unsuccessful (Mason-Cox 1994, pp. 107-116).

Despite this early interest shown by government in supporting public irrigation schemes, a lack of funding and legislative support for such proposals quashed any future developments for well over one hundred years. The onus shifted to private individuals to construct works on their own properties. In 1850 Governor Denison<sup>38</sup> provided practical advice in an edition of the *Royal Society's Papers and Proceedings* on how farmers could construct their own irrigation dams (Denison 1851, pp. 257-264).

By the 1840s some farmers were also beginning to experiment in other methods of drought mitigation. In his report on the colonies, published in 1845, Strzelecki suggested a number of measures (in addition to the

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<sup>38</sup> Sir William Thomas Denison (1804-1871) was born in England and later joined the Royal Engineers. He was appointed Governor of Tasmania, arriving in January 1847. He took an active interest in engineering works, irrigation and education. In 1854 he was appointed Governor-General of the Australian colonies, and in 1861-1866 served as the Governor of Madras, India, before returning to England (C. H. Currey, 'Denison, Sir William Thomas (1804 - 1871)', *Australian Dictionary of Biography*, Online Edition, updated continuously, viewed 29/3/2011, <http://www.adb.online.anu.edu.au/biogs/A040048b.htm>).

use of irrigation) which he believed could reduce the impacts of climatic variables. He suggested that during drought flock numbers could be reduced to increase the quality of wool produced, that stock runs could be divided to ensure a succession of good pasture, and he advocated an end to the burning of pastures by stock owners (which he believed contributed to soil erosion). He also advocated the use of manure and crop rotation in agriculture (Strzelecki 1967 [1845], pp. 370-374; 433-451). Local scientists experimented with the use of guano and potash as manure in the late 1840s and a bone mill producing bone dust for manure was opened in New Town late in 1849 (*RSTPP* Nov 1848, 1849; *HTC* 15 December 1849, p. 3). During the 1840s and 1850s some wealthier land owners also experimented with the introduction of English grasses, and to a lesser extent crop rotation (Easteal 1971, p. 33; Strzelecki 1967 [1845], pp. 381-387). A number of farmers also began turning their attention to the growth of fodder crops, such as turnips, to provide additional feed to stock (Hartwell 1954, p. 132). Agricultural societies, first formed in the 1820s, played an increasing role in encouraging such experimentation and innovation (Hartwell 1954, p. 132). On the whole, though, the use of such methods remained uncommon in Van Diemen's Land in this period.

Despite some advancement in irrigation and other methods in the 1840s, periodic drought continued to cause rural distress. Exceptionally dry years were experienced in 1847 (most notable in the south), 1850 and

1853 (*RSTPP* 1850, vol. 1, pt. 2, p. 145; Mundy 2006 [1852], p. 214).

Hobart rainfall for 1847 was recorded at 14.46 inches; in 1850 at 14.51 inches; and 1853 at 14.52 inches (BOM 1936, p. 120). In the following period, 1856-1900, rabbit plagues and soil depletion would add to the impacts of drought on agricultural and pastoral pursuits.

### 3.2.3 *Town Water Supply*

In 1821 the population of Hobart was more than 2700 with over 400 houses having been built (Evans 1967 [1822], p. 62). Drought routinely highlighted the insufficiency of the Hobart Rivulet to fulfil all the demand for domestic and industrial usage. The inhabitants of Launceston also had water issues. They had to rely on carts which were supplied with water from the upper Cataract, or on pumps from the North Esk River (where the water was often brackish) (Richards 2007, p. 99). In both towns, some residents took matters into their own hands and constructed private wells, or installed rainwater butts to catch water from their roofs (Richards 2007, p. 99; Lloyd 2008, p. 5).

Throughout this period the colonial government failed adequately to address the issue of providing an adequate water supply to the major towns, and effectively to gain control over key watercourses from private interests, such as industrial users and riparian property owners. A lack of effective legislation to protect waterways for the public interest created discontent. Drought inevitably created water ‘crises’ that intensified these conflicts.

As we have seen, the re-location of the principal settlement from Risdon Cove to Sullivan's Cove was primarily in response to the summer drought of 1804 and the need to secure a more permanent supply of water for colonists. Again, in 1826, with an expanding urban population and flagging water supply the government considered re-locating the seat of government – this time to New Norfolk. Governor Arthur wrote to Lord Bathurst in England:

At Hobart Town, the want of water is severely felt. The water of the Derwent there is Salt. The only Stream, by which the Town is supplied, is subject to failure, and the water of it unpleasant to the taste. The failure of the Stream has frequently put a stop to the working of the Mills erected upon it (*HRA ser.3, vol. 5, pp. 185-186*).

Other disadvantages of Hobart as the site of a capital city were found to lie in its geographical position – cut off as it was from the main settled areas of the colony by the Derwent River (*HRA ser. 3 vol. 5, p. 184*). Arthur went ahead with plans to re-locate the capital to New Norfolk and despatched an engineer to commence the erection of a log gaol at that location, as the first stage of making it the new seat of government (*HRA ser.3, vol. 5, p. 304*). However, when the Derwent River flooded violently in that locality in the winter and spring of 1826 Governor Arthur reconsidered his plans. He ordered a report by the Land Commissioners, who overall (though not unanimously) identified

persuasive objections to New Norfolk being the site of the capital (*HRA* ser. 3, vol. 5, pp. 306-310).

In their report of 1826 the Land Commissioners recommended that action be taken to preserve the quality of water at Hobart Town through the reservation of a twenty foot space on each side of the rivulet (McKay 1962, p. 104). Unfortunately, their advice was not heeded, and the problems with the Hobart Rivulet as the main water supply continued to worsen. The rivulet not only supplied water for inhabitants, but also served as the town sewer. As the population and number of industries adjacent to it increased, it became notoriously fouled, especially in the lower reaches. Extremes in weather made the situation worse. Following the hot, dry summer of 1830-1831 the Colonial Surgeon reported that numerous cases of fever and bowel complaints had arisen from drinking the 'pernicious fluid' (CSO1/1/230 5605, p. 29). Mills established along the course of the rivulet compounded problems by drawing off water into dams that was then used to power the working machinery (Button 1978, p. 69).

In 1831 the government completed a diversion from Browns River into the Hobart Rivulet and a dam. A brick-lined conduit (known as the 'town tunnel') carried water to the soldiers' barracks, and then on to the port and a number of public fountains in Hobart streets (Crawford and Ryan 1988, p. 6; MacFie 2008, pp. 28-30). This was done to capture excess flow and rainfall and store it for use in dry periods, as well as to

divert clean water from the more polluted sections of the rivulet. Such measures proved necessary in such a variable climate (*HTC* 17 September 1831, p. 3).

During the dry summer of 1831-1832, however, the new scheme was still found to be unsatisfactory. Rainfall in Hobart for the year 1831 was only 18.67 inches (Jevons 1859, p. 60). Water supply was stretched to the limit. The reduced quality of the water supply for domestic purposes prompted Mr Solomon of Liverpool Street to invent a water purifying machine. The local newspaper also suggested that town drinking water should be boiled or filtered before use (*HTC* 4 February 1832, p. 3).

Further protracted dry periods in the 1830s re-ignited concerns about water supply in the major towns. In Launceston a petition was presented to the Governor in 1831 calling for ‘a supply of wholesome water for the town’ (*The Independent* 4 June 1831, p. 3). A memorial was also presented to Sir Thomas Brisbane of New South Wales claiming:

That the water of the North Esk, from where your  
Memorialists draw their principal supply is for six months in  
summer brackish, and not fit for domestic use, and at all times  
of the year is very nauseous, from the quantity of saline mud  
mixed therewith caused by the ebbing and flowing of the tides  
(*The Independent* 22 October 1831, p. 2).

They claimed that the South Esk River at the Cataract was bounded on each side by huge precipices of rock, and they requested that consideration be given to constructing an aqueduct to carry water from the cataract to the town (*The Independent* 22 October 1831, p. 2).

Again in 1833 residents petitioned the government about the lack of an adequate fresh water supply to the town (Harris 1988, pp. 14-15). That year the Legislative Council voted to provide £1000 for an improved supply of water to Launceston. However, with aborted starts and changes in proposals this would take many more years to achieve.

Government neglect of its northern constituents was widely blamed for inaction (Harris 1988, pp. 14-15). In 1836 Governor Arthur finally approved a scheme to bring water to Launceston from the South Esk near Evandale, but it was abandoned some years later due to ongoing disputes with affected landowners (Harris 1988, p.15, 37-70).

Opposition from rural property owners to having water pipes laid across their land, or to the diversion of streams on their properties for town water supply purposes, was common in the first half of the nineteenth century, resulting in a number of early town water supply schemes being aborted (Bourke and Lucadou-Wells 2006, pp. 22-44). A further Launceston scheme proposed by Major Cotton in the 1840s was to raise water by pumps from the Cataract Gorge to a nearby hill and into reservoirs. Work was begun but was soon aborted due to lack of government funds (Richards 2007, p. 111).



In Hobart, extended dry periods in the coming years caused ongoing disputes regarding water rights between the government and local entrepreneur, Peter Degrares, who by 1824 had substantial sawmilling and brewing concerns adjacent to the rivulet at Cascades (South Hobart). He had erected a dam across the rivulet and a mill race to supply his needs (CSO5/113/2541). Following the construction of the government dam upstream of Degrares' original dam in 1831, however, Degrares argued that the government had diverted water away from his business and caused him losses in production. He not only sued for compensation, but also built another dam further upstream of the government dam, thereby ensuring his own supply came first (CSO 5/113/2541; *HTC* 22 May 1847, p. 3; Crawford and Ryan 1988, p. 15). This, together with allegations of misappropriation of water by government officers, caused much consternation to the citizens of Hobart. The issue reached a head in the dry year of 1835 when a memorial by the people of Hobart was presented to the government demanding an improved supply of water for the town (Melville 1978 part 3, p. 37). The memorial stated:

Your Excellency cannot but recollect, the great misery and disease, which prevailed among the poorer inhabitants of Hobart Town, during the last summer, in consequence of the putrid state of the water in the Hobart Town Creek, which they were compelled to drink... (Melville 1978 part 3, p. 37).

An Act was subsequently passed in April 1835 vesting the water supply of the Hobart Rivulet in the government (*HTC* 22 May 1847, p. 3: Petrow and Alexander 2008, p. 33). Authorities also took the controversial step of requesting the breaking up of mill dams (including Degraives') that were hampering the flow of water along the stream (CSO5/113/2541). Milling operations in Hobart suffered as a result and a number of millers turned to alternative sources of power, such as wind and steam (Cassidy 2002, p. 25). Degraives later repaired his dam, but claimed a loss of £50 a week to his sawmilling business during the five month period when it was not operational (CSO5/113/2541).

Further water woes were experienced during dry periods in the late 1830s and early 1840s. In November 1839 the government introduced water restrictions as a measure to protect the failing supply to Hobart. The order stated that anyone found misusing or wasting the water from the town aqueduct (including the irrigating of gardens) would have their supply cut off (*HTC* 15 November 1839, p. 2). Ongoing conflicts between Degraives and the residents of Hobart continued. In 1844 a scheme was devised by which Degraives was to construct a large reservoir on the rivulet from which the town would be supplied with water – once it had passed through his mill and a filtration system. The supply to residents via the town tunnel was to remain intact. This arrangement was precarious to say the least and the dry year of 1847 brought matters to a head. Degraives was accused of diverting water

from the town tunnel for his own interests (*HTC* 22 May 1847, p. 3; Crawford and Ryan 1988, p. 15). Hobart rainfall for the year was just 14.46 inches (BOM 1936, p. 120). The residents of Hobart now numbered about 21 000 (*Statistics of Tasmania 1848*). Concerned citizens once more wrote a lengthy memorial to the government demanding that the issue of an adequate supply of water to Hobart be immediately addressed. They argued that the rights of the people of Hobart to a pure and plentiful water supply had been gradually and systematically encroached upon and interfered with by Degraives, and that the government should re-gain full control of the water supply provided by the rivulet (*HTC* 22 May 1847, p. 3). According to Breen, such tensions between individual property rights and liberties and the 'public good' are a recurring theme in Australian and Tasmanian histories in the nineteenth century (2001, p. 168).

Similar disputes arose in country towns. In the Hamilton district, two enterprising millers, Roadknight and Nicholas, joined forces to construct a dam at Lake Crescent at the outfall of the River Clyde, so as to ensure their operations had an adequate year round supply of water (Mason-Cox 1994, p. 18). This, however, did little to assist the townspeople of Hamilton and Bothwell for which the river served as their water supply. During the summer of 1841-1842 the river became so reduced and fouled that several people died from drinking from it (*HTC* 9 April 1857, p. 2).

Water supply in the major towns was once more put on the agenda when municipal bodies were formed in Launceston and Hobart in 1852. That year the Launceston Water Act was passed and a scheme for utilising water from the St Patricks River was commenced. It was finally completed in 1857 (Richards 2007, p.120). In Hobart, the new corporation employed Hugh Cotton to oversee the construction of another government reservoir that was to be built, and operate, alongside that of Degraes. As late as 1858, however, less than half of Hobart's 4500 households could boast a piped town supply. Most still relied on public fountains (MCC16/65/1).

#### *3.2.4 Summary*

Drought periods affected both farming and town residents in this era. On the land, the first response to drought was for farmers to acquire new land to feed hungry stock or for cultivation. However, by the mid-1830s the possibilities for this were much reduced and a few began experimenting with irrigation and other methods of drought mitigation. The government assisted in the Toombs Marsh irrigation scheme and the doomed Long Marsh scheme in the early 1840s, but this interest languished after the withdrawal of monetary support from the Home Government. In the towns, extended dry periods highlighted the need for improved water supply schemes and greater government control over waterways to serve the public demand in a more equitable fashion.

In the period 1856-1900 that follows, water issues continued to plague the capital, Hobart, contributing to disease outbreaks. As settlement also spread into the forested ‘waste lands’ of the island a new class of under-capitalised, small-scale farmers were placed at risk by drought. Despite much rural suffering the government remained reluctant to invest in public irrigation schemes.

### **3.3 Floods: ‘It Never Rains But it Pours’**

As we have seen in Chapter Two, floods created havoc for the transportation of people and goods across the island in the early years of the colony. Bridges and roads were, at first, not built to withstand the strength and rapid rise of inundations that could be experienced in the Van Diemen’s Land climate. Edward Curr observed how rivers which he could cross in summer without getting a foot wet, could at another season flow right over the top of his horse’s back (Curr 1824, p. 24). Some properties, such as Edward Lord’s ‘Lawrenny’ at Ouse, were periodically completely cut off by rising flood waters (Burn 1973 [1842], pp.103-105). Unwary travellers could be caught off-guard and loss of life was not uncommon.

The damage to farmers with low-lying land adjacent to rivers could be enormous during floods, with fences, crops and livestock being washed downstream. In March 1846 Mr Corney of the Lake River lost several hundred sheep in a single deluge (CC 28 March 1846, p. 242). Carcasses of sheep, cattle, horses and even two bullocks still yoked together

tumbled over the Cataract at Launceston during spring floods of 1848, demonstrating in graphic fashion the devastation wrought by the floods upstream (*CC*18 November 1848, p.171). Footrot in sheep was also a potential danger on flooded farmland (Morgan 1992, p. 63). Heavy rains at harvest time could be especially damaging. When heavy rains descended in late February and March 1836 it was feared that the sheaves of wheat standing in the fields would be irreparably damaged, as many were not yet thatched (*HTC* 4 March 1836, p. 2).

Despite the damage caused, floods also had benefits – they saturated the soil and refreshed the vegetation (particularly after long dry spells). When a long drought was finally broken by the arrival of flooding winter rains in 1842, the *Cornwall Chronicle* correspondent claimed that ‘a moist winter will do more for the colonists than all the Governor has done for the last six years’ (*CC* 18 June 1842, p. 2).

In the towns, as populations increased and buildings became crowded around the waterways, floods became increasingly catastrophic causing widespread property damage and distress. Activities such as the building of dams, embankments and illegal structures fronting streams, land clearing and the diversion of waterways, could cause hazards which exacerbated flood damage. However, even in the towns periodic floods had some benefits – they flushed waterways, streets and drains of the accumulated refuse and filth of the preceding dry period. Major widespread flooding occurred in September 1822, September 1828,

June 1832, November 1842, March 1846, October 1844, July and August 1852 and March 1854. Localised severe flooding occurred in Hobart in March 1836 and February 1854, and in Launceston and northern districts in November 1848. Severely cold winters were also experienced in the years 1820, 1830, 1832, 1837 and 1842.

### 3.3.1 *Roads, Bridges and Shipping*

Following the recommendations of Governor Macquarie of New South Wales during his visit to the island in 1821, the government made some progress on building a better road with substantial bridges between Hobart and Launceston, using convict labour. Improvements were also made in some outlying areas, such as the stone bridge erected over the Coal River at Richmond (*HRA* ser. 3, vol. 4, p. 18; *HTG* 2 March 1822, p. 2; *HTG* 13 December 1823, p. 2). Nevertheless, severe flooding episodes could still cause substantial disruption on key arterial routes. Floods in September 1828 caused considerable damage to the Ross Bridge over the Macquarie River on the main line of road between Hobart and Launceston (*HTC* 27 September 1828, p. 3). In this period, many of the island's bridges were still of timber or log construction and unable to withstand the pressures of rising flood waters. The towns also suffered during wet spells.

During the cold, wet winter of 1830, the *Hobart Town Courier* drew attention to the lack of adequate drainage and properly formed streets and footpaths in Hobart:

With the exception of Elizabeth and Macquarie Streets, which have been metalled, it is impossible to pass from door to door in any of the others without being up to the ankles in mud. The consequence is that nobody stirs out of doors that can avoid it, and very little business has been done in any of the stores or shops for the last ten days (*HTC* 7 August 1830, p. 2).

In June 1832, when flooding prevented farmers from transporting their goods to market, a reporter for the *Launceston Advertiser* wrote:

If the present weather holds much longer, there will not be a candle in Launceston. Fat of all kinds is exceedingly scarce... Every article of farm produce is becoming scarce and dear, while scarcely a bit of butcher's meat, fit to bring to table, is to be had (*LA* 10 July 1832, p. 5).

By the 1850s the main line of road linking Hobart and Launceston was generally considered robust enough to withstand all but the most severe episodes of flooding. By this time ample bridges had been completed at Bridgewater, Ross, Campbell Town, Perth and Kerry Lodge (Stancombe 1955, pp. 24-32). The introduction of steam boat ferries from the early 1830s and the completion of the Bridgewater Bridge in 1849 had reduced the dangers of crossing the Derwent (Broxam and Nash c1998, p. viii).



Badly constructed roads in outlying areas were, however, still highly susceptible to flood damage. The situation was made worse in the 1840s with a decline in British funds made available for road development. Struggling to finance new works and repair existing roads the colonial government introduced road tolls, and then in 1852, a system of road trusts (whereby responsibility for maintenance of all but the main roads was devolved to local trusts) (Rootes 2008, pp. 36-37). Lack of funds ensured that many secondary roads in country districts remained inferior, and floods highlighted the deficiencies, often with dramatic effect. For example, when the Derwent Valley experienced heavy flooding in March and April 1846, the New Norfolk Bridge was damaged and all the bridges between New Norfolk and Hamilton were either washed away or rendered useless (*HTC* 25 March 1846, p. 2).

Adverse weather conditions also badly affected shipping. The towns of Hobart and Launceston were now hosting an ever-increasing amount of shipping traffic. Trade and passenger vessels, whaling ships and convict transports regularly plied between the island's ports and those on the mainland and overseas. The strong gales and storms often experienced in Tasmanian waters resulted in a litany of shipwrecks along its coastline. By the 1850s some advances in shipping technology had made sea travel safer, such as a regular steamship service linking Launceston, Melbourne and Sydney, but many still travelled by sailing

ship which were particularly vulnerable to the vagaries of the winds (Broxam and Nash, c1998 p. viii).

### 3.3.2 *Country Floods*

While flooding episodes sometimes prompted farmers to take some precautions against future floods, other farm activities actually increased the risks. Following widespread damaging floods in the winter of 1828 the *Van Diemen's Land and Hobart Town Almanac* remarked:

These occurrences and a better knowledge of the seasons already admonish the settlers to build their houses in a more substantial and durable manner than formerly, and to embank and sow such plants only in the lower grounds as will hold the earth, and enable it to withstand these occasional floods (*VDL and Hobart Town Almanack* 1831, p. 38).

However, land clearing practices, such as indiscriminate clearing and the rolling of logs into waterways, increased the hazards in rural areas. The Land Commissioners of Van Diemen's Land toured the island in 1826-1828, observing:

Serious evils and inconvenience arise from the abominable practice that Settlers have of clearing their bottom land on the banks of Rivers, by rolling all the Logs into the Water, the

consequence is, that the Floods make Dams everywhere, and the water thereby impeded in its course (McKay 1962, p. 34).

They recommended that an Act be passed so that such offenders could be fined, but this was not pursued at that time (McKay 1962, p. 34).

Overgrazing and land clearing undertaken by farmers in the preceding dry period worsened the impacts of flooding. Grazing by stock along river banks denuded the vegetation and compacted the soils, making them more prone to increased runoff when heavy rains returned. Breton reported on this phenomenon:

The floods which occur may easily be accounted for; the ground becomes indurated by drought and heat; and the deluge of rain suddenly descends, and instead of part of the water being imbibed by the thirsty soil, the whole runs off, and rushes through the gullies or beds of rivers, not only too narrow and tortuous to admit of its flowing on without impediment, but the course of the torrent is likewise interrupted by trunks and branches of trees, which by the accumulation of rubbish soon become dams (Breton 1834, p. 375).

Some landowners drained and embanked flood-prone swampland to make it suitable for pasture or crops. However, embankments could prove inadequate at times of high flood, or be worn down over time.

Settling at the Forth in the north-west in 1840, James Fenton's<sup>39</sup> first attempts at planting crops on marshy land failed due to inundations of tidal salt water. After draining and embanking the marsh at great expense (free convict labour no longer being available), he sold the property. Whilst the embankments served the new owners well for a number of years, they were ultimately trodden down by cattle and the tidal waters entered once more (Fenton 1964 [1891], pp. 44-46).

### 3.3.3 *Severe Winters: Van Diemen's Land Company 1832*

As pastoral activity expanded throughout the island, severely cold winters highlighted regional differences in climate. An exceedingly wet and cold winter in 1832 proved the unsuitability of some of the more exposed and elevated areas for fine-wool sheep. The Van Diemen's Land Company, formed in May 1824 by a group of British businessmen interested in pursuing the fine-wool industry in Van Diemen's Land, had established large pastoral holdings of 350 000 acres in the island's extreme north-west by the late 1820s. The Van Diemen's Land Company grants were largely located in areas characterised by a higher average rainfall than in the previously settled areas of the island, and included highlands which were prone to cold winters (the government

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<sup>39</sup> James Fenton (1820-1901) emigrated from Ireland, arriving in Van Diemen's Land in 1834. In 1840 he settled on the Forth River in the north-west where he bought 1000 acres from the government and established a timber business. In 1879 he retired to Launceston and published two books: *A History of Tasmania From its Discovery in 1642 to the Present Time* (1884) and; *Bush Life in Tasmania Fifty Years Ago* (1891). He died in 1901 (F. C. Green, 'Fenton, James (1820 - 1901)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 4/8/2009, <http://www.adb.online.anu.edu.au/biogs/A040172b.htm>).

of the day had forced the company to take up land in this locality away from the main 'settled districts'). The region's climatic features caused many losses of valuable stock and crops over the first few years (Robson 1983, vol. 1, pp. 189-192). According to historian John West:

The losses sustained by the company were great: the cold destroyed the stock, and their crops often perished from moisture. On the Hampshire Hills many hundred lambs died in a night. Sometimes the season never afforded a chance to use the sickle: in the morning the crop was laden with hoar frost, at noon it was drenched with the thaw, and in the evening covered with dews; and thus rotted on the ground (West 1971 [1852], p. 91).

The company directors concluded that the more elevated regions of their estate (at the Surrey and Hampshire Hills) were too cold and otherwise unsuitable for merino sheep, and they imported breeds with heavier fleeces for those locations (VDL Co. Report 13/3/1832, p. 8). Even so, the company suffered greatly during the harsh winter of 1832 and estimated a loss of 2400 lambs as well as many sheep at those estates (VDL Co. Report 18/3/1833, p. 1; VDL Company report 17/3/1835, p. 4). Following the 1832 winter the Van Diemen's Land Company removed its sheep from the Hampshire and Surrey Hills estates to the more temperate coastal runs at Circular Head and Woolnorth, and reserved the former blocks for the grazing of cattle

(VDL Co report Oct 1833; 17/3/1833). According to Stokes, of 5500 sheep sent to the hill estates over the years, only a few hundred had survived when they were removed to Circular Head in 1834 (Stokes 1964, p. 24).

Harsh weather also curtailed other farming activity. As settlement spread into the open plains of the interior in the 1820s and 1830s the severe and recurrent frosts there led many farmers to also abandon the growth of potatoes and wheat (Curr 1824, p. 26).

Even as late as the 1850s vast areas of the rugged, wet and windy western side of the island remained uncharted. The small penal settlement at Macquarie Harbour, which operated periodically between 1821 and 1847, was the only vestige of European occupation in that remote location. The excessively cold, wet and windy climate was thought to be particularly suitable as a punishment for the convicts (*HRA ser.3 vol. 5*, p. 345).

#### *3.3.4 Town Floods*

In this period, poorly designed bridges, mill dams, embankments and illegal structures fronting the stream in Hobart, and the reclamation of former swampland in Launceston, heightened the impacts of town

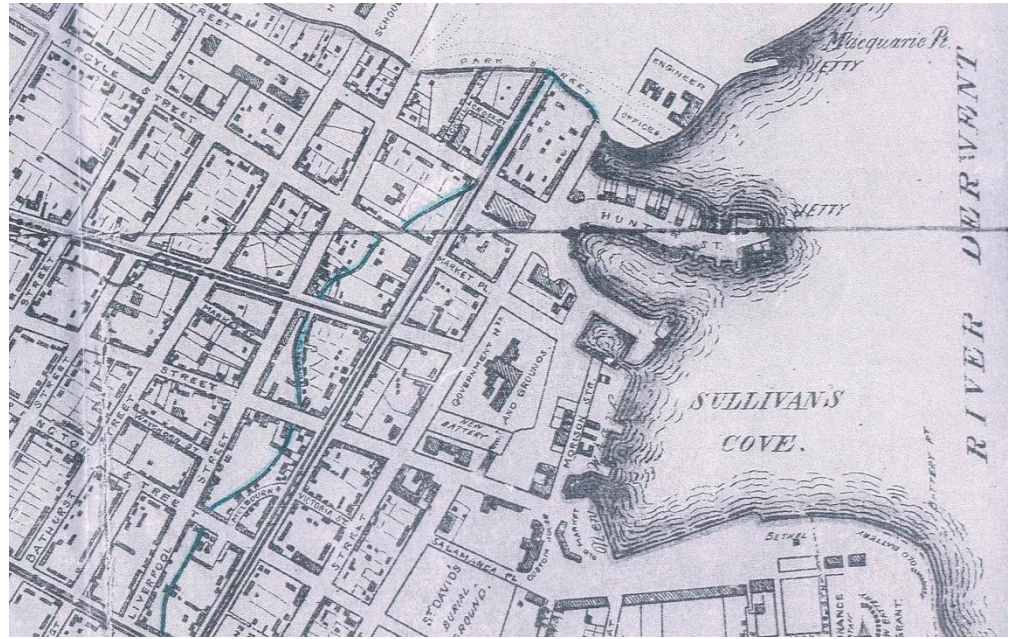


Fig. 6. Map of Hobart 1854 published by R. Hood, showing the Hobart Rivulet (in blue)  
(Tasmanian Archive and Heritage Office MAP1/1/84).

floods to calamitous proportions. An artificial diversion of the Hobart Town Rivulet carried out in 1825 proved devastating during subsequent floods. The 'new cut', as it was called, had been formed in order to allow reclamation of land in the wharf area. It involved the diversion of the lower reaches of the Hobart Rivulet into the Park Street Rivulet near Lower Collins Street. When bad weather wreaked havoc in September 1828 causing widespread flooding, the Hobart Rivulet topped the banks of the 'new cut', swamping the New Market place (now the City Hall block) and nearby buildings (*HTC* 20 September 1828, p. 2; *HTC* 27 September 1828, p. 3; Wapping History Group 1988, pp. 23-24). A further flooding episode was experienced along the rivulet in March 1836, causing damage to a brewery, a mill dam, bridges and gardens (*HTC* 4 March 1836, p. 2).

Some improvements were subsequently made in the capital by the government to replace flood-prone bridges and to safeguard the rivulet. Key bridges were gradually replaced with more substantial structures (Rayner 1988, p. 7; Button 1978, p. 62). By the 1840s significant portions of the rivulet had also been lined with retaining walls (albeit in a piecemeal fashion). Paving the bed of the rivulet had begun on the lower end, but by the 1850s much still remained in its natural state (Button 1978, p. 64).

It seems that little had been learned in Hobart when widespread flooding returned in force in February and March 1854. At the end of



February, the *Hobart Town Courier* exclaimed ‘it never rains, but it pours’ when a protracted drought was suddenly broken by a devastating deluge (*HTC* 27 February 1854, p. 3). The monthly rainfall figure was a massive 9.15 inches (232.4mm), a record high for February which remains unbroken (BOM 2011). By this time the banks lining the rivulet had been heavily built upon. There were eight flour mills, a brewery, tannery and distillery, as well as many houses and commercial premises along its route (Button 1978, p. 13). The municipal corporation (later council), formed in 1852, had done little to prevent the encroachment of structures over the stream.

When the heavy downpour of February 1854 hit, many of those illegal structures and a number of houses were swept downstream, causing obstructions to the natural flow of water. The rushing water and debris spilled out into the streets. Several parts of the city became quickly inundated, including the flood-prone market place, and Customs House (*HTC* 27 February 1854, p. 3; *HTC* 28 February 1854, p. 2; Wapping History Group 1988, pp. 23-24). Governor Denison blamed the Hobart Corporation for the intensity of the damage caused by the floods – it had allowed a great deal of debris to accumulate following a fire in the city the previous month. This was washed downstream, choking the rivulet (Denison 2004 [1870], p. 223). In the light of the floods, Denison also had to revise his own calculations of the drainage channels

that would be required for a sewerage scheme for the city (Denison 1855, pp.1-5).

A second downpour caused further flash flooding of the Hobart Rivulet at the end of March. It swamped warehouses on the New Wharf, damaging valuable goods such as sugar, tobacco, wheat, wool and leather. Cat and Fiddle Alley was likewise inundated, and tenements in Argyle St, and a row of small houses in Melville Street, were washed away completely. Houses backing onto the rivulet near Wellington Bridge had portions of the main dwellings ripped away in the torrent. The New Market and locality of Wapping were once again submerged. A number of bridges throughout the town and outlying areas were also lost or damaged. Several businesses were inundated. Three people lost their lives, including two convicts employed clearing debris at Wellington Bridge, as well as Alfred Slade, a foreman on the grounds of Mr Cleburne's property, who drowned while attempting to clear a log from the flooded rivulet (*HTC* 22 March 1854, p. 2; *HTC* 23 March 1854, p. 2). Flood relief was provided to victims by public subscription from citizens and St David's Church (*Mercury* 15 June 1872, p. 3). Local newspaper columnists partly blamed the poorly designed Macquarie Street Bridge for exacerbating the damage (*HTC* 23 March 1854, p. 2). Once again the Hobart Corporation was castigated for failing to protect its citizens (*HTC* 24 March 1854, p. 2). A letter to the editor of the *Hobart Town Courier* claimed: 'It is not easy to conceive



Fig. 7. J. Ross 'Plan of Launceston and its Vicinity' *Hobart Town Almanac* 1832 showing swamp to the north of the city (Tasmanian Archive and Heritage Office).

that the public can often be called upon to witness a more palpable instance of gross ignorance on the part of the authorities than has been displayed to-day' (*HTC* 24 March 1854, p. 2).

Following the floods of 1854 the Hobart Corporation was persuaded to take action against illegal building at the rivulet. However, its authority to do so was unclear as the rivulet was under government control (*CT* 2 March 1854; *HTC* 4 March 1854, p. 2). In November the bed and soil of the waterway was vested in municipal control, giving the Corporation greater powers to purchase land to divert the course of the rivulet, and to build retaining walls to prevent damage by further floods. A by-law was also passed in order that persons found throwing rubbish into the rivulet or illegally building over it could be fined (Petrow and Alexander 2008, p. 32). Governor Denison suggested that the Corporation also take the following measures: that it widen the outfall of the rivulet into the Derwent River; widen and raise the bridge in Macquarie Street; reconstruct the Campbell and Murray Street bridges on improved designs; and make improvements to the 'new cut' which had caused flood waters to bank up and overspill (*HTC* 30 March 1854, p. 2). The Public Works Committee issued a report on these matters in February 1856 (Petrow and Alexander 2008, p. 33). However, the division of authority between government and the Corporation over responsibility for removing obstructions from the rivulet remained a point of confusion for a number of decades, stifling any major flood

prevention works. The impact of man-made obstructions on rising floodwaters was not confined to Hobart. In July and August 1852, when tremendous floods battered the island, particularly in the north, local commentators blamed a number of man-made features for worsening the situation. When the Toombs Lake dam gave way in July 1852 it forced even more water into the already gushing Elizabeth and Macquarie Rivers, increasing the impact of the flooding downstream (*HTC* 21 July 1852, p. 3). Convict-built embankments constructed when the Launceston swamp<sup>40</sup> was drained in the mid-1840s were likewise blamed for exacerbating the problems caused by the August floods. Residents in the low-lying sections of Launceston city were forced to evacuate. Jetties were submerged and the post-office and other government buildings on the wharf were filled with water. Many businesses suffered damage or loss of property (*LE* 11 August 1852, p. 546; *LE* 14 August 1852, p. 551, p. 554; *HTC* 14 August 1852, p. 3).

The floods in Launceston in 1852 raised local concerns about the future use of the town's swamp. In January 1854 a public meeting opposed the government sale of the swamp because of its flood-proneness. It must have been unsuccessful, as in late 1855 the *Launceston Examiner* reported that wooden tenements were springing up on the swampland north of the town bridge (now Inveresk) (*LE* 6 November 1855, p. 2).

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<sup>40</sup> The draining and embanking of swamps and marshes was common in this period, as such land was long believed to be associated with death and disease (Giblett 1996, p. 103).

Those residents would be in an invidious position in the event of future floods.

### **3.3.5 Summary**

Although the government made substantial improvements to the main arterial roads in the colony in this period, using convict labour, the provision of adequate roads and bridges failed to keep pace with the rapidly expanding settlement throughout the island, and in many areas heavy flooding continued to render outlying roads impassable. Poor land practices added to flood woes in the country and harsh winters curtailed some types of farming activity in inland and alpine locations. Unregulated growth and the building of embankments and diversions along waterways heightened flood impacts in Hobart and Launceston. These problems continued to worsen in the following decades.

## **3.4 Bushfire: Deadly Conflagrations**

Fire advanced the march of European settlement across the island. A ‘good burn’ became a customary device for settlers to improve their pastures and open up new land. Exploratory parties also routinely used fire to clear the country and assist in track cutting (Marsden-Smedley 1998b, p. 19). Once out of control, however, wildfire could quickly become a threat to houses, fields, and crops. Transport and communication could be disrupted, and destructive fires could leave valuable livestock short of feed for up to eight weeks. At times, towns could also come under threat.

During the 1820s and early 1830s Aborigines and Europeans both used fire as a major land management tool (Pyne 1991, p. 201). Fire also became an instrument of war. As European settlement spread throughout the island, hostilities with the original inhabitants increased. Aborigines used fire to destroy the houses and fields of the intruders, while settlers used fire for signals and to flush Aborigines from hiding. In 1830 the settlers of the Clyde Valley drew up a petition to the government outlining the serious threat that Aboriginal fires posed to their lives and property (Reynolds 1982, p. 109). The forced removal of the Aboriginal population from the landscape in the early 1830s, however, did not lead to a decline in troubling fires. Although damaging bushfires were experienced in the 1820s and 1830s, more serious and increasingly deadly bushfires occurred in the summers of the 1840s and early 1850s. Changing fire regimes (a consequence of European fire practices superseding those of the traditional custodians), opened the way for less frequent, but increasingly catastrophic bushfires. In this section I argue that although European settlers embraced fire as an agent in transforming the landscape for agricultural and pastoral purposes, their efforts to mitigate its potentially deadly and destructive force were minimal.

#### *3.4.1 European Fire Regimes and Bushfire Control*

Pyne has argued that following the dispossession of Aborigines from the Tasmanian mainland in the 1830s the nature of the landscape

changed dramatically. In some locations, in the absence of regular Aboriginal firing, former grassland and open woodland soon reverted to a dense, tangled scrub and then eucalypt forest, which was highly flammable given the right conditions (1991, pp. 127-128). Also, as the pastoral runs of the colony became more enclosed from the mid-1830s, firing by graziers became less frequent – for fear of damage to valuable fencing (Strzelecki 1967 [1845], p. 367). Meredith observed how the absence of regular burning of pasture lands quickly led to the build-up of debris which she claimed made fires ‘thrice as mischievous in the destruction of fences’ (Meredith 2003 [1852], vol. 1, p. 109). She also noted the susceptibility of the island’s forested areas to devastating bushfires: ‘The summer bushfires in these forest regions [of the north-west] sometimes rage to a fearful extent, from the great masses of dead wood, bark and scrub which accumulate through successive seasons’ (Meredith 2003 [1852], vol.2, p. 254).

This was particularly marked in the Huon Valley in the south and in parts of the north-west, where small land holders had begun to take up land in the 1840s. Having been squeezed out of the settled districts of the midlands as wealthy farmers consolidated their holdings, these small-scale farmers (including ex-convicts) lived on blocks of 10-20 acres that were usually rented from absentee landowners. In 1843 the Van Diemen’s Land Company had divided up much of its holdings for tenant farmers. The widespread adoption of ringbarking as a method of



clearing the bush aided this movement of small land holders into the forest (Boyce 2008, pp. 231-232). The implantation of timber houses and outbuildings, fields and haystacks into the imposing eucalypt forests made these settlers and their property particularly susceptible to bushfire damage. Eucalypts were highly flammable, but introduced plants could also pose a danger. James Fenton recalled the hazards caused by the Scotch thistle, which invaded farm lands of the north-west. The thistle down was very easily ignited and apparently 'spread with a fury that no human power could abate' (Fenton 1964 [1891], p. 108).

Settlers developed some fire control methods, but they remained crude. Double ploughing and burning of grass and scrub surrounding fields and fences in early summer to starve any approaching fires of fuel became common practice amongst farmers (Pyne 1991, p. 203). According to Louisa Meredith, care needed to be taken before summer to clear away all fallen dead wood and rubbish and the high grass and bracken surrounding fences.

The fences of sheep-runs, which extend in lines of many miles in length, over the uncleared hills and forests, are those which most frequently suffer; but growing crops, stacks, farm-buildings, and dwellings are likewise sometimes swept away by the rapidly-advancing fire (Meredith 2003 [1852] vol. 1, p. 107).

Back-burning in the face of a fire threat was also used as a protective measure (Pyne 1991, pp. 203). Settlers in areas prone to bushfire or Aboriginal attack soon became aware that thatched roofs were highly flammable. When bushfires threatened in the dry summer of 1826-1827 the *Hobart Town Gazette* ran warnings, highlighting the need for vigilance against the accidental setting fire to grass and woods. It also suggested that thatch roofs should be replaced with shingles (*HTG* 16 December 1826, p. 3; *HTG* 25 March 1826).

Fire-fighting in this period was primitive and there were no dedicated rural brigades, though in serious bushfires the local military or constabulary could be called in to assist with fire-fighting efforts (*CT* 23 February 1847, p. 3). Neighbours and other community members were also relied upon to assist in the protection of life and property. By comparison, in the major towns insurance companies had taken the lead in purchasing fire engines and in forming town brigades (McNeice 1987, p.2).

#### 3.4.2 'A Black Day' 1854

As we have seen in Chapter Two, the potential for fires to get out of control on hot, windy days was recognised very early on in the life of the settlement and government orders were issued at susceptible times prohibiting the use of fire. However, it would take increasingly catastrophic fires in the 1840s and 1850s for the government finally to enact legislation to address the issue.

In the summer of 1840-1841 bushfires raged to an unprecedented extent throughout the island, causing damage to fences, crops and pasture on both sides of the River Tamar in the north, and disrupting coach traffic between Launceston and Hobart. The *Cornwall Chronicle* reported:

Bushfires have prevailed to a greater extent during the past two or three weeks than at any previous time in our recollection. Both sides of the Tamar, for many miles from the Heads upwards, have exhibited an awful appearance...

Immense destruction has been occasioned to the growing crops and fences (CC 20 January 1841, p. 2).

In the south, the *Hobart Town Courier* reported similar conflagrations, and described the countryside as more resembling the barrenness of Tierra Del Fuego than Van Diemen's Land. Cattle were dying from lack of feed (HTC 22 January 1841, p.2). The *Cornwall Chronicle* editor thought the situation so grave that legislation ought to be introduced to protect citizens against bushfire (CC 2 January 1841, p.1). Nothing was done at that stage, however, and the situation would worsen before the government stepped in.

Northern Tasmanians witnessed European Australia's first major bushfire catastrophe in the summer of 1850-1851. The devastating Black Thursday fires engulfed Victoria on 6 February and the dark smoke and ash from those fires travelled across Bass Strait, shrouding

the town of Launceston in a murky mist that obscured the sun (*LE* 8 February 1851, p. 94). James Fenton, residing at Devon on the north-west coast, recalled the spectacle in his *Bush Life in Tasmania Fifty Years Ago* (1891):

Early in the afternoon clouds came rolling over the heavens, obscuring the light of the sun in a most ominous and mysterious manner. There was a lurid glare in the sky, mixed with dense columns of blackest cloud-banks in the distance, which stole gradually upwards from the horizon until the sun became entirely obscured (Fenton 1964 [1891], pp.79-80).

Ash rained down and by 4 o'clock there was utter darkness (Fenton 1964 [1891], pp.79-80).

In Tasmania hot winds and fire also wrought destruction on that day. The whole of the 'new country' to the west of Hamilton and adjacent to the Repulse and Gordon Rivers was apparently in flames (Dobson 1854, p. 423).

In February 1852 widespread, damaging fires in the Huon region burnt numerous huts, destroyed fences and ruined crops. Two people suffered horrific burns and a subscription fund was set up to provide relief for them (*HTC* 18 February 1852, p. 3 c3).

When bushfires returned in the hot, dry summer of 1853-1854 they did so with exceptional ferocity. In December 1853 fires again threatened

properties in the Huon, as well as in the Channel at Oyster Cove and in the Richmond district (*HTC* 16 December 1853, p. 2). In January 1854 the Quaker traveller, Fred Mackie, was thwarted in his journey to the Huon by an immense, terrifying and ultimately deadly fire. He wrote on 11 January:

... for some distance we had seen large volumes of smoke rising in various directions ahead of us, ashes were also falling about us and thin smoke was diffused through the air. It was evident we were in the neighbourhood of extensive fires... The smoke ascended high into the air, spread over the face of nature and obscured the light of the sun which occasionally could be discerned red and portentous. The heat was oppressive (Mackie 1973, pp. 174-175).

Having retreated to Browns River (Kingston), Mackie reported some days later on 13 January:

We have received intelligence of the destruction of life and property by the fire on the 11<sup>th</sup> in the district of the Huon. Several individuals were severely burnt and 8 if not more lost their lives; houses and property were also destroyed... Such a conflagration has not been known before in the colony (1973, pp. 174-175).

The newspapers reported that up to 14 lives were lost in the devastating fire, which had burnt through Port Cygnet and Esperance and other parts of the Huon Valley (*HTC* 14 January 1854, p. 2). John and Jane Crowther of Peach's Bay, together with their two children, were amongst the dead (*HTC* 16 January 1854, p. 2). The fires razed houses, huts, and a hotel, and left many people homeless and destitute. Valuable crops and timber were reduced to cinders. The *Hobart Town Courier* reported: 'The awful grandeur of the scene was never surpassed in this colony, the heat was so great that gigantic trees ignited like matchwood'. Once the fire had passed the scene that presented itself was heartbreaking:

... all was desolation, the blackened earth being strewn here and there with the charred remains of animals who had perished in the flames, while the falling of numberless trees rendered it extremely dangerous to move among the ruins (*HTC* 13 January 1854, p. 2).

The *Hobart Town Advertiser* referred to the Huon fires as 'the most fearful catastrophe in the history of Van Diemen's Land', and claimed that 'the day will be marked as a black day in the chronicles of the island' (*HTA* 14 January 1854, p. 2). A Bushfire relief fund was established to assist the victims (*HTC* 10 February 1854, p. 2). Parliament was also quick to respond. In November 1854 a Bushfire Act was passed in order to prevent such deadly conflagrations from

occurring again, and to allow for the suitable punishment of offenders for starting such fires. The Act prohibited anyone from setting fire to the bush in the months of December to March without taking the necessary precautions to prevent it from spreading (*HTC* 1 September 1854, p. 2). Not all politicians were in support of the Bill. Mr Thomas Gregson opposed it, claiming that ‘fire had made Van Diemen’s Land what it then was’. He argued that fire had been an instrumental agent in clearing the bush and opening out lands which otherwise would be uninhabitable. He also argued that the Act would be near impossible to enforce (*HTC* 1 September 1854, p. 2). These views were widely shared and predominated in the decades to come.

### 3.4.3 *Summary*

While fire proved a useful tool in the European conquest of the island, the government and settlers did little to check its potentially destructive force. The replacement of Aboriginal fire regimes with European ones opened the way for less frequent high-intensity fires that proved not only highly damaging to pasture, crops, livestock, buildings and fences, but were also, on occasions, deadly. As these impacts escalated throughout this period, the government finally introduced the *Bush Fire Act of 1854*. However, as is outlined in the following chapter, the legislation was widely ignored and policing of it was largely neglected. Fire-fighting remained primitive in this period with no dedicated rural brigades. In the following decades fire continued to be used extensively

for clearing land and encouraging pasture, and also as an aid to mineral exploration. Despite increasing damage to property, industry, and timber and scenic assets by unruly fires, fire protection remained a low government priority.

### **3.5 Conclusions**

In this chapter I have traced the impacts of, and responses of British settlers to, the climatic features of Van Diemen's Land in the period 1820s to 1855 and have considered the emergence and relevance of the enduring image of the island as an 'Antipodean England'. The evidence suggests that the 'Antipodean England' construct was largely a product of inter-colonial rivalry and attempts to promote the island as a suitable place for British migrants, and did not accurately reflect the real situation.

In this chapter I have provided much evidence for the 'foreignness' of the Tasmanian climate to British settlers – its variable rainfall oscillating between periods of drought and flood, the susceptibility of the landscape to bushfires, and the impacts of severe cold and storms. I have demonstrated that, at first, farmers and graziers adopted the expedient response of acquiring more land in times of drought – a measure that proved largely unsustainable in the longer term. The resulting landscape of vast, unfenced bush runs was very different to the mode of farming carried out in Britain, and widely regarded as 'inferior' to the British 'ideal'. As settlement became more intensive,



overstocked and enclosed runs led to ‘crisis’ situations during drought. Soil compaction and erosion caused by over-grazing and land clearing also increased run-off and damage during flood events, particularly following drought periods. Changes in vegetative cover and firing practices, in turn, affected bushfire frequency and intensity.

It often took such ‘crises’ before significant changes were made – for instance, the use of irrigation in the severe drought of 1837-1842, and the introduction of bushfire legislation following the deadly fires of 1854.

During this period funding from the Home Government and the availability of convict labour meant that a number of substantial public works could be achieved, such as the construction of Toombs Marsh irrigation dam and improvements in the major road networks. In other ways, however, the government and town councils failed to protect their citizens from climatic extremes – by relinquishing control over waterways to private interests, by failing to construct adequate town water supply schemes, and by failing to regulate town growth and the city environment sufficiently to mitigate floods.

In the following chapter I continue the story of the impacts of, and European responses to, climatic extremes in the farming, mining and urban sectors of the population for the period 1856 to 1900. In this era an initial period of stagnation was followed by a mineral boom and the

expansion of settlement into the hitherto more remote regions of the island. Tourism and recreation industries also received a boost in this period as Tasmania was widely publicised as a health resort. The rise of tourism promotion as a way of redeeming the island's image in the wake of convict transportation is examined. Climate played a pivotal role in this promotion with Tasmania widely lauded as the 'Sanatorium of Australia'. The 'Antipodean England' myth also remained strong.

## PART II: TASMANIA

### Chapter Four: 'Sanatorium of Australia'?: Creating a New Tasmania 1856-1900

#### 4.0 Introduction

On 3 February 1863 the *Mercury* ran a column on 'Tasmania as a Sanatorium', extolling the island's virtues as a resort for invalids from the Australian colonies and India wishing to escape the excessive heat:

This journal has been a strenuous exponent of the benefits to be derived from the climatic peculiarities of Tasmania by the valetudinarian, the man of business worn down with physical fatigue and mental toll, by the man of luxury and ease, who anxious to escape from the burning sun of Victoria, New South Wales, South Australia and even India, might desire renewed health and vigour from a climate more temperate and agreeable. Tasmania is admirably calculated to confer these benefits (*Mercury* 3 February 1863, p. 3).

On the same page was another report – a detailed account of the previous day's weather which, emphatically, contradicted the above claim:

During the night the temperature was sultry and oppressive with scarcely a breath of air to cool it, and the morning dawned

with a hot unclouded sun, and soon a wind as from the mouth of a furnace blew in strong gusts from the north-west, forcing what remained of the dust from the previous day into the shops and houses of the citizens (*Mercury* 3 February 1863, p. 3).

This edition of the *Mercury* highlights with dramatic effect the fact that promotional images of the island's climate could be, at times, in stark contrast to the reality. Tasmania's claim to be the 'Sanatorium of Australia' was a product of the desire by Tasmanians to re-create their island's image in the post-transportation era. But how accurate an image was it? In *Sanatorium of the South? Public Health and Politics in Hobart and Launceston 1875-1914*, Stefan Petrow explores the myth that Tasmania in the late nineteenth century was the incumbent of 'health' and 'salubriousness'. His work delves into the unsavoury aspects of the histories of Hobart and Launceston in an era characterised by overcrowded slums, filth and poor sanitation and charts the progress made in public health reform prior to the First World War (1995). In this chapter I extend the exploration of this myth not only in the major towns of Hobart and Launceston, but also trace the impacts of, and responses to, drought, floods, storms and bushfire in the straggling mining camps and towns of the west and north-east, the well-established country towns of the midlands and in the 'back-blocks' of the waste land selections. I highlight the ongoing climatic dangers posed to public health,

livelihoods and property by climatic variability and concentrate on the new challenges that emerged in the period 1856-1900.

I will argue in this chapter that, in over-emphasising the ‘distinctiveness’ of Tasmania’s climate from the rest of Australia, and in the ongoing pre-occupation with the island’s ‘Englishness’, a Tasmanian ethos emerged in which climatic extremes were often ignored or dismissed as ‘uncharacteristic’. This contributed to a state of under-preparedness to deal with the negative effects of severe weather events. In section 4.1 the emergence of the ‘Sanatorium of Australia’ myth in this period is charted, as well as alternative views, in sections 4.2-4.4 the new challenges posed by drought, floods and storms and bushfires, and the major responses to them, in the period 1856-1900 are traced, and conclusions are set out in section 4.5.

#### **4.1 The Sanatorium of Australia Myth**

Concerns about the influence of the atmosphere on human health were prominent at this period (Golinski 2007, pp. 137-138). Health was viewed as inextricably linked to climatic and geographic features. Temperature, atmospheric conditions, prevailing winds and characteristics of the local soil and vegetation were all believed to affect a person’s health. This reflected the concerns of the Hippocratic tradition, with ‘airs, waters and places’ deemed to be causes of disease (Anderson 2002, pp. 13-15). British constitutions were perceived to be

vulnerable when placed in new climatic and geographic locations, such as prevailed in the colonies (Anderson 2002, p. 14).

As we have seen in chapter three (section 3.1), a number of commentators believed Van Diemen Land's bracing weather to be invigorating and described its climate as 'salubrious'. It was believed to be especially fitting for a European constitution (see also Parker 1834, p. 74; Breton 1834, p. 418). From the 1820s and 1830s Tasmania was officially promoted as a place of retirement for ex-army officers from India, with the vision that it would provide an ideal restorative escape from the debilitating heat of the tropics (*HRA* ser. 3, vol. 8, p. 892, note 397; Stilwell 1992, pp. 11-13).

According to the *Hobart Town Almanac* the local vegetation contributed to the healthy environment:

The aromatic trees and shrubs... impregnate the air with their perfume [which] cannot fail in some degree to spread a certain feeling of health and comfort over the human frame (*Hobart Town Almanac* 1831, pp. 39-40).

It argued that the active, outdoor life experienced in the colonies was beneficial (although the excessive consumption of food and alcohol was thought to counteract it to some degree) (*Hobart Town Almanac* 1831, pp. 39-40). G.T.W. Boyes thought the native-born youth to be comparatively less inclined to the childhood illnesses of measles,

whooping cough and chicken pox. He wrote: 'they are such beauties, you cannot imagine such a beautiful race as the rising generation in this Colony' (Chapman 1985, vol. 1, p. 496).

These beliefs in the 'salubriousness' of Tasmania's climate took on a new depth of meaning in the post-convict era. In 1853 transportation of convicts to the island ceased and the shackles of the tainted 'convict' past had begun to be discarded. A new spirit of confidence imbued Tasmanian society following the granting of responsible self-government in 1856. Van Diemen's Land was officially re-named Tasmania in an effort to throw off the island's old associations as the receptacle for the criminal classes of Britain. According to Anthony Trollope,<sup>41</sup> the name 'Van Diemen's Land' became odious to the ears of Tasmanians 'as being still tainted with the sound of the gaol and harsh with the crack of the gaoler's whip' (Trollope 1967 [1873], p. 488). When, in 1898, a bushfire ripped through the old penal settlement at Port Arthur, the premier symbol of convictism on the island, it destroyed in its path the old penitentiary which had, over the years, housed thousands of criminals. Few lamented its loss (see Young 1996).

Although attempts could now be made to put the convict associations of the name 'Van Diemen's Land' to rest, it was conceded that it was under

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<sup>41</sup> Anthony Trollope (1815-1882) was a British born novelist and civil servant who travelled extensively in the Australian colonies in 1871-1872. His *Australia and New Zealand* was published in 1873 (R. B. Joyce, 'Trollope, Anthony (1815 - 1882)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A060324b.htm>).

that name that the island had achieved its greatest prosperity. With funds supplied by the British government and convict labour ‘roads were made, and buildings were erected, and river banks were cleared, and forests were cut down’ (Trollope 1967 [1873], p. 488). By throwing off its convict past, Trollope argued, Tasmania had also thrown itself into public debt (1967 [1873], p. 489).

Although the mid-1850s were a period of prosperity, riding on the back of the Victorian gold discoveries, confidence soon languished (Bolger 1968, p. 9; Townley 1955). A great depression, lasting from 1858 until the mineral boom of the 1870s and 1880s, cast Tasmania deep into the shadows of its prosperous neighbours, Victoria and New South Wales. Population, industry and commerce all stagnated. Farming interests were also generally in decline. Charles Dilke<sup>42</sup> wrote in 1868: ‘It is disheartening... in an English colony, to see half the houses shut up and deserted, and acre upon acre of old wheat-land abandoned to mimosa scrub’ (Dilke 1985 [1868], p. 132).

Many young people departed across Bass Straits to the goldfields and Tasmania gained a reputation as ‘Sleepy Hollow’, with its inhabitants ‘lacking vigour and energy’ (Trollope 1967 [1873], p. 503; Martineau 1869, p. 69). Trollope wrote in 1873: ‘It seems hard to say of a new

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<sup>42</sup> Sir Charles Wentworth Dilke (1843-1911) was a politician and author born in London. He travelled extensively in the Australian colonies in 1866 and published his *Greater Britain: A Record of travel in English-speaking countries during 1866 and 1867*, the following year. It ran to eight editions (Sally O'Neill, ‘Dilke, Sir Charles Wentworth (1843 - 1911)’, *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A040070b.htm>).



colony, not yet seventy years old, that it has seen the best of its days, and that it is falling into decay, that its short period of importance in the world is already gone' (1967 [1873], p. 487).

Talk of annexing Tasmania to Victoria in the late 1860s caused great anxiety in a society which prided itself on its new found independence. The growing number of native-born Tasmanians, which by 1881 constituted 73 percent of the population, would have been particularly dismayed by the thought of incorporation with Victoria (Reynolds 1971/72, p. 18). Tasmanian folklore, customs and festivals, such as the Hobart Regatta, had fostered a sense of local identity. The bitter fight to end transportation had also rallied colonists together and increased their sense of loyalty and responsibility for the island and engendered a spirit of hope for the future (Reynolds 1971/72, p. 20).

It became obvious that an independent government and a name change were not enough to attract immigrants and investment. The government and enterprising individuals looked for ways to re-invent Tasmania's image and promote its assets. With an inglorious and tainted 'past' and a failing economy, the island's climate and scenery was a natural choice.

In his 1871 emigrant's guide to Tasmania and New Zealand, Rev. J. Baird pictured a rosy future for Tasmania:

... the Tasmania of the future is likely to be as attractive socially as it is now in respect of climate and scenery. Along

with the gradual elimination of the convict element there will be an influx of retired merchants and capitalists from the Australian colonies of the continent; the island affording so many picturesque sites for country seats, with their lawns, gardens, and pleasure-grounds being, besides, so much better watered than most parts of the mainland, and being free from the 'hot winds' (1871, p. 4).

As we have seen, from an early stage, Tasmania's climate had been considered particularly 'salubrious' and it was promoted as the 'most English' of the Australian colonies. T. C. Just, in *Tasmaniana*, published in 1879, claimed that the climate of Tasmania was 'one of the most pleasant and salubrious in the Southern Hemisphere' (1879, p. 25). He also claimed that Tasmania was the 'Garden of Australia', where freshness and beauty could be found in abundance, contrasting starkly to the parched lands and scorching winds of the continent (1879, p. 32). In a later (1883) publication he claimed:

The valetudinarian will find in Tasmania a climate genial and bracing, fitted to ameliorate most of the 'ills that flesh is heir to'. The air is clear and generally cool; while violent extremes of temperature, so trying in other countries, are rarely experienced... The rainfall is abundant, but seldom excessive, and although there are occasional floods, they are rarely of

sufficient magnitude to be dangerously destructive (1883, pp. 4-5).

In Tasmania, health officials often accounted for high or low mortality rates by changes in atmospheric and meteorological conditions, and for a number of years the meteorological observations were published in the *Royal Society Papers and Proceedings* alongside the vital statistics for the colony (see *RSTPP* 1863-1865, 1870-1872). Statistics were bandied about to support the claim that Tasmania's climate was exceptionally 'salubrious'. While medical officer, Dr Edward Swarbreck Hall,<sup>43</sup> was often scathing about the insanitary conditions experienced in Hobart city as a result of overcrowding and poor municipal management, he believed the Tasmanian climate to be healthy in the extreme:

Invalids from India, China, and the hotter Colonies of Australia, if not past recovery, speedily rally in Tasmania, and the increased appetite for food is the first and most surprising change. With such clear skies, abundance of ozone, bracing sea breezes, the lamp of life burns quickly, as well as brightly, and demands a much more abundant and nutritious supply of food than suffices elsewhere... Tasmanians spend much of their time

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<sup>43</sup> Edward Swarbreck Hall (1805-1881) was of English origin and studied medicine in Dublin and London. He emigrated to Hobart in 1832. He held a number of medical posts in the country districts, and in 1875 was appointed Municipal Officer of Health in Hobart. He was an outspoken advocate of vaccination and sanitary reform (no author; 'Hall, Edward Swarbreck (1805 - 1881)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A010458b.htm>; see also Haynes 1978).

in the open air, and many of the diseases which afflict European communities are unknown... The children of Tasmania are as plump and rosy as the finest specimens in England, and the rosy cheek does not disappear in adult life (Hall 1862, p. 47).

Hall concluded his article on the 'Climate and Health of Tasmania' by stating:

Few countries in the world... can equal this beautiful isle of the south sea – young Tasmania – as an abode where the human race may dwell comfortably, healthily and to a ripe old age, without deteriorating either physically or morally from the elevated position their British progenitors held among the nations of the earth (1862, p. 49).

Clear mountain air and scenery, which were in abundance in Tasmania, were believed to be physically and mentally invigorating (Kevan 1993, p. 120). Medical practitioners often recommended stints in such climes for sufferers of a host of conditions, but most notably for ailments of the respiratory and digestive systems (Kevan 1993, p. 120). Such prescriptions formed the basis of a growth in medical tourism in the nineteenth century (Kevan 1993, p. 119-120). Switzerland was one country which had benefited substantially from the promotion of mountainous regions as health resorts (Walker 2008a, p. 65). Powell has

outlined the importance of such 'health' promotion on migration and settlement patterns in other Australian colonies and parts of the New World in the nineteenth century (1978, pp. 119-143). Additionally, notions of the sublime and picturesque became popular in the Romantic Movement of the nineteenth century, adding to the attractions of mountain regions for tourists. The work of local artists such as W. C. Piguenit and Haughton Forrest, and photographers such as J. W. Beattie, drew upon these traditions in the Tasmanian context (Robson 1991, pp. 167-168; see also Haygarth 2008).

Seaside locations, due to their perceived high ozone levels and 'pure' air, were also gaining in popularity as health resorts by the late nineteenth century (Kevan 1993, p. 117; Inglis 1999, p. 23). This contributed to the popularity of a number of Tasmanian coastal areas in the north-west and east of the island (Walker 2008, pp. 160- 161).

Tasmanians utilized these medical beliefs in promoting their island. Slogans such as 'Sanatorium of the South', 'The Switzerland of the South' and 'the Garden of Australia' were spread widely in attempts to lure emigrants, and later tourists, to the island (see Walker 2008). These claims took on a new purpose and vigour in the face of a stagnating economy and population drain.

In the first instance, however, they largely failed. Although incentives were offered by the government, few emigrants arrived. In 1858 the

government of Sir Henry Fox Young<sup>44</sup> proposed that a sanatorium for Anglo-Indian military invalids be established in the capital. It was argued that Tasmania's climate was ideal for the restoration of health after service and exposure to disease in the tropics of India (*TPP* 1858 *H.A.J.* no.1). The proposal, however, failed to materialize (Walker 2008, pp.156-158). A further scheme to attract Anglo-Indians to the Castra settlement in the north-west was initiated in 1865. Although over 40 initially bought land, by 1880 only half remained – primarily due to the lack of roads and the hard work involved in settling in such a remote place (Stilwell 1992, pp. 11-28; Walker 2008, p. 158).

The government operated a 'bounty' scheme from 1854 to 1890, whereby subsidized passages were offered to nominated immigrants from Britain. Later free grants were offered as an inducement (Crowley 1954, p. 104). Although initially quite successful, numbers soon dropped away. Between 1860 and 1890 only about 5100 government-assisted immigrants arrived in the colony from Britain (300 or so less than had arrived in the single year of 1855) (Crowley 1954, p. 104). Not all the new immigrants during this period planned to stay – many saw the

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<sup>44</sup> Sir Henry Edward Fox Young (1803-1870) was born and educated in England. In 1848 he arrived in Adelaide to take on the position of Lt. Governor of South Australia, before being moved to Tasmania. He arrived in Hobart in January 1855 and acted as Governor until his resignation in 1861, whence he returned to London. He proved unpopular with local politicians in both colonies (H. J. Gibbney, 'Young, Sir Henry Edward Fox (1803 - 1870)', *Australian Dictionary of Biography*, Online Edition, updated continuously, viewed 1/4/2011, published by Australian National University, <http://www.adb.online.anu.edu.au/biogs/A060485b.htm>).

colony as a convenient 'stepping stone' to the Victorian goldfields (Crowley 1954, p. 106).

Whilst the immigration schemes were largely unsuccessful, tourism displayed better prospects. By the 1870s and early 1880s the ports of Hobart and Launceston were attracting a steady stream of visitors in the summer months, many of whom were intent on escaping the oppressive heat and hot winds of the Australian continent. Marcus Clarke,<sup>45</sup> who visited the island in 1870, wrote in his novel, *For the Term of His Natural Life*:

The hot wind, born amid the burning sand of the interior of the vast Australian continent, sweeps over the scorched and cracking plains, to lick up their streams and wither the herbage in its path, until it meets the waters of the great south bay; but in its passage across the straits it is reft of its fire, and sinks, exhausted with its journey, at the feet of the terraced slopes of Launceston (Clarke 1911, p. 83).

Cheap boat fares aided the influx. The opening of railway connections throughout the island in the 1870s also proved a boon to the tourist trade.

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<sup>45</sup> Marcus Andrew Hislop Clarke (1846-1881) was a journalist and novelist born in London. In 1863 he emigrated to Melbourne and by 1867 was working for the *Argus*. He later worked for the *Melbourne Herald*, *Daily Telegraph* and *Age*. In 1870 he was editor of the *Australian Journal* where his 'His Natural Life' was first published in instalments over two and a half years. He later worked for the Public Library of Victoria (Brian Elliott, 'Clarke, Marcus Andrew Hislop (1846 - 1881)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A030392b.htm>).

The visitors gave the towns a lively aspect in the summer months  
(Bolger 1968, pp. 13-14).

However, as the population of Tasmania's towns increased and outbreaks of typhoid and diphtheria became more common from the 1870s and 1880s, the island's claim to 'salubriousness' came under attack. Dr Harry Benjafield<sup>46</sup> claimed in 1874 that the death rate for Hobart was 23.3 per thousand people – a figure which was on par with that of New South Wales and only slightly below the figure for the larger towns of England. The *Mercury*, in response, claimed that the presence of a large number of 'decrepid and broken-down' men and women of the old convict class had swelled the city's death rate and painted an unrepresentative picture (*Mercury* 17 October 1874, p. 2). Petrow has argued that pre-occupations with Tasmania's image of 'salubriousness' led to the official down-playing of any sanitary problems and epidemics of disease in the major towns that had the potential to tarnish that reputation (Petrow 1995, p. 134).

By the 1860s and 1870s medical science was moving away from 'geographic and climatic' theories of disease to theories of contagion, which attributed the cause of epidemics to overcrowding, poor hygiene

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<sup>46</sup> Dr Harry Benjafield (1845-1917) was born in England and studied medicine at University College, London and the University of Edinburgh before migrating to Hobart in 1873. He was an exponent of homeopathic medicine and in 1899 established a homeopathic hospital (St. John's) in Hobart (Michael Roe, 'Benjafield, Harry (1841 -1917)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/AS10034b.htm>).



and sanitation, and contaminated water supply. Movements began in the towns for improved sanitation to stem the tide of such epidemics. As contagion theories gained increasing popularity in the late 1800s, the tourism emphasis shifted from the promotion of the ‘curative’ powers of climate to the ‘restorative’ influence that it could have on ailing bodies (Anderson 2002, p.56).

The image of Tasmania as the ‘Sanatorium of Australia’ did not require a relaxation of ties to the old country – in fact, it was intimately tied to it. Historian, Lloyd Robson in the Eldershaw Memorial lecture of 1971 claimed that one of the most important themes in nineteenth century Tasmanian history was its ‘Britishness’. He argued that Tasmanian colonial society was always a profoundly derivative one – being linked to the Empire rather than deeply Australian or Tasmanian: ‘The tie with Britain was so great that it led the essentially insecure colonists to grasp [the imperial connection] to their hearts’ (1972, p. 14).

Tasmania’s climate was lauded as the most English of the colonies and English loyalties remained intact (Reynolds 1971/72, p. 24). Trollope remarked that ‘everything in Tasmania is more English than is England herself’ and that ‘Tasmanians in their loyalty are almost English-mad’ (1967 [1873], pp. 519-520). The patriotic fervor surrounding Queen Victoria’s Jubilee in 1887 is used by Robson to demonstrate the strength of loyalties to Empire in Tasmania during this period (1972, p. 13). Acclimatisation societies, aimed at introducing familiar plants, birds, fish

and animals from the Home Country, flourished in the colonies in the latter part of the nineteenth century (Barr and Cary 1992, p. 24). A society was formed in Tasmania in 1862 which was instrumental in introducing a number of exotic flora and fauna, including trout.

According to Reynolds, the emerging Tasmanian identity in this period was largely the product of the educated middle-classes and, as such, differed from the emerging radical nationalism generated by the emancipist class in New South Wales (1971/72 p. 21). It was moderate and pro-imperial in character (Reynolds 1971/72, p. 28). Walker's thesis on the evolution of the tourism image in Tasmania 1803-1939 argues that these images of Englishness and salubriousness, which were used to promote Tasmania to emigrants and tourists in the nineteenth century, became 'so entrenched in the Tasmanian psyche that they provided the colonists with a significant 'sense of place'' (2008, p. 386). However, she also identifies a 'Vandemonian' spirit present amongst sections of the Tasmanian convict and working classes, and the native-born, which spurned such associations with the Empire. This spirit, however, was a much weaker force than the predominant 'pro-England' ethos (Walker 2008, p. 80).

The Tasmanian promotion of a 'salubrious' climate was particularly strong in the nineteenth century, but was also evident as late as the 1950s and 1960s, when tourist preferences began to change towards warmer, sunnier climes (Haynes 2006, p. 33). Through the promotion of the

island's salubriousness, Englishness and picturesque scenery, an image of 'distinctiveness' and 'separateness' from mainland Australia was generated. According to Bolger, by the early 1900s Tasmanians considered themselves neither fully Australian nor non-Australian (1968, p. 15). Reynolds argues that Tasmania's involvement in the Federation movement was spurred on more by economic and practical considerations than by any feelings of identification with an emerging 'Australian' nationalism (1971/72, p. 27). Prior to Federation, he argues, in many parts of Australia regional loyalties were the precursors to a more national outlook (1971/72, p. 30).

I argue in this chapter that the droughts, floods and bush fires which affected the lives of the island's population periodically were downplayed both in the promotion of the island to outsiders and in the emerging island identity. When such events did occur they were usually dismissed as 'unusual' or 'uncharacteristic' and it was generally remarked that the situation, however bad, was much worse in the neighbouring colonies. In March 1868, on a day when the weather was swelteringly hot and dusty and bushfires raged, the *Mercury* contrasted the weather to that of Adelaide, where business had been brought to a standstill due to the heat. It was remarked: 'How grateful... we ought to be that the heat here is so refreshingly tempered by the cool sea breeze, and that, even at its highest, it is not unendurable' (*Mercury* 13 March 1868, p. 2).

Tasmanians often greeted severe weather events with shock and disbelief. After a period of fierce storms and unseasonal cold weather in December 1875, the editor of the *Mercury* exclaimed: ‘the weather for a long time past has been anything but Tasmanian’ (*Mercury* 2 December 1875, p. 2). When extensive bush fires devastated large areas of the island in the summer of 1897-1898, a correspondent to the *Mercury* claimed that we ‘never dreamt that bush fires in Tasmania would cause death and disaster such as that recently experienced’ (*Mercury* 17 January 1898, p. 4).

#### 4.1.1 *Alternative Views*

Whilst many were in denial about the negative impacts of Tasmania’s climate, some took a more realistic view. James Bonwick,<sup>47</sup> in his *Climate and Health in Australasia* (1886), threw doubt upon the boosters’ claims. Tasmanian weather, he claimed, could be extraordinarily cold, and at other times, scorchingly hot – both of which ‘might shake the bloom from the poetic fancy’ (1886, p. 4):

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<sup>47</sup> James Bonwick (1817-1906) was born in England. He arrived in Hobart in October 1841 to manage a school, but soon established his own boarding school in Glenorchy. In 1850 he left for the mainland where he established schools in South Australia and Victoria and published numerous works of an historical or anthropological nature. Returning to England in the 1870s he researched the early years of the Australian colonies and his work produced the basis of the *Historical Records of Australia* series (Guy Featherstone, ‘Bonwick, James (1817-1906)’, *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A030182b.htm>).

... no colony of Australasia [except New Zealand] can display greater variety of climate. An excess of rain and a deficiency of rain, plains scorching in summer covered with snow in winter, gullies typical of repose and shores ever assailed by tempests, vales of eternal spring and peaks of eternal frost... The Author has been caught in a blinding snowstorm on a Tasmanian plain, where in another season he encountered a furious hot wind (Bonwick 1886, pp.1-2).

Yet even Bonwick confirmed his belief in Tasmania as a premier health resort (1886, p. 18).

A number of forestry experts, scientists and concerned citizens also put the island's climatic extremes under the microscope in this era. These emerging champions of forest conservation were influenced by theories linking forests and climate. The publication of *Man and Nature* (1864) by the American, George Perkins Marsh, drew attention to the influence of deforestation on local weather patterns. Marsh argued that forests had the capacity to temper climatic extremes of hot and cold and lessen the effects of droughts and floods. From the 1880s concerned individuals increased pressure on the government to take appropriate measures to protect the island's scenic and forest areas. In 1881 legislation was passed enabling the government to establish timber reserves and in 1885 a State Forests Act gave the Governor power to appoint a Conservator of Forests. The island's first scenic reserve was declared at Russell Falls

(now part of Mt. Field National Park) in that year. In 1886 the government appointed George Perrin<sup>48</sup> as Tasmania's first Conservator of Forests and from the beginning he took an active role in promoting the climatic benefits of reserving forests and protecting them from fire and needless destruction:

... the improvement of the rainfall; the prevention of floods in the retention of the water in the soil instead of rapidly flowing away, as is customary on bare exposed places; the toning down of the winter cold, and the cooling of the heat of summer, by means of the respiration of leaves (*TPP* 1887, *HAI* no. 59, p. 4).

Perrin also argued that trees could prevent landslips and provide shade and shelter from strong winds. *En masse* they protected the agricultural and pastoral lands from extreme cold and the spread of stock diseases such as fluke. He called the common farm practice of ringbarking trees 'reprehensible' (*TPP* 1887, *HAI* no. 59, pp. 4-6). He suggested that tree-planting was an action that individuals and governments could take to ameliorate the impacts of a harsh climate and argued that a co-ordinated program of systematic planting would 'produce a wonderful change in the climate, soften the rigorous nature of the ice-laden winds, and give comfort and shelter to the stock depasturing thereon' (*TPP* 1887, *HAI*

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<sup>48</sup> George Samuel Perrin (1849-1900) was born in England and migrated with his parents to Victoria in 1853. In 1880 he became a forester for the government of South Australia. In 1886 he was appointed Conservator of Forests in Tasmania until 1888 when he was appointed to the equivalent role in Victoria. He died in Ballarat, Victoria (Hall 1978, p. 103).

no. 59, p. 15). Towns would also benefit from the protection of the forests on their doorstep. In a report on Mt. Wellington in 1887 Perrin outlined the threats to the forested slopes and gullies of Hobart's primary tourist and recreational 'playground'. The denudation of its trees, he argued, would harm the city's water supply, increase the risks from flooding and destructive winds, and make the town more vulnerable to episodes of severe heat and cold (*TPP* 1887, *HAI* no. 61).

In 1890, W. T. Brown, a successor to Perrin, advocated that Tasmania introduce an Arbor Day to re-forest large areas of what he considered the 'treeless wastes' of the midlands (*TPP* 1890, *HAI* no. 63, p.7; Young 1991, p. 52). Arbor Day had been introduced in Adelaide the previous year.<sup>49</sup> Leonard Rodway,<sup>50</sup> the government botanist, in a paper read before the Royal Society of Tasmania in August 1899, outlined his vision for state run nurseries, whereby saplings would be raised by the government and distributed at low cost to landholders. The benefits of such a scheme, he argued, would be to moderate climatic extremes:

The farmer knows only too well the dessicating effect of hot  
dry winds parching up his fields and pastures: he knows as well

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<sup>49</sup> For more information on Arbor Day see Robin 2007, pp.21-23.

<sup>50</sup> Leonard Rodway (1853-1936) was born in Devon, England and trained as a dentist. In 1880 he migrated to Tasmania where he practiced as a dentist until 1923. He was better known, though, for his botanical interest and work. He presented numerous papers to the Royal Society of Tasmania and in 1896-1932 served as honorary government botanist. He played an important role in the conservation of Tasmania's first scenic reserves under the Scenery preservation Act 1915 (Ann Elias, 'Rodway, Leonard (1853 - 1936)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A110443b.htm>).

the effect on his stock, and the conditions of his paddocks, in the heat of summer, and the bleak cold of early spring.

Judicious tree-planting has been found in other countries an effectual help in both cases (Rodway 1898-1899, p. liii).

He also expressed disappointment in the government's lack of action on the issue at that time:

The policy of past Governments have been confined to a limited attempt to conserve the wealth of our virgin forests. There has been no grasp of what might have been done beyond this. Of the timber industry that could have been built up; of the enormous advantage of conserving the water that falls on the land in the form of rain and dew; of the changes in climate, much of which is certain, though much is problematical, they appear not to have troubled themselves... The office of Conservator was first curtailed and then abolished.<sup>51</sup> (1898-1899, p. liii).

Individuals, such as Perrin and Rodway faced not just government inaction, but also much opposition in a colony with an ingrained culture of unrestrained forest clearing and burning.

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<sup>51</sup> When W. Brown resigned from the position of Conservator of Forests in 1892 the position was not re-filled (Carron 1985, p. 62; Young 1991, p. 54).



#### 4.1.2 Meteorology

In an era when meteorologists in other states, such as Charles Todd<sup>52</sup> and Henry Russell,<sup>53</sup> were expanding the weather observation and forecasting network across Australia and developing theories on the cycles of climatic variability experienced in Australia, Capt. Shortt, the Tasmanian government meteorologist<sup>54</sup> appointed in 1882, remained aloof from his counterparts in the other colonies. Shortt was largely uninterested in inter-colonial collaboration and contented himself with merely collecting and issuing his observations (Day 2007, p. 5). He was replaced after his death in 1892 by Henry Kingsmill. The paucity of Tasmanian meteorology came under notice in 1896 when Queensland

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<sup>52</sup> Sir Charles Todd (1826-1910) was an astronomer and meteorologist who migrated from England to South Australia in 1855 to take up the positions of government astronomer and superintendent of the electric telegraph. He was instrumental in establishing telegraphic communications between mainland centres and in setting up hundreds of weather observation stations. He advocated communication of meteorological information between centres and produced the first Australian weather maps. In 1888 he identified the long-range connections between the climate in India and Australia (G. W. Symes, 'Todd, Sir Charles (1826 - 1910)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 21/3/2011, <http://www.adb.online.anu.edu.au/biogs/A060301b.htm>; see also Douglas 2007).

<sup>53</sup> Henry Chamberlain Russell (1836-1907) was born and educated in New South Wales. He joined the Sydney Observatory in c.1860 and by 1870 had been appointed government astronomer. He increased the number of weather observation stations and was instrumental in implementing a system of weather forecasting. He proposed that Australian weather ran in 19 year cycles of drought and rainfall (G. P. Walsh, 'Russell, Henry Chamberlain (1836-1907)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 21/3/2011, <http://www.adb.online.anu.edu.au/biogs/A060085b.htm>; see also Douglas 2007).

<sup>54</sup> Following the retirement of Francis Abbott from the role of meteorological observer in Hobart in 1880 there was a gap in recording of two years before the formation of the State Meteorological in April 1882. Captain Shortt filled the position of government meteorologist from 1882 until his death in 1892. He was replaced by Henry Kingsmill. The meteorology office was located at Anglesea Barracks in Hobart (BOM 2008b, p. 4).

meteorologist Clement Wragge<sup>55</sup> visited the island. In his subsequent report Wragge recommended a suite of improvements to standardize equipment and recording procedures in line with other services across the Australian colonies. He opened a new experimental recording station on Mt. Wellington and suggested locations for other new stations. Wragge also introduced a weather forecasting service which was co-ordinated and issued from his office in Queensland and published in local newspapers. This service included the issue of storm warnings to advise vessels in port of any expected bad weather (Wragge 1896). These changes to the weather service of Tasmania brought it in line with other colonies and by 1901 Tasmania had ten meteorological recording stations and 80 rainfall stations which supplied daily weather records to the mainland (Douglas 2007, p. 22). Despite such advances, by Wragge's own admission, meteorology remained an 'inexact' science (in Douglas 2007, p.13).

#### 4.1.3 Summary

In the above section I have outlined the rise of the 'Sanatorium of Australia' myth and its connections with the 'Antipodean England' myth

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<sup>55</sup> Clement Lindley Wragge (1852-1922) was born in England. In 1876 he joined the South Australian Surveyor-General's Department. He studied meteorology and in 1887 was appointed meteorological observer to Queensland. He was an advocate of a national weather bureau, and was bitterly disappointed that he was not appointed head of the new Commonwealth Bureau of Meteorology when it was formed in 1907. He re-located to New Zealand where he died in 1922 (Paul D. Wilson, 'Wragge, Clement Lindley (1852 - 1922)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 22/3/2011, <http://www.adb.online.anu.edu.au/biogs/A120646b.htm>).

that continued to strengthen in the period 1856-1900. I have also outlined some alternative views, although they remained weak in this period. Even Tasmanian meteorology failed to counteract false impressions of the island's climate. Drought, floods and fire continued to be viewed as 'uncharacteristic' and 'un-Tasmanian'. By contrast, the reality of the situation is given in the sections below, whereby the impacts of, and responses to, drought, floods and storms and bushfire are outlined.

#### **4.2 Drought: 'Scorching Plains' and Contaminated Water**

New challenges were faced in this era – rabbit plagues, the diversification of agriculture into dairying, hop and orchard production, the opening up of forest areas for small-scale selection and mineral extraction, and further town growth all added to the consequences of drought in the period 1856-1890s. Widespread drought occurred in 1868, extending to the winter of 1870 in some parts of the south and east (*Mercury* 8 September 1868, p. 2; *Mercury* 30 January 1869, p.4; *Mercury* 20 April 1870, p. 3). In Hobart, rainfall for the year 1868 was just 18 inches (BOM 1936). At Kelvedon, near Swansea on the east coast, rainfall was also below average for the years 1868 and 1869 (UTAS C7/119; BOM 2011). According to Gergis and Fowler, 1868 was a very strong El Nino year (2009, p. 368). The years 1887-1889 were also very dry, with drought extending from October 1887 to May 1889 in

the south and October 1887 to December 1888 in the north (Foley 1957, p. 41). Again, a very strong El Nino was in force in 1888 (Gergis and Fowler 2009, p. 368). The closing years of the century were also exceptionally strong El Nino years, with widespread drought present in the years 1896-1902 (Foley 1957, p. 42; BOM 1936, p. 120; Gergis and Fowler 2009, p. 368). Based on the rainfall statistics for Hobart other years that experienced low rainfall were 1857, 1860, 1862, 1871, 1877, 1884, 1886 and 1892 (BOM 1936, p. 120).

El Nino conditions caused severe drought in many parts of mainland Australia in the early to mid-1880s and from 1895-1903 (dubbed the Federation Drought) leading to the retreat of European farming from arid and semi-arid areas (see Garden 2009, pp.195-196; pp. 239-243; Meinig 1962).

#### 4.2.1 *Changing Rural Landscapes*

In his annual report for 1871, W.E. Warner, the Collector of Agricultural Statistics for Ross in the northern midlands, remarked that pastoral estates in his district had been so overrun with rabbits for the last two years that stockowners had been forced to reduce their flocks. The dryness of that year had also contributed to pasture denudation, as well as poor crops in the district (*Statistics of Tasmania* 1871, p. 189).

Rabbits had been introduced into the colony in the 1820s and by 1870 they were in plague proportions throughout the old settled districts. They

proved a resilient pest. During periods of drought they reduced already flagging pastures to bare earth prone to erosion. Between 1858 and 1871 the number of sheep in the colony fell by nearly 250 000, with 50 000 or more of that loss being attributed to the influence of rabbits (*TPP* 1871 *HAI* no. 13, p. 5). Low prices, economic stagnation and disease (such as scab and fluke) had also contributed to the decline (Easteal 1971, p.288).

In a letter written in 1872 by Rev. J. Mayson of Swansea on the east coast, the rabbit problem was described in graphic detail:

In some parts of the island the rabbits have increased so as to become a perfect scourge. Many properties in the interior of the colony have a light sandy soil in which the rabbits burrow to such an extent that cattle and sheep have to be removed to save them from starvation. Cultivation is suspended from the same cause; the ground appears to be alive with them. A plague of locusts could scarcely be more destructive (*Mercury* 29 July 1872, p. 3).

Adding further pressure on pastures in the settled districts was the fact that much of the central plateau, which had previously been used to provide alternative pasture during summer droughts, had become riddled with the parasitic fluke. Pastoralists largely abandoned the high country runs from the late 1850s to the 1890s as a result (*TPP* 1869 *HAI* no. 43;

*TPP* 1871 *HAI* no. 49; *Mercury* 28 January 1865, p. 2; Cubit *et al* 2008, pp. 85).

Despite the government passing the *Rabbit Eradication Act* in 1871, which entrusted the problem to local boards, eradication attempts failed miserably. According to Rootes the work of these local boards was hampered by inadequate funds and apathetic landowners as well as by the explosion in rabbit numbers (2008, p. 235). In 1879 Thomas Just wrote in his guidebook to Tasmania that, although over one million rabbit skins had been exported in the past year, in his opinion rabbits were more numerous than ever, ‘spreading all over the country, even into country not favourable for burrowing’ (1879, p. 31). In the following decades, responsibility for rabbit eradication was transferred to a government department, then back to local boards, and finally to municipal councils, all with little effect (Rootes 2008, pp. 243-245, 253-254).

The combined effects of overgrazing by stock and rabbits on enclosed runs led to a rapid decline in native grasses. Wallace, in *The Rural Economy and Agriculture of Australia and New Zealand*, published in 1891, wrote:

A number of the best native grasses of Australia have been eaten down by sheep (and more recently by rabbits) and prevented from seeding, so that they have practically

disappeared from fenced-in pasture land – specimens of them may be found on roadsides and railway banks, or on such places as are not regularly pastured (1891, pp. 294-295).

As the native grasses became depleted, scientists and some farmers experimented with different varieties of introduced pasture grasses in order to ascertain those best suited to withstand the Tasmanian climate. The Council of Agriculture<sup>56</sup> played a leading role in this transition. By March 1901 over 300 000 acres of land had been sown in permanent introduced grasses throughout the island, with over half of that area being in the north-west division (*Statistics of Tasmania* 1900). The Council of Agriculture was also active in promoting the use of silage to provide feed for stock at times of shortage. Silage was commonly used in America and also in Queensland (*RJCAT* Nov 1892, p. 35; Dec 1892, p. 46). The use of such methods, however, remained negligible in Tasmania.

Soil exhaustion, in tandem with loss of capital and skilled labour, also led to a decline in the island's traditional grain crop production during this period (Blainey 1954, p. 66). As crops failed or became uneconomical to sow the land reverted to sheep runs. An observer noted in 1876:

Everyone who has travelled much in the interior must have been struck with the large tracts of land that have gone out of

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<sup>56</sup> The Council of Agriculture was formed by the Tasmanian government in 1891.

cultivation; and unless a change is made in the prevailing system of farming the whole colony must, within a period that can be easily computed, become one vast sheep run (*Mercury* 12 April 1876, p. 2).

Although guano and bone dust were used by some farmers to improve soil fertility they generally proved uneconomical. From the 1880s increasing quantities of flour and wheat had to be imported (Easteal 1971, p. 287). Whilst wheat production made a brief come-back in the late 1890s, a long-term trend of conversion from cropped land to pastoral land was well underway (*Tasmanian Yearbook* 1967, p. 180). In the drought of the late 1890s local meat was also scarce and the Tasmanian Parliament, under pressure, temporarily reduced the import duty on meat to alleviate the shortage (*Mercury* 31 December 1898, suppl. p. 1).

While the cultivation of grain crops may have been in decline and the pastoral industry stagnating, several relatively new agricultural enterprises were emerging. Dairy farming, hop-growing and orcharding had grown in popularity since the 1850s. Developments in refrigeration in the late nineteenth and early twentieth centuries aided the expansion of the Tasmanian fruit and dairy export industries (McGowan 1989, pp. 27-36; *Mercury* 27 May 1922, p. 11).

By 1891 there were over 400 dairy farmers on the island (Cassidy 1995, p.8). Dairying activity increased significantly after 1892, largely due to



the efforts of the Council of Agriculture in establishing butter factories (Easteal 1971, p. 292). Dairying, reliant on sufficient rainfall to provide lush pasture, was more prominent in the north of the island. As pastures shrivelled up and feed became scarce during drought, the milch cows also became dry and milk production dropped dramatically. During the drought year of 1888 the dairy industry at George's Bay in the north-east suffered greatly. A correspondent to the *Mercury* wrote:

The weather continues to be dry and hot, and the surface of the earth... presents a uniformity of parched and blackened barrenness. The remains of what was once grass is now almost powder, and could be blown away, and the young growth of trees, which would otherwise yield a subsistence for cattle, has been consumed by the bush fires (*Mercury* 3 February 1888, p. 3).

As a consequence of the drought, milk production was reportedly down by a third of the usual quantity (*Mercury* 3 February 1888, p. 3).

Commercial orcharding grew in popularity from the late 1860s, largely due to increased export markets and the successes of a group of farmers who had experimented with growing techniques (Easteal 1971, p. 295). The industry became well-established in the Huon, as well as the Derwent Valley and Channel district.

Drought was just one of a host of factors that could seriously damage fruit trees and jeopardise the industry. During severe drought in 1888, James Backhouse Walker recorded in his diary:

Early frost killed the blossom in many gardens, and what the codlin moth has spared, the drought has taken. Peaches and apples are sprinkled sparsely on trees which are usually loaded (Walker 1976, p. 67).

Hops, too, required plenty of moisture. First grown by Paterson in 1804, hops became a valuable export commodity in the 1860s. By this time a steady market had been developed by brewers both in Tasmania and the mainland colonies, and advances had also been made by local entrepreneurs in the cultivation of the plant. Hop growing was an intensive form of farming, requiring skill, knowledge and dedication. Drought highlighted the unsuitability of some parts of the island for its successful cultivation. River flats where irrigation works could be constructed proved the most favourable. By the 1860s the Derwent Valley had emerged as the premier hop growing region, although hops were also grown to a lesser extent in Glenorchy, the Huon Valley, the Channel district, along the Tamar Valley in the north, and at isolated spots on the east coast (Evans 1993, pp. 20-25).

#### 4.2.2 *Tenant Farms and Waste Lands selections*

With stagnation and decline in the traditional pastoral and agricultural districts from the 1850s, many of the larger estates that were concentrated in the hands of the gentry class were broken up and offered for lease as tenant farms (Easteal 1971, p. 284). In some cases landowners used tenants to remove forests on their estates, with rents increasing as the leases became cleared (Breen 2001, p. 52). Tenant farmers generally lacked capital and were particularly vulnerable to the vagaries of the seasons, as well as market fluctuations. Insolvency often resulted, leases were abandoned and farms reverted to sheep runs (Breen 2001, pp. 64-65). A letter to the editor of the *Mercury* by a tenant farmer in 1881 highlights the difficulties:

The position of the tenant farmer in Tasmania is becoming a matter of serious consideration... Short leases with high rents, labourers difficult to get ... and to make matters worse, the seasons of late years have been most unpropitious for the agriculturalist, scarcely enough rain falling to cause the grain to germinate when sown, to say little of blight by hot winds, rust, depredations by insects, etc; all these things combined tend to place the tenant farmer in no enviable condition; in short, I see nothing but ruin before the man engaged in tilling the ground.

... Let any person travel through the country, and look at the state of the fences and buildings on any of the agricultural

farms occupied by tenants, and see the wretchedly dilapidated state they are in. The tenant has not the means to put them in proper order. He patches up in the best way he can until his lease expires, and another tenant is found to take his place and follow out the same system (*Mercury* 16 November 1881, suppl. p. 1).

Others, managing to hang on to their holdings, abandoned crops in favour of small-scale stock raising or hay growing (Breen 2001, pp. 65-66). Work on the railways, roads or in the mining fields of the north-east and western districts drew others away from their failing leaseholds.

As Breen has argued, power on the tenanted farms was heavily weighted towards the landholder. Agitation for improved rights for tenants during the disastrous drought of 1888 had little success. While a few landowners remitted rents in that year, others did not (2001, pp. 53-54).

A series of 'Waste Lands' Acts passed between 1858 and 1870 aimed to establish a class of 'yeoman' farmers on the unsettled lands of the colony.<sup>57</sup> The desire to recreate a rural landscape based on 'old England' was a prime motive for such a policy (Powell 1978, pp. 75-76). The Waste Lands Acts induced many small-scale farmers to move from the old settled areas in the pursuit of an independent lifestyle on virgin land. The Acts allowed for the sale of marginal land to small-scale selectors

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<sup>57</sup> For background on the waste lands legislation and its application in the north-west of Tasmania see Stokes, 1969.

with provision for credit. Much of the land was mountainous, swampy or heavily forested, and principally in the Huon Valley in the south, and in the north-west and north-east. Development in these areas saw a population shift away from the midlands. By 1891 the north-west coast towns of Devonport, Ulverstone and Latrobe were all larger than the old midlands towns, and the north-east and north-west regions together accounted for over a quarter of all cultivated land (Reynolds 1969, p. 15).

The selections in these areas required much effort to clear and cultivate, often for little monetary reward (Breen 2001, pp. 42-43). They were generally small in size – in 1891 the average was 143 acres (compared to the average of 1 174 acres for farms in the midlands) (Reynolds 1969, p. 17). Wadham has outlined the difficulties faced by such small-scale farmers in Australian conditions where water is often scarce, native timber is particularly hard to clear, and soils are relatively poor and rainfall erratic. In reversal to European conditions, the period of scarcity of food for people and livestock in southern Australia was more likely to be in summer rather than winter, and the traditional means of providing for lean times, in terms of preserving meat, butter and cheese and growing vegetables, were not practical in the heat without refrigeration (Wadham 1947, pp. 139-146). Self-sufficiency often proved elusive and selectors turned to other means to support their families, such as splitting timber palings for sale, growing fruit for cash crops, or paid work at the

timber mills, mines or on the roads. As in earlier years, the hunting of native game and birds would have supplemented food grown on the farms. By the late 1800s Meander Valley farmers were also taking out leases on the north and north-western parts of the central plateau for the grazing of stock. These small-scale farmers often used runs to assist the stock of others as a means of making money (Collett 1995, pp.16-19).

Powell has argued that in response to the manifold difficulties of establishing small farms with a lack of capital under Australian conditions, family and community support networks became vital for survival. Intra-family supports, as well as co-operative activities between landholders and inter-family connections, were all used to advantage. This became apparent in the patterns of land-use which emerged in these 'Waste Lands' districts, whereby amalgamation and inter-linkage of formerly independent holdings were used by smaller farmers to increase their foothold on land resources (1978, pp. 78-80).

Whilst some succeeded against the odds, others were forced into forfeiture and abandonment of lots. The difficulties of establishing farms and incomes in the bush all took their toll – appalling roads for transporting goods to market, low prices and poor seasons. Most small farmers could not afford irrigation or drainage schemes to counteract droughts and floods. In evidence before a select committee into the Waste Lands Act in 1862, W. L. Crowther noted that in the previous ten years at least 420 000 acres taken up under the Waste Land Act of 1858

and its predecessor, the pre-emptive right legislation of 1851, had been given up, and that every month there were additions to the long list of defaulters (*TPP* 1862, *HAI* no. 111, pp. 8-37). A good number of those who gave evidence before the committee agreed that selectors in their area were having difficulties paying their latest instalment and that forfeiture would be a likely outcome. This was especially the case at several centres in the north-west and in parts of the Huon (*TPP* 1862 *HAI* no. 111, pp. 8-37). Amendments to the Act in the following decades may have eased some of the problems, but the 'waste lands' continued to be places of never-ending toil, vulnerability to changing economic and climatic factors, and poverty. The idealistic notion of a 'yeoman' class of farmers on the British style was clearly not appropriate in Australian conditions.

#### 4.2.3 *Irrigation*

In times of drought, with crops and livestock suffering, the question of irrigation inevitably arose within the public sphere, with many who were negatively affected claiming that the government should take responsibility for the construction of major schemes (*Mercury* 9 June 1868, p. 2; *Mercury* 3 October 1871, p. 2; *Mercury* 2 January 1888, p. 2). Governor, Henry Fox Young (1855-1861), was an advocate of irrigation and instigated a number of investigations, but these bore little fruit. The government appointed Select Committees in 1860 and 1861 to deal with the issue of whether a national irrigation scheme was feasible for

Tasmania. The 1860 report concluded that the problems associated with undertaking a large government-controlled irrigation scheme were ‘insuperable’, and that irrigation was best carried out on a smaller scale by private enterprise and groups of landholders. The 1861 committee came to the same conclusions, but recommended several legislative suggestions to enable irrigation works. These included: that all streams and lakes be declared public property; that the right to use their waters be vested in the Crown; and that the passage of waterworks across private land be allowed (on compensation to affected landholders). However, parliament largely ignored these recommendations (*TPP* 1861, *HAI* no. 112, pp. 3-4; *Mercury* 27 January 1871, p. 2). The only piece of legislation enacted was the rather paltry and unworkable *Irrigation and Drainage Act 1868*, which did little more than provide a legal framework for the operation of private irrigation schemes. A further select committee in 1883 also concluded that a national scheme of irrigation was ‘impracticable’ for Tasmania (*TPP* 1883 *HAI* no. 143; Mason-Cox 1994, p. 143). In 1888, following yet another select committee report, a Bill was drawn up for water conservation and irrigation works to be constructed at Lakes Sorell and Crescent. However, it also failed to gain parliamentary approval (*TPP* 1888 *HAI* no. 124; Mason-Cox 1994, pp. 147-150).

The *Mercury*, on several occasions, castigated the government for its inaction on the issue, and for failing in its duty to vest the island’s



waterways in the public trust so that water could be more equitably distributed to farms by way of irrigation works. Such a measure, it argued, would reduce conflicts over water rights and improve access for all (*Mercury* 30 June 1860, p. 2; *Mercury* 31 January 1871, p. 2).

In comparison to the Tasmanian situation, a severe drought experienced as an El Nino event throughout south-eastern Australia in the early 1880s prompted a vastly different response in Victoria. There, in 1886, under the influence of Alfred Deakin,<sup>58</sup> new water legislation was passed allowing for large-scale 'national' irrigation projects to be constructed. Victoria's legislation was ground-breaking in that it vested all waterways in the government and curtailed the riparian rights of landowners (Powell 1989, pp. 112-113; Cathcart 2009, pp.199-205). In that colony, several major irrigation projects were constructed in the following decades.

Tasmanian advocates for a 'national' scheme of irrigation for the island became frustrated at the government's stance on the issue. Ebenezer

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<sup>58</sup> Alfred Deakin (1856-1919) was born in Melbourne and worked as a barrister and journalist. He entered Victorian politics in 1879 and in 1884 chaired a Royal Commission on irrigation, of which he was an advocate. He introduced the first legislation in Australia promoting irrigation and vesting waterways in the crown. He later went on to serve as Prime Minister of Australia (R. Norris, 'Deakin, Alfred (1856 - 1919)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 22/3/2011, <http://www.adb.online.anu.edu.au/biogs/A080275b.htm>).

Shoobridge,<sup>59</sup> considered to be the father of the hop industry in Tasmania, proposed that the Derwent River could be utilised to supply farms and Hobart with plentiful fresh water (*Mercury* 28 May 1868, p. 2). Maurice Weston, too, was a strong campaigner for more government involvement in irrigation (*Mercury* 12 April 1889, p. 4). At his own property on the Derwent, 'Roseneath', Weston dug a complex of channels and constructed troughs to collect and carry water throughout his property (*Mercury* 12 November 1894, p. 4).

Although large-scale public irrigation schemes failed to find favour with the government during this period, a good deal of experimentation was carried out by private land-holders, most notably by hop farmers. In 1872 the *Mercury* reported: 'The hop growers in the New Norfolk district have recognised the advantage of irrigation and the vast majority of gardens are now supplied with water from one or other of the many fine streams which abound in the locality' (*Mercury* 22 February 1872, p. 3).

Shoobridge toiled for sixteen years before successfully growing a good crop of hops in Tasmania – his main problem being the want of sufficient water (*Mercury* 28 May 1868, p. 2). After much

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<sup>59</sup> Ebenezer Shoobridge (1820-1901) was an agriculturalist from the Derwent Valley district and later a member of the Legislative Council. Both he and his sons, William, Robert and Louis, were known for their agricultural innovation and experimentation in the hop and apple industries (Peter Chapman, 'Shoobridge, William Ebenezer (1846 - 1940)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A110616b.htm>).

experimentation at his 'Valleyfield' estate at New Norfolk he finally settled on the use of a 10 hp engine to draw water from a well excavated next to the Derwent River, from whence the water was lifted into troughs that carried it to the hop fields and orchards (Evans 1993, p. 39). At 'Bushy Park' the Shoobridge family used a complex system of races to carry water by gravitational flow from the Styx River (Evans 1993, p. 40). Alexander Riddoch of the 'Turriff Lodge' estate planted his hops so deep in the ground close to the river that they were irrigated subterraneously. The higher ground was irrigated using a steam engine and pump (Evans 1993, p. 40). In his 1861 report on irrigation, Signor Alessandro Martelli described a number of private schemes in operation in the New Norfolk hop-growing district. At 'Redlands', the estate of Mr R.C. Read at Plenty, a dam had been constructed across the Plenty Creek from which water passed by gravitation through channels to the estate. At 'Clarendon' at New Norfolk, John Walker had installed a hydraulic pump from which water was conveyed to pipes (*TPP* 1861 *HAI* 43, pp. 3-4).

#### *4.2.4 Mining Fields*

The movement of settlers into the forested regions of the north-east and north-west coincided with a mineral boom in the 1870s and 1880s. The discovery of tin at Mt Bischoff in the west in 1871 and in the north-east shortly afterwards sparked a rush of people to these hitherto unsettled forest regions. Gold, too, had been discovered in small quantities in the

north-east. By 1881 nearly 6500 people were living on the mining fields, most being in the north-east (Blainey 1954, p. 63).

Silver-lead deposits were discovered at Zeehan in the west in 1882 and payable copper at Mt Lyell in the following decade. Mineral exports soon boosted the island's flagging economy, averted a further population drain to the mainland and caused a major shift in the settlement patterns of the island. By the turn of the century the west coast of Tasmania could boast the largest tin mine, largest copper field and second largest silver-lead field in Australia (Blainey 1954, p.66). The exploitation of mineral resources had attracted a population of 25 000 to the remote and rugged west coast (at that time one-seventh of the island's total population) (Reynolds 1969, p. 15).

Tin and gold mining were dependent on ample water supplies. Alluvial fields required water for sluicing and washing the ore. When hydraulic sluicing through high-pressure hoses was introduced to tin mining in the 1880s even greater quantities of water were needed. Lode mining also required water to power machinery for extracting, crushing and treating the ore (Dallas 1960, pp.87-89; Whitham 1980, pp. 61-63). Waterwheels or steam were traditionally used to power machinery such as stamping batteries, but by the mid-1880s hydro-electric energy was also being used for mining operations at Mt Bishoff (Lupton 2000, p. 19). Drought periods could bring matters to a standstill on the mining fields. In April 1883 the *Mercury* correspondent from the Lisle goldfield in the north-

east outlined the problems facing the miner and his community at such times:

Scarcity of water puts an end to his mining operations, except on a very limited scale, and those who have not saved money, and are not in credit with the storekeepers have a very sorry time of it... Trade, of course, suffers equally, and the storekeeper finds himself in the awkward position of either giving unlimited credit or losing his customers... Thus it has been with Lisle for the last three months... Our spirits rise in proportion as the barometer falls (*Mercury* 11 April 1883, p. 3).

Disputes of miners' water rights were also likely to increase at times of shortage (*Mercury* 17 March 1891, suppl. p. 2).

Whilst the west coast was characterised by a much higher average rainfall than the rest of the island, even in that usually sodden locality drought could be experienced from time to time. In December 1873 a correspondent from the Mt Bischoff Mining Co. wrote to the *Mercury*: 'We have had exceedingly fine weather for this place. The small streams of water are dried up. There is not likely to be any chance during this summer for sluicing with running water on those sections' (*Mercury* 13 December 1873, p. 3).

Three years later, in the autumn of 1876, exceptionally dry weather over five weeks led to the drying up of the Mt Bischoff mine's reservoir. The

company then decided to increase its water supply capacity by building an additional dam (*Mercury* 14 March 1876, p. 2). Whitham, writing on water power in the South Heemskirk tin field, outlines how, despite the high annual rainfall, water shortages still caused problems at a number of the mines on that field. For example, the Cliff mine's situation along a shallow creek that was prone to drying up necessitated the building of five dams (1980, p. 63). At the Cumberland (later Federation) mine a dam, 30ft high by 120ft long, was constructed to form a large lake, estimated to hold 190 million gallons of water. The Montagu mine also utilised this water to power its turbines (Whitham 1980, pp. 67-68).

In order to secure sufficient water for mining purposes, mining companies dammed and diverted streams and creeks and constructed water races throughout the mining fields. According to Gaughwin in her archaeological study of the north-east, 'barely a stream remained on its natural course in the vicinity of the tin fields' (1991, p. 50). Loone's history of the north-east, first published in 1928, describes the changes in the landscape:

There have been during the past 50 odd years been many hundreds of miles of water races surveyed, cut, and constructed for the tin and gold mines on this North-East Coast mining fields. Go where you will, in any of the good tin country, you will find old water races almost anywhere, and if one only knew what money these many races really cost to construct the



Fig. 8 Miners at Balfour c1900 (Tasmanian Archive and Heritage Office, PH30/1/1550).

amount in hard cash would indeed be a very large sum (1981 [1928], p. 128).

The Briseis race, built for the Briseis Mine at Derby, was erected in 1899-1900 to convey water from the Ringarooma River to the mine. It was 30 miles long and included sections of fluming constructed through rugged granite country and with pipes across deep valleys (Roberts 2007, pp. 307-308; Gaughwin 1991, p. 53). The North Brothers Home mine had a 25 mile race constructed to supply its operations (Roberts 2007, p. 300). Companies also built large dams to conserve water for powering machinery and sluicing. The Esk Company built a dam 27ft high on the Ringarooma River. Water was lifted by wheel and pipes to produce 97hp and to supply 16 nozzles for sluicing (Dallas 1960, p. 88). In 1885 the Anchor mine in the Blue Tier worked a 60ft water wheel to power a forty stamp battery and other machinery. This was later replaced by more efficient pelton wheels and a race over 40km in length was cut from the George's River to supply the mine (Dallas 1960, p. 88). The importance of water supply to the success of the mining industry also led the government to become involved. A petition signed by 158 people was presented to parliament in 1884 calling for the implementation of a North Eastern National Water Scheme to supply water to the north-eastern mines. After some deliberation and delay, in 1887, the government purchased the Mt Cameron Water Race, under construction



by a private company, to supply water from the Great Musselroe River to the tin fields at Gladstone and South Mt. Cameron. At that time the race consisted of twelve and a half miles of main race and nine miles of branches (Roberts 2007, pp.301-305). The race was substantially extended in length and the completed works officially opened in August 1890.<sup>60</sup> The race primarily supplied the smaller tin producers of the region. Lack of maintenance of the race, however, led to inefficiencies, and when the Minister for Mines, Edward Mulcahy, visited the north-east in the summer of 1900 he found that work was still being restricted by poor roads and water shortages (Roberts 2007, p. 306).

#### *4.2.5 Contaminated Water Supply 1870s-1890s*

Despite the establishment of major water supply schemes in Launceston in 1857 and Hobart in 1861 problems with water supply to the major towns continued in drought periods. In 1860 the Hobart Council began work on a large reservoir on Sandy Bay Rivulet to hold water from the Mt Wellington springs to supply water to Hobart. It was completed in 1861. Supply was further augmented by works at Fork and Long Creeks in 1868, the Plains Rivulet in 1875 and a new storage reservoir in 1888 (Petrow and Alexander 2008, pp. 146-153). In the face of opposition from riparian landowners, the North-West Bay River scheme was also completed in 1901 (Petrow and Alexander 2008, pp. 159-160).

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<sup>60</sup> The Mt. Cameron Water Race continued to supply water to numerous tin mines in the Gladstone area until 1985. It was extended over the years by the government (Dickens 1990).

In times of drought the Hobart Council applied water restrictions, penalties for leakage and wastage, and metered heavy users to conserve dwindling supplies. The Council also made moves towards the reservation of Mt. Wellington in order to protect the town's water catchment area.<sup>61</sup> Development of roads and tourist facilities on the mountain were banned by the council for fear of contamination of the water supply (Petrow and Alexander 2008, p. 158).

Despite steady advances in diverting and storing water, suburban expansion and increased consumption patterns continued to stretch the limits of supply during drought periods (*Mercury* 5 June 1868, p. 2). Lloyd has estimated that daily water consumption (for domestic use and industry) in Hobart doubled in the years 1850 to 1880 (2008, p. 35). After the colony had suffered two successive years of severe drought James Backhouse Walker recorded in his diary in Hobart on the 22 February 1888:

Water short everywhere. Short supply, even in the town, and, in the suburbs, none at all, even for drinking. At Sandy Bay, the people could not use their cooking stoves, because there was no water to fill the boilers, and have reduced to all sorts of shifts (Walker 1976, p. 67).

Hobart lagged behind other major cities in setting up a legislative framework and administrative structure for water control. By

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<sup>61</sup> The Hobart side of the Mountain was finally reserved in 1906.

comparison, by 1890 both Victoria and New South Wales had well-resourced metropolitan boards to deal with the construction and maintenance of major water supply works (Smith 1998, p.144).

Low water supplies combined with poor sanitation had drastic health implications for the population. During prolonged drought water supplies in some towns became substantially reduced, concentrating any pollution or filth which had accumulated in them. The link between outbreaks of disease and poor water quality was increasingly recognised by the medical and scientific communities. In a paper on the subject read before the Royal Society of Tasmania in 1885, A. F. Ward demonstrated how water taken from tanks and barrels could be contaminated by the droppings of rats, mice and birds, as well as decayed leaves and insects and zinc from galvanized iron roofs and gutters. Springs, lakes and water-holes were also found to contain numerous impurities, whilst rivers could receive drainage from land contaminated by manure, dead animals and sewage and become receptacles for associated germs and parasites. Wells, too, were found to be prone to leakage from cesspools, farmyards and the like (*RSTPP* 1885, pp.cxvi-cxxviii). A series of outbreaks of typhoid and diphtheria in the 1870s-1890s highlighted the problem dramatically.

Droughts in the years 1895-1900 caused a 'crisis' in water supply issues in the main towns. In Launceston complaints during shortages of water came from those living in the more elevated parts of the city – the

gravity-fed system not meeting demands (*LE* 9 January 1900, p. 5). Hydro-electric power, introduced into Launceston in 1895 to provide lighting and power for the town, was also periodically affected (*LE* 12 January 1898, p. 5). In the capital, Hobart, extended dry periods reduced town streams to mere trickles which became foul-smelling and noxious due to contamination from adjacent water closets and accumulations of refuse. During the hot, dry early months of 1895 the local papers described Wellington Rivulet on the city's Queenborough boundary as 'a veritable hotbed for fever diseases' and the Park Street Rivulet as 'the Valley of the Shadow of Death' (*Mercury* 28 March 1895 and *Tasmanian News* 10 April 1895 cited in Petrow and Alexander 2008, p. 168). The Hobart Rivulet also continued to offend both residents and visitors (Walker 1976, p. 134). Concerned citizens castigated the council for being 'sluggish' and procrastinating on the issue of sanitary reform (Walker 1976, p. 134). Amid rising concerns the council commenced a metropolitan sewerage and drainage scheme for Hobart early in the new century (Petrow and Alexander 2008, pp. 165-172).<sup>62</sup>

Smaller towns situated throughout the island also suffered periodic water problems as they were more likely to be dependent on rainfall to fill tanks and keep rivers and streams from drying up:

In the country... there is an implicit reliance on chance; while rain is abundant and the streams flow down in sufficient body,

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<sup>62</sup> In Launceston sanitary reform ran ahead of Hobart. There the council began construction of a sewerage system for the town in 1860, which was gradually extended (Petrow 1995, p. 9).

their water is sure, and they go on as if they had a never-failing supply. But droughts are frequent and the summer too often sees the springs dried up; the streams assume attenuated proportions and finally become a chain of waterholes which each day contain a less quantity and increasing deterioration in the quality of water (*Mercury* 16 March 1878, p. 2).

Following a hot, dry summer in 1877-1878 it was stated that at Brighton in the south the diminished stream which supplied the town was so putrid that even the horses refused to drink from it (*Mercury* 16 March 1878, p. 2). When six cases of typhoid were reported in Campbell Town in March and April 1877, Dr Bingham Crowther of the Hobart General Hospital blamed the 'foul and stagnant river' (which he noted was also the watering place of livestock) and the lack of proper sanitation in the town (*Mercury* 5 July 1877, p. 3).

The problems of poor water supply in country towns intensified as their populations expanded. It has been estimated that during the 1880s the number of towns and villages with populations exceeding a hundred people rose from 47 to 79 (Rootes, 2008, p. 286). In 1884 the government introduced a system of town boards to address the growing crisis in public health, sanitation and water supply for rural townships. This was in line with a government policy of encouraging local bodies to take control of local issues and works. As with the road trusts, however, they were under-resourced and a lack of funds often hampered any major

public works. Those that did carry out major works tended to incur large debts (Rootes 2008, pp. 281-328).

In 1889 an officer with the Board of Health, Alfred Mault,<sup>63</sup> reported on an outbreak of typhoid at St Helen's on the north-east coast. He found that of the town's population of 300, 24 cases of the disease had been recorded in the past season. Rainfall for the year 1888, as recorded at nearby Falmouth, was just 17.11 inches (8.21 inches below average). Of 60 houses in the town 35 had water supplied by wells, 19 from tanks and a few others from springs or carting from the River George (*TPP* 1889 *HAI* no. 137, pp.1-5). Mault found the wells to be particularly fouled and the most likely cause of the outbreak. The *Mercury* referred to the water in them as little more than 'diluted sewage' (*Mercury* 21 May 1889, p. 3). Mault subsequently recommended that the supply from the town be taken from the George's River (*TPP* 1889 *HAI* no. 137, pp. 1-5).

Although the *St Helen's Water Act* was passed in 1892, it would take many more years for plans to be put into effect due to a lack of funds. As late as 1914, St. Helen's residents were still complaining about the lack of proper water supply to their town (*Mercury* 30 October 1914, p. 4).

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<sup>63</sup> Alfred Mault (1829-1902) was an engineer and civil servant born in the East Indies. After working in Britain and Europe he applied to the Tasmanian government to carry out engineering work on the Derwent Valley Railway in 1882. He was later appointed to the Central Board of Health as engineering inspector and became a member of the Royal Society of Tasmania in 1884 (no author: 'Mault, Alfred (1829 - 1902)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 16/11/2009, <http://www.adb.online.anu.edu.au/biogs/A050261b.htm>).

Fatalities in the Clyde River Valley during dry spells in the years 1889, 1895, 1896 and 1897 prompted Mault to also undertake a number of inspections in that locality. He found that reduced water levels in the Clyde River as a result of drought had significantly affected the quality of water that supplied the towns of Bothwell and Hamilton (*TPP* 1889 *HAI* no. 114, pp. 1-8; PWD74/1; Mason-Cox 1994, pp. 151-152).

Competition for the use of the Clyde River water for irrigation and milling had compromised the town supplies and caused conflicts (*TPP* 1888 *HAI* no. 124, pp. 1-11). Petitions for improved domestic water supplies had also met with angry opposition from riparian landowner, William Kermode, whose property would be inundated by the artificial raising of water levels in Lake Sorell (*TPP* 1888 *HAI* no. 124, pp. 1-11). Mault recommended the maintenance of the dam at Lake Sorell, and the cutting of an open channel to divert water directly from Lake Sorell to the Clyde (to avoid contamination from the muddy waters of Lake Crescent) (*TPP* 1889 *HAI* no. 114, p. 8; PWD74/1; Mason-Cox 1994, pp. 151-154).

Another proposal to supply the township of Tunbridge in the midlands with water from Lake Sorell met with fierce opposition from the residents of Bothwell and Hamilton, who argued that such a scheme would diminish their already insufficient supply from the lake. Tensions ran high over the issue during the drought years of 1896-1898 (*Mercury* 26 August 1897, p.4; *Mercury* 1 September 1897, p. 3; *Mercury* 3

September 1897, p. 3). Conditions had become so severe by February of 1898 that six thousand gallons of water a day had to be carted by rail to relieve the sufferers at Tunbridge and other midlands towns Parattah, Antill Ponds, Conara, Cleveland and Epping (*Mercury* 17 February 1898, p. 2).

In 1898 the *Clyde Water* and *Midland Water Acts* were passed to allow the diversion of water from Lake Sorell to the Clyde River (to improve supplies to Hamilton and Bothwell) and also to Tunbridge and the midlands district. However, subsequent surveys by Danish hydraulic engineer, K. L. Rahbek, threw doubt on the effectiveness of the Lake Sorell schemes – he calculated that in dry years the rainfall may not be sufficient to supply all the water required, and that it would be ‘unwise’ to proceed with the proposed works (*TPP* 1902 *HAI* no. 46; Mason-Cox 1994, p. 160). Interest lapsed until early in the new century.

Even in the west, drought occasionally affected town water supplies. In December 1896 Zeehan residents complained of shortages (*Mercury* 17 December 1896, p. 3). At Gormanston running streams and tanks were often contaminated with copper or sulphur fumes (Blainey 1978, p. 94).

In response to the water ‘crises’ of the 1880s and 1890s, a number of towns commenced improved water supply schemes. At Campbell Town a large dam was constructed at Lake Leake to store water from the Elizabeth River. The dam was completed in 1883 and the race



connecting it to the Elizabeth River in 1886 (Mason-Cox 1994, pp. 118-128). At Glenorchy on the outskirts of Hobart a large reservoir was built to supply the town in 1893 (*Mercury* 28 February 1893, p. 4). At Evandale an imposing water tower was constructed in 1895 to hold 38 000 gallons of water supplied by the South Esk (Hoare 1998, p. 101). Water supply schemes were completed in Devonport in 1894 and in Queenstown in 1899 (Rootes 2008, pp. 308-310). By 1901 a number of other country towns, such as Cressy, Longford and Latrobe, could also boast reticulated supplies drawn from reservoirs constructed near to the towns (Hoare, 1998, p.65, 86, 189; *Mercury* 3 March 1893, p. 4). Despite these advancements, however, for the most part, drought periods continued to highlight inadequacies in town water supply schemes.

#### 4.2.6 *Tourism*

Extended droughts also tarnished Tasmania's tourism image. Contaminated water and epidemics, heightened during drought periods, damaged Tasmania's image as 'the Sanatorium of Australia', the state of town waterways and outbreaks of disease generating considerable anxiety about the island's capabilities for attracting tourists. During a smallpox epidemic in Launceston in 1887,<sup>64</sup> James Backhouse Walker commented:

[Dr H.A. Perkins and the Board of Health] have made such a fuss about typhoid and smallpox, and been so persistently

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<sup>64</sup> For more information on this outbreak see Roe 1976.

alarmist, that the idea is now universally prevalent in the other colonies, that Tasmania is thoroughly infected, and a dangerous place to come to. The consequence will be practically no summer visitors; and, the result will be most disastrous to shopkeepers, and lodging house keepers, and the crowds of other people... who look to the summer as an opportunity of making a harvest out of the foreigners (1976, pp. 60-61).

Such concerns led to the official down-playing of epidemics at the expense of sanitary reform (Petrov 1995, pp. 134-135).

Drought-stricken landscapes, oppressive heat and unbearable hot winds were also not expected to be encountered in Tasmania – this was exactly what many tourists had come to the island to escape. An exceedingly hot summer at the beginning of 1880 prompted the *Mercury* editor to claim that visitors from the other colonies ‘must feel they might well have stayed at home’ (*Mercury* 10 February 1880, p. 2). On a trip from Hobart to Parattah in the Midlands district in January of 1898 a correspondent to a local newspaper wrote of the destruction caused to beauty spots by the recent bushfires and of the desolate scenes caused by the drought:

... the sun, has rendered desolate wide tracts of country, and in place of growing herbage and verdant sward, there is little to be seen but parched and sun-dried land... A visitor from any of the Australian colonies travelling overland from Launceston to

Hobart at present time, must experience disappointment, not that the scenery is in any way inferior... but because the long-continued drought has made such inroads upon the attractive features of a country that invariably presents a pleasing appearance... at places along the line sheep can be seen seeking food on hill sides so destitute of verdure that a grasshopper would scorn to exploit them (*TM* 8 January 1898, p. 4).

#### 4.2.7 *Summary*

In this section I have demonstrated that the image of Tasmania as ‘the Sanatorium of Australia’ based on claims of a ‘salubrious climate’, was thrown into doubt by drought periods that highlighted contaminated water supplies and contributed to epidemics of disease. Drought also caused suffering on the land (particularly on the tenant farms and ‘waste lands’ selections), as well as interruptions to mining and other industry. Drought periods impacted heavily on both urban and rural sectors. Attempts at re-creating an ‘English’ rural landscape in Tasmania through acclimatisation of introduced species and a policy of closer settlement proved disastrous, particularly in the case of rabbits, and the ill-conceived ‘waste lands’ acts. The government proved reluctant to invest in public irrigation schemes to ameliorate drought in the country districts. With the exception of the government’s Mt. Cameron water race scheme in the north-east, it was also left to miners to build their own dams and races to supply their mining leases with necessary water. With

a failure by the government to take control of the island's water courses, inequities and conflicts over water usage inevitably arose during extended dry periods.

In the following period of 1901-1960s water issues escalated in the island's capital, Hobart. Drought also impinged on hydro-electric generation causing widespread disruption to industry and mining. The rural community continued to suffer under policies of closer settlement and the government's reluctance to instigate public irrigation schemes.

#### **4.3 Destructive Inundations and Storms**

Haphazard growth along waterways in the major towns and in poorly drained areas of the new mining communities in the west and north-east greatly increased flood damage in this era. The construction of major railway and tramway connections and the telegraph improved communications throughout the island, but a lack of foresight by engineers was exposed at times of severe floods. Storms and floods also disrupted mining ventures and jeopardised the success of new agricultural industries. The rural sector continued to suffer severe setbacks during this period, particularly due to problems with liver fluke which spread in water-sodden pastures. Widespread and damaging flooding occurred in August 1858, December 1863, April 1880 and June 1889. Localised flooding also occurred in the north in June 1863, September 1870, May 1872, November 1889 and July 1893 and in the

south in June 1872, August 1880, November 1881 and November 1885.

The north-east was particularly hard hit by flooding in November 1889.

#### 4.3.1 *On the Land*

Flooding and poorly drained pastures caused problems with liver fluke (*Fasciola hepatica*), a parasite which infects sheep. Although not realised at this time, the disease was spread by freshwater snails that thrived in marshy wet areas (Cubit *et al* 2008, p. 85). The fluke first made an appearance in the colony in 1827, had become problematic on the high country runs in the late 1850s, and subsequently spread widely throughout the island (TPP 1869, HAJ no. 43). By the 1860s many of the high country runs had been abandoned due to the prevalence of the disease (*Mercury* 25 July 1868, p. 2). In his report of 1871, Robert Crawford, a Commissioner responsible for inspecting crown lands for the Lands and Works Department, estimated that 435 000 acres of crown land had been abandoned or only partially stocked due to fluke – this amounted to a loss of £4500 in revenue to the government (TPP 1871, HAJ no. 49, pp. 3-5).

In 1869 a Royal Commission was held into the problem. Its key recommendation was the drainage of low-lying and marshy land, and the removal of sheep to well-drained, elevated runs (TPP 1869, HAJ no. 43). A number of farmers heeded the advice. In 1872 William Gerrand, the Collector of Agricultural Statistics for the Oatlands region, could report that underground drainage had been practiced on a few farms, and that

many miles of open drains had been cut in efforts to combat the disease (*Statistics of Tasmania* 1872, p. 195). At Longford and Westbury a good deal of underground and open drainage was also constructed (*Statistics of Tasmania* 1873, p. 196; *Statistics of Tasmania* 1877, p. 219). Some, including the respected physician and politician, William L. Crowther, advocated improved drainage and a return to the use of regular firing of the sheep runs and crown land as a means of eliminating fluke.

Brushwood fences, prone to damage in fire, it was argued, could be replaced with stone walls (*Mercury* 18 January 1869, p. 2; *Mercury* 5 January 1869, p. 2). It appears that by the late 1800s pastoral leases were again being taken up on the alpine plains of the plateau. According to Cubit *et. al.*, when stock was re-introduced to the northern areas from the 1890s cattle tended to be more fluke resistant than sheep (Cubit *et. al.*, 2008, p. 85).

Hop growers were also generally heavy losers during floods, as hops were often grown on or close to river banks. Ebenezer Shoobridge's 'Valleyfield' hop fields at New Norfolk had been cultivated on former swamp land adjoining the Derwent River. The land had been embanked and drained and then irrigated by the waters of the Derwent, but its low-lying position was particularly prone to flooding. The Derwent Valley was particularly hard hit during floods in July 1863:

At New Norfolk it flooded all the lowlands, swept away the hop-poles by thousands, and just above Bridgewater, the banks

are literally covered with hop-poles, posts and rails, turnips, marigolds, sheaves of wheat, empty casks, baskets, trussed hay, pieces of broken furniture, harness, tin dishes, washing tubs, etc. At Glenorchy yesterday, the hop-poles were being picked up on the beach and carted back to New Norfolk (*Mercury* 8 July 1863, p. 6).

Shoobridge's property at Bushy Park was also subject to flooding and some flood control measures were put in place – the banks of the river were raised, logs were used to construct barriers to flooding water and willows were planted along the banks of the river to prevent erosion (Evans 1993, p. 40). A much larger undertaking was the diversion of the Styx River from its original course for two miles. This prevented the yearly flooding of a large piece of ground which was then planted with hops and fruit. The *Mercury* reported on the Shoobridge's flood control works in 1873:

One of the heaviest portions of the work was the formation of an embankment averaging about four feet in height for a distance of one mile along the course of the River Styx... the embankment is made of immense logs sawn into lengths of twenty feet or so, the rest being earth. Then there are several channels from thirty to forty feet wide, and from a foot to two feet deep, out in different places to carry off the water in the rainy season ... altogether their length is about one thousand

yards. By these works, some two hundred acres of fine land that was formerly a swampy scrub has been reclaimed (*Mercury* 14 February 1873, p. 2).

As in drought periods, floods and storms highlighted the vulnerabilities of tenant farmers and those settled under the ‘Waste Lands’ Acts of this period. Giant stands of ring-barked trees killed in the process of land clearing posed a danger to life and property. During high winds and storms they crashed down with terrifying results. Roads were often of very poor construction – with settlement proceeding at a faster pace than the infrastructure needed to support the population. Attempts by the government to increase taxation to pay for public works in these areas met with hefty opposition from conservative elements (Reynolds 1969, p. 22).

The forested areas of the south were notorious for the state of their roads. Of his first trip from Hobart to the small settlement of Southport in the far south, Dr Harry Benjafield remarked:

... that twenty mile ride made such an impression on my memory that I am not likely to forget it. Rain was incessant and the bush track was a foot deep in mud, whilst overhead was a dense forest of trees some 300ft high (NS2521/1/2, p. 7).

Floods and storms also highlighted the poor state of roads and other communication networks on the mining fields.



#### 4.3.2 Mining Fields and Towns

Living in tents or rough shanties in elevated or exposed conditions made prospecting and mining an occupation for the hardy. R. Forbes recalls the experiences of his gold mining party in the highlands of the north-east at the Cradle Gully diggings:

A tent is very poor protection at this season up here... On Monday afternoon it came to rain with sleet and snow, it came down in torrents, the creek was swollen to a river, flooding all the valleys and swamps lower down; trees, boulders, ferns and a great quantity of debris were hurled down the gully, roaring like a cataract, we could not hear one another speak (*Mercury* 28 July 1865, p. 2).

Inclement weather could bring mining and associated activities to a standstill. Alluvial workings, though heavily dependent on a full supply of water, could be impeded by too much rain. Roughly built dams and races, constructed to cope with dry periods, were damaged, workings inundated and travel on the rough bush tracks made difficult. Following a storm on the east coast in May 1880 a correspondent to the *Mercury* reported:

Between Falmouth and George's Bay the coach got stuck in the water, and all the mail bags were under water. When the mails reached Thomas' Plains they were saturated and had got so

chafed that it was a labour of no small difficulty to sort them...

Beyond Thomas' Plains a horse could not go, and the mail boy had to leave his horse and get a man to help him to carry the mail to Krushka's Bridge (*Mercury* 4 May 1880, p. 3).

The same gale brought down trees that crushed a number of huts occupied by miners and their families, killing one boy and injuring others (*Mercury* 4 May 1880, p. 3).

Heavy flooding in November 1889 also caused widespread damage in the north-east. Numerous bridges were washed away or damaged, and roads rendered impassable (PWD18/1/2036).

The western mining fields, being in a much higher rainfall area than the rest of the island, were particularly subject to inclement weather. Writing from the Mt Heemskirk field during the winter of 1882, a correspondent claimed that after six weeks of solid rain the ground was so saturated that packhorses were continually getting bogged. Workers at the Otago Co. mine had constructed and then enlarged flood-races to divert the huge volume of water flowing down a branch of the Tasman River away from the workings. The flow was estimated at 32 times that of a normal winter one (*Mercury* 22 July 1882, p. 3).

James Bonwick, in *Climate and Health in Australasia* (1886), outlined the problems faced by miners at the Mt. Bischoff mine in the west:

To get to it has been a great difficulty, but to live here, in such weather as commonly prevails, is no small trial for strong constitutions. Scrub, morasses, gloomy forests, sharp rocks and almost interminable rains have to be faced (1886, p. 6).

He recalled the remarks of Mr Wintle, the Government Geologist: 'nature perhaps, never threw greater difficulties in the path of the pioneer of a country's mineral resources... than, those met with at this inhospitable region' (in Bonwick 1886, p. 6).

Mining operators preferred tramways and railways to roads in the remote and heavily timbered mining fields of the 'wild' west. A railway connecting Zeehan to the port of Strahan was completed in 1892, the Abt Railway from Queenstown to Strahan in 1897 and the Emu Bay Railway from Zeehan to Burnie in 1900 (Clements 2005, p. 300).

Mining camps and towns posed special difficulties in regards to drainage and sanitation. The lack of planning to provide for periodic flooding was acutely obvious. Mining camps were most often located upon vacant land close to the works, with little thought for the suitability of the site for human habitation or for the provision of proper drainage or sanitary arrangements. During floods they could become quagmires of mud and filth. Mault wrote a paper entitled 'the sanitation of a mining settlement' for the Seventh International Congress of Hygiene and Demography held

in London in 1891, with special reference to the township of Zeehan in the remote west. He wrote:

It began, as all mining settlements begin, with a few huts and tents on each mining claim. Publicans, tradesmen, and store dealers followed... What has induced building has been – not suitability of site or ground – but proximity to work; and consequently the great majority of the houses are built upon land quite unfit for such occupation (*TPP 1891 HAJ 86a*, p. 4).

The settlement had been formed in the midst of extraordinarily high forest with impenetrable, dense tea tree undergrowth. The yearly rainfall was over 110 inches. The country was traversed by numerous rivulets which were so blocked and tortured by fallen branches that large bodies of stagnant water would collect on the surface in wet weather. Many of the houses had been built on short piles in these conditions. Lack of proper sewerage, refuse removal and drainage made for a very unhealthy state of affairs, and the peculiarities of such towns presented great challenges for local health authorities (*TPP 1891 HAJ no. 86 and 86a*). Despite the difficulties, Mault drew up drainage and sanitation plans for a number of the west coast towns, including Zeehan, Strahan and Trial Harbour (*TPP 1890 HAJ no. 34; TPP 1891 HAJ no. 86*).



Fig. 9. 'Coaching on the North East Coast Road': Collection of the Queen Victoria Museum and Art Gallery, Tasmania (QVM 1983:P:2166)

#### 4.3.3 *Railways, Tramways and Communication*

A new era in land transport was heralded in 1871 with the opening of Tasmania's first railway line from Launceston to Deloraine. The opening of the Hobart-Launceston route followed in 1876, and several extensions to the railway network were also subsequently made. Rail travel reduced travelling times between major centres and provided the mining, timber and agricultural areas with improved means of conveying goods to market or port. Floods, however, affected the construction and workings of the railways from the beginning. In September 1870, during the construction of the Launceston and Western Railway Company's Launceston to Deloraine line, floods submerged miles of tracks, washed away ballast, and caused embankments to collapse (*Mercury* 23 September 1870, p. 2). Although the incident highlighted the need for improved designs for embankments, including adequate provision for drainage during heavy rains, problems continued to arise. During high floods embankments could act as dams, blocking the flow of water and inundating the tracks. Much inconvenience resulted and safety was jeopardized. Passengers and goods had to be transported by cab or coach until the floodwaters had subsided (*Mercury* 28 June 1875, p. 2). The railway terminus and depot at Inveresk in Launceston were also prone to flooding. A Royal Commission into the Railways and Public Works in 1886 identified defects in the design and building of several railways. For example, inadequate culverts on the Derwent Valley line had contributed to damage by flooding in November 1885. The Fingal line

was partially constructed through low-lying swampy ground, and it was found necessary to raise the banks and increase flood openings in that locality (*TPP* 1886, *HAI* no. 64, pp.3-5; pp. 10-11; pp. 25-27). During further floods in Launceston in July 1893 residents in close proximity to the Mile Bridge on the Main Line of Railway claimed that their properties had been inundated due to a gap in the railway line that had let the floodwaters through. This was apparently the fourth flood in the locality and six houses had been abandoned due to the recent flood (QVM; LCC 1, item 488).

Country towns situated adjacent to lines could also suffer from poorly engineered railways. During floods in December 1875, when a number of railway bridges and culverts along the main line between Hobart and Launceston were washed away or damaged by the rising waters, the adjacent townships of Antill Ponds and Tunbridge received the full force of the water (*Mercury* 30 December 1875, p. 2; *Mercury* 31 December 1875, p. 2). The railway bridge at Latrobe on the Mersey-Deloraine line in the north-west was also blamed for much suffering in that town during floods. The stone abutments of the railway bridge and a nearby tramway impeded the rapidly swelling Kings Creek in May and June 1893, causing a massive build up of water and debris, with the only escape for the rising floodwaters being down the main street of the town. The towns' bookseller, general stores, grocer, draper, chemist and coffee palace, as well as several homes, were quickly inundated and much

damage was incurred (*LE* 30 May 1893, p. 7). The *Launceston Examiner* reported:

It came down King's Creek, a solid wall about 18 in high, and broke through the town... A two storey building, about 40ft by 25 ft, was shifted a distance of 7ft. Stables and sheds were carried away by the current until stopped by the wreckage that was strewn everywhere... So strong was the rush of water through Gilbert Street that for several hours it was dangerous for anyone to attempt to cross, especially near the railway gates (*LE* 30 May 1893, p. 7).

Following the floods, the railway department agreed to widen the railway bridge and remove the tramway bridge, but argued that this was unlikely to completely solve the problem of flooding. Kings Creek had apparently been diverted when Gilbert Street was formed, and it was that, they argued, that was the main cause of the problem (AOT; LA34/3).

Wooden tramways erected in the timber-getting regions of the Huon and north-west to transport timber to the mills or ports, also proved vulnerable to flood damage. In December 1863 the Honeywood Tramway Company in the Huon district lost three bridges and a considerable length of tramway during heavy floods. A number of other



private tramways in the region were also damaged (*Mercury* 19 December 1863, p. 2).

The electric telegraph laid across the island in the 1860s, and from the 1880s, the telephone, improved communication enormously – even to some remote, outlying areas. However, storms and high winds uprooted trees which brought down lines.

Despite some advances made in the provision of navigational aids and lighthouses around the coast, gale force winds and storms continued to cause shipping disasters. The growth of new ports to service the mining fields in the west and north-east and the farming, timber and commercial interests in the north-west and south saw an increased volume of shipping. Trading vessels carrying timber and farm produce plied Bass Strait to Victoria and elsewhere on the Australian mainland, as well as to the home ports of Hobart and Launceston. A burgeoning tourist trade also brought a frenzy of activity to the major ports during the summer months. The development of a fishing fleet, which by 1883 numbered 86 boats employing 175 men, added to the traffic (Storey 1993, p. 5).

The west coast in particular was subject to the full onslaught of the westerly gales, making shipping in that locality especially treacherous. Communications and the supply of food and other necessities to the mining fields and towns in the west often experienced long delays while transport vessels awaited weather that would permit sailing.

#### 4.3.4 Hobart Floods

Henry Butler Stoney, on a visit to the colony in 1856, was surprised by the primitive state of the capital, Hobart, after fifty years of European settlement:

When one considers the means which during fifty years were at the command of the rulers of Tasmania, and the immense amount of convict labour ever at their disposal, it was matter of surprise that the sideways remained so unflagged... that there was no sewerage of the town... that an open creek, still in its original state... should have been allowed to remain as a receptacle for every nuisance, with imperfect bridges over it, and likely every season, after heavy rains, to threaten the city with an inundation most destructive to life and property (Stoney 1856, pp. 11-12).

As Hobart expanded and commerce and industry diversified, residences, shops and industries became crowded in flood-prone areas. The Hobart Council continued to turn a blind eye to encroachment and crowding of buildings along the rivulet and the overcrowding of poorly built tenements in the low-lying, flood-prone suburb of Wapping. The editor of the *Mercury* identified the lack of any plan for the city's growth:

... several of the principal business establishments were built close upon, and in some cases over the bed of the rivulet, and...

at the point where the Creek rushes into the river, on low-lying lands, tenements are crowded together, the abodes of large numbers of the rough-and-ready class...an alteration of some kind [being] imperatively necessary, in order to maintain the health and general well-being of the inhabitants (*Mercury* 28 November 1881, p. 2).

Many of the tenements in Wapping had been built below the level of the street and became quickly inundated, forcing residents to move all their valuables to the second storey (if they had one). The building of retaining walls and a cleaning out of the bed of the Hobart Rivulet may have mitigated the impacts of flooding to a certain degree, but improvements were carried out in a largely piecemeal fashion. Severe flood events in August 1858, December 1863 and June 1872 highlighted the deficiencies. The rainfall for those months was 10.16 inches, 7.60 inches and 6.33 inches respectively (BOM 1936, p. 120).

Following heavy rains and storms in the early part of June 1872, the *Mercury* reported on damage throughout the city. Two breweries and several businesses recorded losses. Fences and outbuildings fronting the stream were carried away. Not unexpectedly, the Wapping district at Lower Collins Street suffered badly (*Mercury* 5 June 1872, p. 2):

The aspect of things was extremely gloomy; the dirty dilapidated buildings which a few hours before housed so many

poor denizens of the locality, had had to be deserted, however unwillingly, the lower parts of the various tenements being under water. The walls of the creek on both sides, opposite the entrance of the Ragged School, having been washed down, the scene of devastation in the immediate neighbourhood was remarkable (*Mercury* 15 June 1872, p. 3).

Through the efforts of the Mayor and the Benevolent Society, over 80 residents were re-located to temporary accommodation at the military barracks, and a relief fund established (*Mercury* 15 June 1872, p. 3). The outlying suburb of Glenorchy also recorded damage during the floods of 1872. Two massive landslips brought down huge trees and other debris into Humphreys Rivulet, which overflowed with a violent burst onto neighbouring properties. Andrew Hanaghan, a foreman on Murray's estate, drowned in a hurried attempt to raise an embankment to withstand the raging water (*Mercury* 6 June 1872, p. 2; *Mercury* 7 June 1872, p. 2; Thomas 1879, pp. 61-62).

When over a year had passed since the floods of June 1872, the *Mercury* editor derided the Hobart Council for not having taken any remedial action (despite the Council having reported and discussed the problems extensively) (*Mercury* 11 December 1873, p. 2). However, the council was in a tenuous legal position when it came to taking action against encroachments on the rivulet, whilst large scale engineering solutions

were also beyond its financial capacity (Petrov and Alexander 2008, pp. 112-113).

Nevertheless, the council made some substantial improvements in the 1880s. Three years after the devastating 1872 floods the *Hobart Town Improvement Act 1875* was passed, giving the council greater authority to remove obstructions and clean the bed of the rivulet. It also required land owners to pay for the cost of building retaining walls where the rivulet passed through their properties. Further floods in 1881 and 1885 confirmed the necessity for the improvements. In November 1881 stormy weather and downpours swelled the rivulet. The *Mercury* reported:

The Hobart Rivulet took the proportions of a river. At first a few limbs of trees and such fragments were all it had to toss about and play with, but as it grew deeper and wider the banks and walls, then bridges, then houses, were swept into it (*Mercury* 18 November 1881, p. 2).

Basements in the city were flooded and Wapping once more became inundated with numerous houses, a tannery and a soap and candle factory suffering damage (*Mercury* 18 November 1881, p. 2). While some improvements to the rivulet and underground drainage undertaken prior to 1885 eased the risk to the upper parts of the city during further

floods in November of that year, Wapping still became submerged (*Mercury* 30 November 1885, p. 3).

By 1888 the building of retaining walls along the course of the rivulet had been completed and work had also begun on laying a solid bed. According to plans approved by Victorian engineer, George Gordon, timber retaining walls had also been constructed to extend and direct the outfall of the rivulet into the Derwent below Macquarie Street Bridge. Dredging was carried out to remove tons of silt which had accumulated near the Old Market (Petrow and Alexander 2008, p. 114). When floods returned in June 1889 the *Mercury* could report that whilst some flood damage had been recorded around the city, Wapping had fared much better than in previous floods. The damage done was apparently ‘trifling’, only a few people had been evacuated as a precaution and the usually flood-prone Market Place was surprisingly dry (*Mercury* 17 June 1889, p. 3). This was a relatively good result given that the rainfall for the month was 8.15 inches – the highest monthly rainfall total for the month of June since recording began in 1841 (BOM 1936, p. 120). Likewise during further floods in January 1893 the rivulet retaining walls were sufficient to control the floodwaters from overflowing (*Mercury* 19 January 1893, p. 3). For the time being, at least, Hobart was at last, relatively free from the ‘flood menace’. This situation would change again early in the new century.

#### 4.3.5 *Launceston Floods*

In Launceston, the government continued to sell off land in the flood-prone localities of the Swamp (now Inveresk and Invermay). Following floods in Launceston on 16 December 1863, the mayor reported: ‘... at 6 p.m. yesterday the flood rose over the embankment on the Swamp, inundating every dwelling, and the families were driven from their houses’ (QVM; LCC 1, item 133). He immediately requested financial assistance from the Colonial Treasurer to provide emergency shelter and food for those affected (QVM: LCC 1, item 133). The *Launceston Examiner* reported on the scene after evacuations had been effected:

The houses presented a strangely desolate and deserted appearance... The rooms of many of these dwellings presented a sad scene of disorder – tables, chairs, bedding, and other furniture floating in the water, and everything in great confusion. In the yards, tubs, buckets, firewood, and other buoyant moveables were swimming about (*LE* 23 December 1863, p. 2).

Despite this distressing episode, however, the government continued its campaign to sell land in the locality. In the 15 years from 1866 to 1881 over £13 000 worth of land at the Swamp was sold (*TPP* 1881 *HAI* no. 40, pp. 1-2). In 1883 after a number of cases of typhoid and diphtheria had been reported in the locality the Sewerage Committee of Launceston concluded that:

It is very much to be regretted that any part of this extensive flat should have been alienated by the Crown, except under restrictions as to buildings. The large blocks originally sold having been sub-divided again and again, facilities were afforded for the erection of cheap cottages by labouring men, the results being that a locality quite unfit for human dwellings is being rapidly covered with them (*LE* 13 October 1883 suppl. p. 1).

The committee recommended that the government be called upon to prevent any further land alienation in the area (*LE* 13 October 1883, suppl. p. 1). Three years later, in 1886, Mault in a report on the sanitary condition of Launceston, came to the same conclusion. He reported that a 10 acre block at Invermay bounded by Invermay Rd, the Esplanade, Gunn and Dry Streets was particularly overcrowded, with a total population of 469 (or 47 to the acre compared with 11 for Launceston as a whole) (*TPP* 1886 *HAI* no. 139, pp. 1-4). He claimed that: 'It is certainly much to be regretted that the Government ever sold this land for building purposes without any regard as to its suitability or any provision for its sanitation'. He advocated that the council purchase the swampland around Launceston that had not yet been built upon from the government in order to prevent any further occupation for human habitation (*TPP* 1886, *HAI*. no. 139, p.8). Whilst concerns in this era were primarily related to sanitation as low-lying poorly drained areas



were believed to be harbours of disease, overcrowding at the Swamp also posed an increasing flood risk.

Although the embankments at the Swamp were raised in 1890 following flooding in June and November 1889, heavy floods in 1893 proved that they were insufficient to protect the area (Munro 1959, p.c58; c53).

According to Gergis and Fowler 1893 was a very strong La Nina year (2009, p. 368). When heavy rain descended upon Launceston in July that year much anxiety was felt for the residents of Inveresk and Invermay.

The *Launceston Examiner* reported that, although previous floods in 1852 and 1863 had been devastating, the fact that these two suburbs had become much more thickly populated was of grave concern. Their worst fears were realized when, on the morning of 21 July, part of an embankment gave way, and floodwaters rushed in (*LE* 22 July 1893, p. 5). Between 200 and 300 people had to be evacuated and temporarily sheltered at Albert Hall, where donations of food, clothing and blankets were distributed. A relief fund was also established (*Mercury* 24 July 1893, p. 3). The floods caused distress, loss of property and employment, and in some cases, sickness (*LE* 29 July 1893, p. 7).

The Mayor of Launceston felt powerless to address the issue as it was the government's responsibility to upkeep the Inveresk and Invermay embankments (AB396/1/6 p. 155). Following the floods of 1893 a public meeting resolved that open drains in Invermay should be replaced by pipes and that suitable measures should be undertaken to make the

embankments more secure (*LE* 29 July 1893, p. 7). A report by Mr H. Taylor, the Inspector of Works, claimed that silt removed from the Tamar could be deposited upon the banks in order to strengthen them (*LE* 28 July 1893). However, as late as January 1894 the issue of responsibility for the embankments remained unsolved. Whilst the government had done some remedial work on the eastern embankment, the Mayor of Launceston was still dissatisfied, claiming that the western embankment was still in need of strengthening (AB 396/1/6, p. 183).

#### 4.3.6 *Summary*

In this era, a lack of town plans to direct and regulate growth along waterways continued to highlight flooding problems. As long as the government continued to allow alienation of land in these localities, the councils remained in a tenuous position. This was particularly the case in Launceston where flood-prone reclaimed land was sold, sub-divided and became overcrowded creating a potentially dangerous and deadly situation. In Hobart, following a severe flooding episode in 1872, the council was given greater powers over the rivulet. While some remedial work was subsequently carried out along its course, the effects of this work would not prove long-lasting (see chapter five). The authority of the council in preventing and removing encroachments was less clear. Flooding in these built-up areas of cities led to the inundations of homes and businesses which caused distress, sickness and disruptions to livelihoods. Away from the major towns flooding often caused

widespread havoc to communication networks. A poorly designed railway network was found highly subject to flood damage, and in some instances actually increased the flooding experienced on neighbouring areas. Public works generally languished in the mining fields and waste lands of the island – poor roads, liable to become boggy and impassable in wet weather, continued to be the bane of settlers and miners in these regions. The west, with its dense forest and high rainfall, produced what must have seemed, at times, insurmountable challenges in transport and communications, as well as in the drainage and sanitation of towns. In the settled districts a small number of wealthier farm owners undertook flood control and drainage measures to prevent damage to hop fields and orchards, and also to prevent the spread of liver fluke in sheep, but for the most part such methods were relatively rare. In this section I have clearly demonstrated that floods during this period created situations that were at odds with Tasmania's 'Sanatorium of Australia' image.

In the following period of 1901-1960s unregulated town growth along waterways contributed to the damage caused by cataclysmic floods in Launceston in 1929 and in Hobart in 1960. Mining ventures, rural communities and transport networks also continued to suffer by periodic floods.

#### **4.4 Bushfire: 'Black Desolation'**

As settlement spread into the forests and mineral fields, fire led the way. Waste Land selectors used fire to clear scrub and undergrowth so that

crops and pasture could be sown. Fire was also an aid to mineral exploration and track construction in the mining districts. Vast tracts of country were set on fire in the process. As mines, farms, huts, houses, store, hotels, mining camps and eventually towns were established in the forests, they could be threatened by fire which, under the wrong conditions, could spread at great speed, consuming all in its path. Fire also scarred and blackened beauty spots, on which the island's tourist reputation had come to depend. A small number of people began protesting about the impact of escaped fires on the island's timber reserves and recreational assets. They called for greater enforcement to prevent bushfire from occurring and for the reservation of forests to protect them from such 'wanton firing and destruction'.

Bushfires continued to be a feature of the landscape during hot, dry summers. The forested region of the Huon was particularly vulnerable at such times, but as other areas, such as the north-west and north-east, were opened up for mineral exploration and settlement, they too came increasingly under the threat of fire. The summers of 1861-1862, 1877-1878, 1880-1881, 1886-1887, 1894-1895, 1896-1897, 1897-1898 and 1899-1900 proved to be the worst. Nor was the west coast immune from such outbreaks. Bushfires were experienced at Strahan on the west coast in January 1890, at Dundas, Strahan and Corinna in February 1895, and at Penghane near Queenstown in December 1896. By far the most

destructive fires for this period, dubbed the ‘Black Friday’ fires, occurred in the summer of 1897-1898.

#### *4.4.1 Tourist Assets*

On a trip to the mining fields of the west coast in 1887, Walker reported on the destruction caused by an extensive bushfire along the Collingwood River. From this area awe-inspiring views of the imposing peak, Frenchman’s Cap, could be attained, and the tourist potential of these western ranges was beginning to receive attention through the agency of the few adventurers who made the arduous journey to reach them. Walker’s account of the fire-ravaged country which lay before him brings to light the paradox of fire in Tasmania – while it was considered a useful tool for the explorer and prospector in opening out thickly wooded country, it was also visually confronting and unsightly:

To the tourist it is exasperating to see the exquisite native beauty of these forests desecrated and turned into grim blackness by the fires which during this hot summer have swept over so many miles of bush. But doubtless the prospector views it with other eyes... we were forced to admit that even these disfiguring fires might have their use in opening up the country, facilitating exploration and diminishing the hardships of these pioneers of civilization and settlement (Walker 1993 [1887], p. 29).

The remote western mountains were not the only bush lands with tourism potential to be affected by fire. On a later trip to the east coast in the dry year of 1895 Walker wrote to his sister, Sarah, about recent fires at St. Mary's Pass:

It is really a fine gorge, but people expect too much and fires have destroyed it a good deal... Instead of reserving these places, the Government let people take up little selections of no value as farms, and they burn the bush and destroy the place as an outdoor attraction to tourists (UTAS archives W9/H1/18).

Walker was not alone in his concerns. Conservator of Forests, George Perrin, was one of the first public officers to draw attention to the negative effects of fire on the island's tourist reputation. He noted that in the summer months excursionists to Mount Wellington overlooking the capital were in the habit of lighting fires and causing much damage: 'Troops of boys, armed with tomahawks and guns, are everywhere to be met with in holiday time, lighting fires, chopping down saplings, or setting fire to the forest by the use of inflammable gun-wads etc' (*TPP* 1887, *HAI* no 61, p.1).

Perrin expressed concern over the impact of such activity on the natural assets of the mountain, which he referred to as a 'grand recreation-ground' for residents and tourists (*TPP* 1887 *HAI* no. 61, p.1).

In the summer of 1897-1898, Walker watched with horror as devastating fires wrought destruction on Mt Wellington and far beyond. He wrote again to his sister on 20 January 1898:

On Friday it was a furious wind... Driven by this wind the whole body of fire swept down over the Springs and the Bower, and simply licked up all the bush. The whole western slope of the mountain has been burnt out and the glories of the Huon Road are no more. Nothing remains of all that lovely bush but a black desolation (UTAS archives W9/H1/18).

That week, wrote Walker, 'can never be forgotten'. The loss of Hobart's natural assets, he calculated, would lead to the ruin of many tourist lodging houses (UTAS archives W9/H1/18). The fires were so intense that many eucalypt trees were killed and the undergrowth took many years to recover. Nine years later, in 1909, naturalist G. Smith outlined the damage:

... to the south and south-west the ruinous fire of nine summers ago has destroyed a great part of the vegetation upon the higher slopes, leaving the unsightly white spars of the Gum-trees standing by thousands, or lying prone upon a parched and rocky soil that has not yet sufficiently recovered to support even a moderate undergrowth (Smith 1909, p. 50).

During this period, the conservationist viewpoint gained increasing numbers of supporters, but their voices remained relatively weak in an era characterized by large-scale mineral exploitation and forest clearing for settlement.

#### *4.4.2 Mining Fields and Towns*

Fire was a great aid to mineral discovery – opening out the country, aiding travel through the thick scrub and bush and exposing mineral lodes. Vast expanses of potentially mineral rich lands were set ablaze in the process of mineral exploration (Pyne 1991, p. 196). Track construction parties in the 1880s and 1890s also lit extensive fires (Marsden-Smedley 1998b, pp.19-20). These huge fires burnt through the expanses of button grass and tea tree scrub of the southwest with great effect, reducing travelling times and revealing the easiest path through the rugged terrain. It was also believed that firing the button grass plains of the south-west could transform them into pasture (Marsden-Smedley 1998b, p. 21).

Conflagrations were lit wherever mineral prospectors and track cutters ventured. In an 1898 report on the state of the timber industry in Tasmania, E.A. Counsel, the Surveyor General and Secretary of Lands, expressed dismay at the destruction being carried out in the mining districts, particularly on the west coast: ‘... there is a whole-sale and reckless destruction of the forest growth, young and old by bush fires in



all directions during many months of the year' (*TPP 1898 HAJ* no. 48, p. 4).

Fires destroyed vast quantities of timber and firewood required for mining purposes (Marsden-Smedley 1998b, p. 22). In 1898 George Perrin, by now the Conservator of Forests in Victoria, noted in a report on Tasmania's forest resources that:

In order to clear prospecting claims it is quite an ordinary custom for the prospector to set fire to the timber and let the flames spread at will over as much of the surrounding country as they can reach... This is ignorantly regarded as a creditable and serviceable exploit in 'clearing the country', no consideration being given to the fact that the timber destroyed in this haphazard fashion will be wanted later on, and can only be replaced at great cost (*TPP 1898 HAJ* no. 48, p. 13).

Mining equipment, miners' huts and later whole towns also came under threat. Extensive fires on Christmas Day 1876 created a frightening scene at the Albert Company's claim at Ringarooma in the north-east:

We spent a fearful Christmas Day. The trees all around us were in flames; we could get no water, all communication was cut off except one narrow track, and the smoke was so dense we could not have found our way through it... The flames came to within a few yards of the hut, which was so hot we could hardly

touch the boards, and the trees were falling on all sides of us. Twelve or fourteen fell within a very short distance, and all were wrapped in flames... The tracks and the face on the works are all filled up with fallen trees (*Mercury* 29 December 1876, p. 2).

Despite the terrifying ordeal the miners managed to save the hut and most of the equipment (*Mercury* 29 December 1876, p. 2). Neither were the normally sodden west coast mines immune from such conflagrations. In January 1878 fires burnt sections of tramway at the Stanhope Tin Mining Company's operations near Waratah in the west, as well as a large quantity of firewood which had been collected to feed the furnaces. The Mt Bischoff Co.'s tramways and the township of Waratah also came under threat from the fires (*LE* 23 January 1878, p. 2).

The small port of Trial Harbor, which serviced the Zeehan mining district, was consumed by an enormous blaze in February 1887. A roaring north-westerly gale on the night of 12 February carried a fire from nearby hills into the town with such ferocious speed that residents were caught unawares (*Mercury* 19 February 1887). At least four houses, the hotel and two store buildings were burnt to the ground – gunpowder kept in one of the stores added dramatically to the blaze by exploding and blowing the roof off the building. The 24 residents of the town lost everything, including all their clothes and provisions (*Mercury* 18 February 1887, p. 3; *Mercury* 25 February 1887, p. 4). The town of

Zeehan itself also came under attack in January 1893 as a large bushfire descended upon the main street. Thick scrub and dry grass near buildings heightened the danger, with many houses on the outskirts of the town being lost (McNeice 1993, p. 47). In February 1895 fire also desolated the mining town of Dundas, with at least 11 houses lost (*Mercury* 9 February 1895).

Penghana, a mining camp housing hundreds of workers and their families at the Mt Lyell mine, had sprung up on the company's mining claim – dangerously close to the works. On a hot, windy day on 12 December 1896 a blaze swept down from the nearby hills and through the town, obliterating the premises of store-keepers, the baker, hairdresser and tobacconist, butcher, chemist, newsagent, photographer, the billiard room and two boarding houses, as well as hundreds of cottages, huts and tents - only five buildings along the tramline between Penghana and Queenstown escaped the fire. Hundreds were rendered homeless. Thomas Brent, who had been wood-cutting for the Mt. Lyell mine, was burnt to death (*Mercury* 14 December 1896, p. 3). In the aftermath of the fire the mining company banned any re-building at Penghana or along the railway and tram lines. Land and cheap building materials were made available for the miners' and their families to re-locate in nearby Queenstown (*Mercury* 15 December 1896, p. 2).

The western mining districts also suffered heavy losses during the devastating fires in the summer of 1897-1898 (see section 4.4.4).

#### 4.4.3 *Timber Industry*

Tasmania's timber industry was boosted from the 1850s by the growing demand in Melbourne for building timber and on the Victorian gold fields for both sawn timber and split palings (Carron 1985, p. 60). Timber harvesting was primarily carried out in the heavily forested regions of the north and the Huon Valley in the south. Privately owned sawmills and wooden tramways for transporting the milled timber to port were erected amongst the tall forests, making them particularly prone to damage by bushfire. Large stacks of timber and split palings, timber tramways wending their way through the dense bush and the timber huts of mill workers were all highly flammable. A fire which ravaged Little Oyster Cove in the Channel District in January 1858 consumed 20 000 palings and a tramway recently constructed by Dr Crowther (*Mercury* 7 January 1858, p.3).

Such destruction of forests, mills and tramways threatened the commercial viability of the industry. The industry was largely unregulated until the 1880s when Acts were passed which provided for the establishment of reserves for the preservation and growth of timber, and also for the appointment of a Conservator of Forests (Carron 1985, p. 61). In his first report in 1887, George Perrin stated that he considered fire to be the greatest enemy to the protection of forests for systematic and economical harvesting. Illegal cutting and grazing activity were also considered threats (*TPP* 1887 *HAI* no. 59, p.3). Little was done in the

way of fire protection however. The position of Conservator lacked any real authority and in the 1890s forestry issues lapsed back into the hands of the Lands Department (Carron 1985, p.62). Regulations introduced in 1894 to prevent the lighting of fires on unoccupied crown land without official permission, and in 1896 forbidding saw millers to light fires between October and March each year, were largely ignored and not policed (Young 1991, p. 60).

The timber industry was particularly hard hit during the devastating 1897-1898 fires when much valuable timber as well as sawmills and associated works were destroyed (see section below).

#### **4.4.4 *'Black Friday': The Summer of 1897-1898***

New Years Eve 1897, dubbed 'Black Friday', was oppressively hot and windy. The country was tinder dry after two years of severe drought (Gibbs and Maher 1966, p. 22; Foley 1957, p. 42). Temperatures on 30 and 31 December were 40° C or above (BOM 2011). A number of fires had been smouldering in the western slopes of the Wellington ranges for days preceding the disaster, and with soaring temperatures and strong north-westerly winds these fires quickly broke out of control. Fires threatened Fern Tree on Mt. Wellington on 31 December and a massive fire front swept through the towns of Longley and Sandfly reducing the area to 'one vast cinder patch' (*TM* 8 January 1898, p. 9). Churches, schools, hotels, scores of houses, orchards and fields were consumed in the fire's path. Catherine Matthews, aged 26, died in hospital several

days later from injuries received in the Longley fire (*TM* 8 January 1898, p. 9). Fires also swept the Channel and Huon districts, and elsewhere in the colony fires raged at Colebrook, Lake St Clair in the highlands, Scottsdale in the north-east, Sorell, Bream Creek and the Tasman Peninsula in the south-east, and at the west coast mining fields at Zeehan, Ringville and Mt. Read (*TM* 8 January 1898 pp. 9-13).

A second wave of fires hit the northern districts in February 1898, threatening life and property at Sheffield and elsewhere on the north-west coast, in the Tamar valley, in the Scottsdale district and St Marys in the north-east, and at Waratah in the west (*LE* 8 February 1898, p.6; *LE* 9 February 1898, p. 6-7; *LE* 11 February 1898, p. 6; *LE* 12 February 1898, p. 11). Fresh outbreaks in the south caused further consternation and suffering (*Mercury* 9 February 1898, p. 3; *Mercury* 10 February 1898, p. 3; *Mercury* 11 February 1898, p. 3). The immense destruction created throughout the colony by the 1897-1898 fires necessitated the organisation of disaster relief on a scale never before experienced in the colony.

As in the 1853-1854 Huon fires, the small selector or tenant farmer, carving out a subsistence living on a relatively small bush block, was most vulnerable during bushfires. The opening up of vast new tracts of forested country in the south, north-west and north-east of the island for selection under the 'Waste Lands' Acts placed many more settlers in potential danger. During the 'Black Friday' 1897 fires settlers in the

Huon and Channel districts and Tasman Peninsula particularly suffered. During the second wave of fires which ravaged the northern districts in February 1898, small-scale settlers on the north-west coast and at Sheffield, as well as at Scottsdale and St. Mary's in the north-east, also suffered heavy losses. The editor of the *Launceston Examiner* described the lack of preparation for fire by many of the small settler class, claiming 'as a rule, his hands are full with plenty of other work':

The pioneer settler rarely troubles himself to take special precautionary measures against such visitations. He scrubs a certain area of his land, erects his dwelling house, and puts in his crops, with a forest of dead and dying timber on all sides of him. His selection constitutes a veritable court for the Fire King to hold high revel in (*LE* 4 January 1898, p. 4).

Fire could destroy in minutes what had taken years of work to achieve. One sufferer spelt this out to readers of the *Mercury*:

A small 25 acre section I purchased on a 14 years' lease from Government. A house of three or four rooms is erected. A quarter of an acre is put in as garden, and one acre of land cleared and planted with orchard, while about four or five acres are scrubbed and sown with grass, the whole cultivated part, securely fenced, and the rest left. This goes on for several years, say 10 or 15, until the whole is cleared and sown with

grass. The apple orchard comes in full bearing, a few tons of hay grown and placed in barn, by the side of which is a cowshed, pigsty and fowlhouse. I have my fortune; I am happy... The fire comes and sweeps off everything. The fruit on the trees is roasted, the trees burnt etc etc, we have only the clothes we stand up in (*Mercury* 12 February 1898, suppl. p. 1).

There were many such stories in the wake of the 1897-1898 fires, and their plight aroused a good deal of sympathy, as it was this class of person who was seen as the 'back-bone' of the colony – the men and women responsible for clearing the forest so that civilization could extend its reaches (*TM* 8 January 1898, p. 10). After the 'Black Friday' fires there was a huge outpouring of sympathy. Many of those who lost their homes were taken in by neighbours or family or accommodated in local schools. The Mayor of Hobart promptly began a subscription fund to raise money, the military distributed tents and blankets and local groups gave out private donations of clothes, food and blankets (*Mercury* 7 January 1898, p. 3). Fund raising concerts were held. As the full calamity of the fires became apparent the Government also became involved – a central committee was established for the administration of the relief fund and the government agreed to match the private subscriptions on a £1 for £1 basis, which amounted to £3332. It also supplied grass seed, wire for fencing and carried out repairs to bridges and culverts - the total cost being £8880 (*TPP* 1898 *HAI* no. 43). Cheap,



temporary occupation licenses to crown land adjoining the property of those who had suffered from the fires was also offered (*TM* 15 January 1898, p. 11).

The 1897-1898 fires also had devastating consequences for the mining and timber industries. At Ida Bay in the far south one correspondent described the damage to Mr Tyler's sawmill:

They had erected a new mill about five months ago entirely of green wood with beams of about 12 x 12. They had all new machinery, and it was considered one of the best worked sawmills in the south of Tasmania. To give you an idea of the extent of their loss, they have had totally destroyed eight men's huts, a blacksmith's shop, stabling, bullocks' sheds, bush tools, mill stores, their office, and all their books and papers, together with about £70 worth of new saws, £60 worth of belting, and about 4½ miles of tramways, totaling [sic] a loss of about £2,000, which was uninsured (*TM* 15 January 1898, p. 10).

Other mills in the area had also suffered heavy losses (*TM* 15 January 1898, p. 10).

In the western mining districts the 'Black Friday' fires caused much anxiety and destruction. On 30 December 1897 a correspondent from Zeehan sent a telegraph to the *Mercury* reporting on fires which, in the very hot and windy conditions, were threatening a number of mines in

the locality (*Mercury* 31 December 1898, p. 4). Several days later fires still raged at the Argent and Montagu no. 1 mines, along the N. E. Dundas tramway and at Ringville, where tramways and numerous cottages were burned. Another fire at Mt Read destroyed over twenty houses and huts, a manager's cottage and the assay offices of the Barlen and Hercules claims (*TM* 8 January 1898, pp. 12-13). Fire also destroyed houses around Queenstown and the Linda Valley (*Mercury* 4 January 1898, p. 4). Further fires in February threatened the mining town of Waratah (*LE* 12 February 1898, p. 11).

By mid-January 1898 mines on the east coast were also troubled by bushfires. At the Cornwall mines near St. Mary's the manager's house, office and stable were consumed (*Mercury* 13 January 1898, p. 3). More fires threatened mining operations and towns in the Derby and Warrentina districts in the north-east in early February (*LE* 9 February 1898, p. 7).

In the aftermath of the 1897-1898 fires, a Port Cygnet sufferer made an impassioned plea for the better enforcement of the *Bush Fire Act 1854* (*TM* 8 January 1898, p. 13). He was not alone in this view (*Mercury* 14 March 1898, p. 3). George Perrin, the former Conservator of Forests, went one step further – he called not only for greater enforcement but a review of the Act and tougher penalties (*Mercury* 15 January 1898, suppl. p. 2). He reported that in the 11 years since he had left the colony the waste, vandalism and ravages by fire had continued unabated and

seriously affected the commercial viability of the timber industry (*TPP* 1898 *HAI* no. 48, p.7). Several years later in 1900-1901, Heyn published an article on Tasmania's timber resources in the *Royal Society of Tasmania's Papers and Proceedings*. He claimed that the *Bushfire Act 1854* was clearly ineffective because it had not been adequately enforced:

Everywhere I found abundant evidence of the recklessness with which fires were lighted, and the carelessness with which they were left burning afterwards, when a strong breeze might raise a conflagration in which lives and property would be imperiled (Heyn 1900-1901, p. 29).

He pleaded with the government to invest in bushfire prevention measures, rather than compensation after the event, and to ensure that the island's timber resources were adequately protected (Heyn 1900-1901, p.29).

Yet others believed that more stringent enforcement measures would be useless – fires were inevitable and imposing fines was not the answer. They argued that the only way to combat deadly fires was to carry out regular burning regimes in winter and by exercising due care (*Mercury* 15 January 1898, suppl. p. 2). Some thought that the event was out of man's control, blaming divine providence and calling for a day of public prayer (*Mercury* 15 February 1898, p. 3).

Even in the immediate aftermath of the widespread and catastrophic 1897-1898 fires the benefits of fire were still lauded by many. The *Tasmanian Mail* claimed that on the west coast the fires had cleared away miles of impenetrable scrub, making the work of the prospector easier (*TM* 8 January 1898, p. 12). Skemp, in his memories of Myrtle Bank in the north-east, found that, despite the immediate threat to his house and extensive damage to fences caused by the 1898 fires, by removing many of the dry logs and debris from the property the fires had actually done more good than harm. He claimed that ‘the danger from subsequent fires was lessened and grass seed sown on the burnt ground soon provided plentiful feed for the stock again’ (Skemp 1952, p.123).

Despite the devastation wrought in the 1897-1898 fires, the government took no action on the issue. No further legislation was introduced and bushfires continued to create damage and cause distress. Fire-fighting in this period remained rudimentary and mostly ineffective. Rev. J. Mayson of Swansea, in a letter to a friend, described the process:

Those whose property is endangered generally employ a number of men to battle with the flames. Each man takes a long branch that has a number of twigs covered with leaves at the end. The party beat the grass and extinguish the fire, separating and hastening along in front of it as it advances, for it may be a mile or two in width. In calm weather, if sufficient hands are employed, they are able to subdue the flames... if the wind

freshens... and blows anything like a gale, the labour is all in vain, and they are compelled to abandon it... Under any circumstances it is a time of great anxiety, and I cannot imagine work more exhausting... The heat is extreme, so is their thirst (*Mercury* 29 July 1872, p. 3).

Assisted by insurance companies, a number of country town authorities and mining companies purchased fire engines (McNeice 1993, p. 2). However, their use was generally confined to use in township and mine fires, rather than against bushfire. They would have been no match for the ferocity of a rapidly spreading wildfire.

Further bad fire seasons followed the 1897-1898 fires. Early in 1900 further destructive fires burnt through areas settled by small-scale farmers in the Derwent Valley, as well as at Dromedary, Broadmarsh and Brighton on the eastern shore of the Derwent (*Mercury* 2 January 1900, p. 2; *Mercury* 3 January 1900, p. 3; *Mercury* 4 January 1900, p. 2; *Mercury* 5 January 1900, p. 3; *Mercury* 6 January 1900, p. 2).

#### 4.4.5 Summary

By the turn of the century fire was still widely seen as more of a benefit than a curse by farmers and mineral prospectors. However, those eking out a living in the forested regions of the island were particularly at risk from escaped fires. Tourist assets also suffered damage periodically. Even following the devastation wrought by the 1897-1898 fires only a

handful were beginning to call for the greater protection of forests and property from the negative impacts of bushfires. Legislative backing was ineffective. No changes were made to the *Bush Fire Act 1854* until well into the next century and fire protection remained a relatively low priority. Bushfire fighting methods remained primitive, with no organised brigades or forward planning.

In the following period, 1901-1960s, the expansion of the timber trade and the establishment of a pulp and paper industry saw remote communities of timber workers and their families placed in positions of high risk from bushfire. Selectors under the closer and soldier settlement schemes were also highly vulnerable to bushfire damage. Urban areas on the bush fringes of Hobart city became the scene of catastrophic fires in February 1967.

#### **4.5 Conclusions**

This chapter has followed the course of Tasmanian history from the granting of independent responsible government in 1856, through the deep depression and stagnation from 1858 to 1872 to the more optimistic period of the mineral boom of the 1870s and 1880s, and finally to the closing years of the century, with Federation looming. New challenges presented themselves at every turn, and at each stage Tasmania's climatic variability had to be contended with. The promotion of the island as the 'Sanatorium of Australia' drew public attention away from a shameful and painful past to its climatic and geographic features, but

also caused anxieties when its reputation failed to meet expectations. This chapter concludes that, at times, drought, floods, storms and bushfires threatened the public welfare of Tasmania's population – their lives, health, livelihoods and property. Contaminated town streams during drought, the devastation of the island's tourist assets – its fern glades and forested mountain slopes – during bushfires, the spread of liver fluke disease in sheep by flooded pastures, and the blocking of roads by the fall of huge stands of ring-barked trees during storms, are just some of the examples given of this. The resultant Tasmanian landscape proved a 'far cry' from its English counterparts that were upheld as the 'ideal'.

The promotion of the island as a 'sanatorium' was largely the product of the need to attract emigrants and tourists, but it also influenced an emerging Tasmanian identity based on a celebration of nature, climate and the ongoing assertion of 'Englishness'. Tasmania was physically separated from the other mainland colonies by Bass Strait and it was this 'separateness' and difference that helped shape its island identity and retarded the development of a more nationalistic outlook. Ultimately, it also hindered an acceptance of its true environmental and climatic characteristics.

Authorities generally failed to address the negative impacts of climatic variability. This is demonstrated through the government's continued rejection of proposed public irrigation schemes and its failure to exert

control over the island's waterways. A government policy of settling small-scale farmers in marginal and forested areas, with little or no provision for adequate road making, water supplies and bushfire control, left them at high risk of danger from climatic fluctuations. Mining interests suffered by droughts, damaging floods and bushfire, but little government assistance was given (the Mt. Cameron water race being the exception).

Town councils were generally hindered in their ability to construct adequate water supply schemes and/or flood control measures by a lack of funds and ongoing confusion over legislative authority. The government also failed to take the issue of forest conservation and forestry seriously, and, despite the widespread devastation of the 1897-1898 fires, failed to introduce effective bushfire control measures.

It was largely left to private interests to carry out works on their own properties or in conjunction with other landowners, in order to mitigate drought, floods or fire. While a number of individuals made significant advances on their own properties, for example, those in the hop industry with irrigation techniques, most Tasmanians were still left under-prepared for the negative impacts of a variable climate.

Overgrazing and rabbit infestation denuded the moisture-holding properties of the soil, exacerbating both drought and flood effects. High intensity bushfires, such as in 1897-1898, exposed the soil to the eroding



properties of any wind or heavy rain that followed. Diversion and damming of waterways to cope with drought altered natural flows irrevocably, often with unpredictable results during subsequent floods.

In the following chapter I trace the Tasmanian story from Federation of the Australian colonies in 1901 to the close of the 1960s. This era is marked by the development of an industrial vision for Tasmania based on its hydro-electric generating power, plentiful water and abundant natural resources. The 'Antipodean England' myth remained strong throughout this period, although had begun to erode by the close of the 1960s. It is argued that a 'Lancashire of the South' vision for Tasmania, based on an emulation of Britain's industrial power, ran concurrently with the continued promotion of Tasmania's rural areas as 'reminiscent' of England. Drought, floods and storms and bushfire continued to be down-played in such promotions, and also in government policy. However, the reality was that these climatic variables caused greater distress, disruption and destruction than ever before.

## PART II: TASMANIA

### Chapter 5: ‘Lancashire of the South’?: A Federated State 1901-1960s

#### 5.0 Introduction

On the morning of 8 February 1967 the *Sydney Morning Herald* broke news to its readers of bushfires that were causing immense damage throughout southern Tasmania:

It is indeed something of an irony that this fearful fire should have raged through country which most Australians think of as the greenest and “most English” in their dry and dusty continent (*SMH* 8 February 1967, p. 2).

The ‘Black Tuesday’ fires of 1967 left hundreds of thousands of acres of country blackened throughout south-eastern Tasmania, caused the loss of 62 lives and the destruction of over 1400 buildings. Whole communities were virtually wiped off the map. Tasmanians had been lulled into a false sense of security about the potential dangers of deadly bushfires in their home state. The continuing misrepresentation of the island as ‘another England’ in the period 1901-1960s was evident through the government’s rural, tourism and industrial development policies. It is argued that these policies and visions for Tasmania contributed to a lack of planning for the risks associated with climatic variability.

In order to 'put Tasmania on the map' in the post-Federation era the government embarked on a large scale programme of hydro-industrialisation. The state was widely-promoted as well-watered and resource abundant, and ripe for industrial development. Loyalties to the Empire remained strong and many Tasmanians still thought of their island as an 'expatriated England'. It continued to be promoted in the tourist literature as an 'Antipodean' travel alternative to the old country. Drought, floods and fire had little place in these visions of Tasmania, yet impacted significantly upon them. The establishment of power hungry industries, together with a rapidly rising urban population in the capital, Hobart, placed heavy demands on the island's hydro-electric generating capacity, which failed to keep pace during drought periods. Cities and towns continued to expand around flood-prone rivers and streams. These often became choked with rubbish and debris during dry periods that made them potentially more dangerous during floods, with little or no intervention from local authorities. The extension of isolated timber and logging operations into the tall forests of the deep south and mountain ranges of the Derwent Valley placed new communities at risk of bushfire outbreaks. New mining ventures on the west coast proved highly vulnerable to bushfires. Hydro-electric and tourist developments and new roads opened up hitherto remote highland areas, placing employees and travellers at risk of escaped forest fire, snow storms and landslides. Hobart and its suburbs also expanded into the densely covered lower slopes of the Wellington ranges and surrounding hills, creating a

potentially explosive situation that erupted with full force in the fires of ‘Black Tuesday’ in 1967. Rural communities continued to suffer through misguided land settlement policies, the reluctance of government to invest in irrigation infrastructure and ineffective bushfire legislation. It is argued in this chapter that the dominant images of Tasmania’s climate in this period were often at odds with the reality, and left Tasmanians underprepared for major drought, flood and bushfire disasters. Section 5.1 outlines these images and perceptions, as well as alternative views. Sections 5.2-5.4 outline the main impacts of, and responses to drought, floods and storms and bushfire in this period. The chapter concludes at the end of the 1960s, a time when attitudes to the Tasmanian landscape and climate were beginning to change. Conclusions are provided in section 5.5.

## **5.1 ‘Lancashire of the South’: Industrial and Other Visions**

### **5.1.1 ‘Lancashire of the South’**

Federation initially created a spirit of optimism in Tasmania – the removal of inter-colonial trade barriers and her new status as a state of the Commonwealth of Australia gave Tasmania the chance to leave behind the shackles of the past and plan for a bright and prosperous future. Manufacturing based on the island’s water power potential was widely regarded as the key to success. In an article sourced to a publication named *Arena* and entitled ‘The Bright Little Island’ it was remarked:

... the dawn – or rather, advanced morning – of a new industrialism gives fairest promise that Tasmania will occupy a place in the forefront of federation. With her great mineral wealth as the lodestar and electricity the pioneer of that industrial awakening, her success as an up-to-date and go-ahead State is assured (quoted in *Mercury* 21 August 1901, p. 6).

Hydro-electricity was already being used to power the city of Launceston and mining ventures in the west. The success of these relatively small schemes provided a glimpse of what could be achieved by more ambitious projects utilizing the highland lakes and rivers of the central plateau. When B. S. Bird,<sup>65</sup> the State Treasurer (in the absence of Premier N. S. Lewis),<sup>66</sup> officially opened the Tasmanian Industrial and Manufactures Exhibition in Hobart on the 20 February 1901, he expressed his strong belief that by utilizing the island's many streams and rivers for electricity, Tasmania could become a 'manufacturing

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<sup>65</sup> Bolton Stafford Bird (1840-1924) was a minister of religion originating from Northumberland England. In 1874 he took up a post with the Congregational Church, Hobart, before establishing a farm near Geeveston in the Huon district. He became active in local affairs and in 1882 was elected to represent Franklin in the House of Assembly. In 1899-1903 he was Treasurer in the Lewis ministry. He later gained a seat on the Legislative Council which he held until 1923 (Craig, C., 'Bird, Bolton Stafford (1840-1924)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.anu.edu.au/biogs/A030155b.htm>).

<sup>66</sup> Sir Neil Elliott Lewis (1858-1935) was born in Hobart and educated at the High School, before studying law at Oxford University. He was admitted to the Tasmanian Bar in 1885. He was first elected to the Legislative Council in 1886, representing Richmond. He became Premier in 1899, a position that he held until 1903. He served again as Premier from 1909-1912 (Bennett S, 'Sir Neil Elliott (1858-1935)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.anu.edu.au/biog/A100088b.htm>).

centre of Australia', and he urged all Tasmanians to work toward that end (*Mercury* 21 February 1901, p.4).

Echoing this stance was R. E. Macnaghton,<sup>67</sup> who delivered a paper before the Royal Society of Tasmania in April 1902, on 'Tasmania as a Manufacturing Centre'. He argued that the island's potential for water power, amiable climate, excellent water supply and port facilities could see the capital, Hobart, become the 'manufacturing centre of Australia'. In addition to the expansion of the island's fruit, timber and beer industries, Macnaghton envisioned Tasmania as a manufacturing centre for the wool and textile industry which could one day rival Yorkshire (*Mercury* 1 May 1902, p. 3).

By the end of 1910 that vision was becoming a reality. On 17 December of that year the first sod in the construction of a major hydro-electric scheme utilizing the waters of the Great Lake, Shannon and Ouse Rivers was turned by Mrs Ida McAulay, the wife of Alexander McAulay,<sup>68</sup> the maths and physics professor who first devised the scheme. In her speech on this occasion Mrs McAulay spoke of the transformation that it would

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<sup>67</sup> Russell E Macnaghton was a barrister and scholar of Eton and Cambridge University. He spent 12 years in Australia during which time he was an advocate of free trade and stood unsuccessfully for a seat in the electorate of Franklin. He resigned his position as examiner at the University of Tasmania in c1904 to take up a lectureship in Classics at McGill University in Canada (*Mercury* 26 October 1904).

<sup>68</sup> Alexander McAulay (1863-1931) was a mathematician and physicist born at Luton, England. In 1893 he became the first lecturer and later professor of mathematics and physics at the University of Tasmania. He married Ida Mary Butler (1858-1949) in Hobart in February 1895. McAulay developed a passionate interest in hydro-electric power, which led to the development of Tasmania's first hydro-electric scheme at Great Lake (Scott B, 'McAulay, Alexander (1863-1931)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu/biog/A100196b.htm>).

bring for the island state: 'It means the advancement of Tasmania, and the making of her [into] what she has never been, never would have been, but for this great power scheme, or others of a similar kind' (*Mercury* 17 December 1910, p. 5).

Initially construction was undertaken by the Melbourne-based Complex Ores Company with the view to establishing carbide and electrolytic zinc industries in the state. With frustrating construction delays and difficulties experienced by the company in securing finance, the government took over the scheme in 1914. John Butters,<sup>69</sup> who had overseen the construction to date, was appointed engineer-in-chief and general manager to the new Hydro-Electric Department and he immediately began an aggressive marketing campaign to attract heavy industry to the state.

The Great Lake Scheme and associated powerhouse at Waddamana was officially opened on 6 May 1916, and two months later a contract was signed for the supply of power to a new zinc plant at Risdon in the northern suburbs of Hobart. By 1920 the textile manufacturers Kelsall and Kemp and Paton and Baldwins had decided to establish mills in

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<sup>69</sup> Sir John Henry Butters (1885-1969) was an engineer from Hampshire, England. He re-located to Melbourne in 1909 as chief engineer to the Australasian branch of the British firm, Siemens Brothers Dynamo Works Ltd. In that capacity he consulted to the Complex Ores Company Ltd about proposals to produce hydro-electricity in Tasmania. In 1911 he was appointed chief engineer of the Great Lake scheme, a position he retained (as well as becoming general manager) when the scheme was taken over by the Tasmanian Government in 1914. In 1924 he was appointed to the Federal Capital Commission, a body charged with developing Canberra as Australia's seat of Government. He later re-located to Sydney to run an engineering consultancy business (Linge G, 'Butters, Sir John Henry (1885-1969), *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu.au/biogs/A070517b.htm>).

Launceston. In the south, the British Cadbury-Fry-Pascall chocolate manufacturer was embarking upon a factory at Claremont, north of Hobart. The Electrolytic Zinc Company alone had been guaranteed up to 50 000 hp of electricity at bulk prices and it soon became clear that in order to meet this commitment and supply to other bulk consumers, that the Great Lake scheme would need to be expanded. A second stage of the scheme was completed in 1923, by which time electricity was being transmitted to the capital, Hobart, to the far south at Port Cygnet in the Huon district, as well as to Launceston in the north. Plans were underway for the north-west region to also be connected (*Mercury* 5 July 1924, p. 25).

This was just the beginning of the industrial transformation of the island. In an article published in the *Mercury* in July 1924, Butters outlined a 20 year vision for Tasmania – he foresaw a doubling of the population of Tasmania’s main towns, the electrification of the railways, and the establishment of paper, cement, iron and steel industries. Cotton mills would be established in both the north and south of the island and Tasmania would become known as the ‘Lancashire of the South’. He envisioned that farmers would be using electricity for pumping water for irrigation and producing chaff and cattle feed. On the domestic front, he believed most households in Tasmania would be using electricity for lighting, cooking, sweeping the floor and washing the dishes. To power all this, new schemes would need to be developed. Butters’ limits for



Tasmanian electricity production and use appeared boundless (*Mercury* 5 July 1924, p.69).

Despite Butters' optimism, however, it had become clear to most Tasmanians in the 1920s that Federation was not delivering the expected benefits to their island state, and that the industrial sector was being negatively affected. Under Federation, Tasmania's financial position had deteriorated rather than improved. The high level of federal tariffs and a relatively low degree of spending on Tasmania by the Commonwealth in relation to taxes received were main sources of discontent.<sup>70</sup> Also seen to unfairly disadvantage Tasmania was the *Navigation Act 1921* which placed limits on vessels entering Tasmanian ports and increased shipping costs. Commonwealth arbitration laws were also seen to have pushed production costs up as Tasmanian employers were now forced to pay wages at standard rates (Cox 1964, pp.11-13). While some Commonwealth assistance, in the form of grants, was made available following a Commonwealth enquiry in 1926, the onset of the Great Depression in 1929 saw a further deepening economic crisis. Walker argues that under these circumstances a form of Tasmanian 'exceptionalism' emerged – that if they could not secure justice for their state, serious consideration would be given to secession from the Commonwealth (Walker 2008, p. 318). A number of organizations were

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<sup>70</sup> Cox argues that this was a misconception – that the Commonwealth actually paid more to Tasmania than it received in taxes. He says it is truer to say that Tasmania gained no real benefit from Commonwealth expenditure in terms of aid for development schemes, such as irrigation (as on the Murray River) (Cox 1964 p. 14).

formed in the 1920s and early 1930s, including the Tasmanian Rights League, a State Disabilities Committee and the more radical, secessionist Dominion League (Cox 1964, pp. 36-37). In 1933, Tasmanian Prime Minister, Joseph Lyons,<sup>71</sup> helped redress the imbalance in Commonwealth-State financial relations by introducing a State Grants Commission (Cox 1964, pp. 69-70).

Under the economically depressed conditions of the 1920s and 1930s, Tasmanians left the island in droves – it was estimated in 1926 that over 38 000 people had departed since Federation (Cox 1964, p. 8). The need to establish Tasmania as a manufacturing base to attract new migrants and stem the flow of workers to the mainland became even more pressing. Tasmania's cheap and abundant water power, 'perfect' climate and deep water port facilities were promoted tirelessly by the Hydro-Electric Department (later Commission) as the key to regaining the island's prosperity (see advertisement in *Illustrated Tasmanian Mail* 11 November 1931). In the following decades a number of major industries were established, attracted to the island by offers of cheap, abundant hydro-electric power and a relatively risk-free climate. These included the pulp and paper manufacturers, Associated Pulp and Paper Manufacturers (APPM) and Australian Newsprint Mills (ANM), as well

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<sup>71</sup> Joseph Aloysius Lyons (1879-1939) was a school teacher born at Stanley, in north-west Tasmania. Influenced by his radical Irish background, he entered state parliament, and in 1914 became deputy leader of the Labor Party. He served as Premier from 1923-1928 before entering federal politics. He was involved in the formation of the United Australia Party and became Prime Minister of Australia in 1931, a position that he held until his death in 1939 (Hart, P, Lloyd, C, 'Lyons, Joseph Aloysius (Joe) (1879-1939)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu.au/biogs/A100181b.htm>).

as the aluminium refinery of Comalco and the ferro-manganese plant of Broken Hill Proprietary Ltd (BHP). The government also continued to attempt to draw settlers to the island's rural districts by a policy of closer settlement, and by promises of a climate well-suited to a British style of agriculture. The tourism industry began its own push to boost the state's financial position – once again using the island's climate and similarity to the Old Country as a major drawcard.

#### *5.1.2 An Expatriated 'England'*

Alongside an industrial vision for Tasmania, in this era there was also an increased marketing of the island's tourist assets. As it had in the nineteenth century, tourist promotion drew upon the dominant image of Tasmania as another 'England'. In this 'Britain of the Southern Seas' the visitor was promised 'smiling' farm lands and contented sheep grazing on fat pasture reminiscent of Devon, scenic highland lakes redolent of the English lake country, and hop growing regions akin to Kent. Tasmania, it was claimed, was an improved, milder 'England', without cold drizzle, London fog and crowded city slums (*Mercury* 5 October 1904, p. 6). Such a stance was in line with continuing Tasmanian loyalty to the Empire, which had remained intact even after Federation. In fact, its new status as a state of the Commonwealth had, if anything, reinforced the ties with Empire. A number of events proved the strength of this allegiance – Tasmania's unwavering commitment in the Boer War from 1899 to 1902 and the enthusiasm and pride displayed during

the royal visit of the Duke and Duchess of York at Federation (Alomes 1976, pp. 9-20; Roe 2001, pp. 192-206).

In 1926, in an attempt to significantly boost tourist numbers to the island, the 'Come to Tasmania' organization was formed (Walker 2008, p. 332). The organization produced brochures with the slogan 'Tasmania the Wonderland', proclaiming an equable climate devoid of extremes, abundant free-flowing rivers and streams, and an island of 'greenness and gentleness' (*Come to Tasmania: the Wonderland*, 1926, p. 25).

The use of England as a motif for attracting tourists and new settlers remained persistent even as late as the 1950s and 1960s. In a brochure of 1956 it was claimed:

In many respects Tasmania is reminiscent of the British Isles, for in the island state are found counterparts to the Scottish highlands, the orchard and hop country of Kent, the red soil of glorious Devon, historic country homes resembling English manors, roads and byways bordered with hawthorn hedges and noble oaks, elms and poplars on every hand... Tasmania has no extremes of temperature... but an equably temperate climate of sunny warm days giving way to clear cool nights (*Tasmania: For Our Visitors* 1956).

Walker argues how such images became absorbed into the Tasmanian psyche (Walker 2008, p. 386). Tasmanian-born author, Peter Conrad,<sup>72</sup> recalls being indoctrinated at school in the early 1950s that Tasmania was ‘an expatriated England’. He remembers the excitement surrounding the royal tour of Queen Elizabeth II in 1954, which for him gave ‘a day-long validation of our existence’ and ‘an assurance that we belonged to something’ (1988, p. 41; 154).

By the 1960s tourism promoters were also applying the notion of ‘Englishness’ to the island’s historic heritage (Evans 1984, p.46). A growing interest in history and heritage had, from the late nineteenth century, seen Tasmanians increasingly recognize the value of their historic places for attracting tourists. Such a move was not always popular due to the negative connotations of the convict period (see Young 1996). This movement towards heritage protection and promotion gained momentum in the 1960s, but as Evans argues, such promotion was based on a ‘sanitised’ version of the past, which was ‘cut off’ and removed from the present. The past, he argues, was enfolded in a landscape drawing upon notions of ‘mellowness, gentility and Englishness’. Tourist brochures used images of elegant Georgian buildings in a peaceful, pastoral setting, with hedgerows and quiet towns to demonstrate the transformation of the landscape by a class of ‘gentlemen’ settlers (Evans 1984, p.43). Even the state’s convict past

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<sup>72</sup> Peter Conrad (b.1948) was born and educated in Hobart, before attaining a Rhodes scholarship to study at Oxford. He did not return to Tasmania for twenty years after which, in 1987, he published his book *Down Home* (Pierce 2005, p. 84).

was revised and made more palatable to locals and tourists (Young 1996, pp.113-114).

### 5.1.3 *Alternative Views: 'Tasmania: Like No Other Country in the World'*

Although ties to Empire remained strong throughout most of this period, and Tasmanians continued to promote their island as an Antipodean version of England, another language also began to invade the tourist lexicon. This language stemmed from a growing appreciation of Tasmania's wild places. Bushwalking, angling and other outdoor pursuits increased in popularity from the 1920s and Tasmania was seen as ideally placed to take advantage of this 'cult of the outdoors' (Young 2005, p.198, 204). National Parks<sup>73</sup> proclaimed at Mt. Field in 1915 and Cradle Mountain-Lake Sinclair in 1922 were placed under the authority of the Scenery Preservation Board, formed in 1915 (Young 2005, pp.199-200). In the 1920s the Tasmanian Tourist and Information Bureau, under the charge of keen outdoor enthusiast, E. T. Emmett,<sup>74</sup> sought to extend the tourist season to an all-year round 'business'. Facilities for winter sports, such as skiing and skating, were developed to

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<sup>73</sup> The concept of the National Park first originated in America. Large areas of land were set aside for recreational and aesthetic appreciation and as a means of protecting the environment. The world's first National Park was established at Yellowstone in the U.S.A. in 1872.

<sup>74</sup> Evelyn Temple Emmett (1871-1970) was born in Launceston, Tasmania. He joined the Tasmanian Main Line Railway Co. in 1888, and was made director of the Tasmanian Government Tourist Bureau in 1914. He was interested in sports and recreation, as well as the state's scenic and historic attractions. In 1929 he established the Hobart Walking Club and he was a foundation member of the Scenery Preservation and National Park Boards. In 1952 he published his book, *Tasmania By Road and Track* (Thwaites J, 'Emmett, Evelyn Temple (1871-1970), Australian Dictionary Biography, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu.au/biogs/A080463b.htm>).

extend the tourist season through the winter, and the delights of each season were promoted to visitors (Harris 1993, p. 93-101). The beachside resorts of the north-west and St. Helens in the north-east were promoted as ‘year round’ destinations.

Car travel, which became popular from the 1920s, increased the mobility of visitors to the island’s beauty spots. The advent of passenger air travel after the Second World War also saw increased numbers of tourists arriving in the island. In the post-war period this interest in bushwalking and outdoor pursuits boomed (Young 2005, p. 266). When Victorian nature writer, Charles Barrett,<sup>75</sup> arrived in Tasmania in 1943 to tour the island, he was well aware of Tasmania’s reputation as ‘Another England’, but he had come purposefully to explore Tasmania’s ‘other’ side – ‘wild beauty among the mountains, by the seashore, round about lakes, and in the forests’ (Barrett 1944, p. 1). He was not disappointed. After traversing about 7000 miles by car and on foot, visiting Tasmania’s wild mountain country, as well as the more settled regions, he published an account of his travels in *Isle of Mountains: Roaming Through Tasmania* (Barrett 1944). Books such as these further added to Tasmania’s reputation as an outdoor lover’s ‘paradise’.

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<sup>75</sup> Charles Leslie Barrett (1879-1959) was born in Victoria. In 1906 he joined the staff of the *Melbourne Herald*, writing articles on natural history. He travelled widely throughout Australia, visiting remote locations, and published several works documenting his trips (Chisholm A, ‘Barrett, Charles Leslie (1879-1959), *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu.au/biogs/A070191b.htm>).

It is clear that from the 1920s to the 1960s tourism promotion was based on a combination of images, including congeniality of climate, the 'Englishness' of its rural landscape and historic heritage, and a new found pride in Tasmania's bush and wild places, giving the visitor an experience like 'no other country in the world' (TTPC 1960). Tasmania was not only considered distinctive from the rest of Australia (as had always been the case), but also, now, from England. Although associations with the old country still remained an attraction, Tasmania had on offer an experience that was wholly unique. Frank Hurley's<sup>76</sup> 1956 pamphlet *Hobart in Natural Colour* expresses this:

Tasmania's primary differences from the mainland have long been the lure for visitors. They may come in search of a near alternative to that dream of a long trip to the Old Country, but, once in Hobart, they are soon absorbed in an atmosphere entirely delightful in its own right, and wholly Tasmanian (Hurley 1956).

Until the late 1960s the rapid hydro-industrialisation of Tasmania and a conservationist ethic conducive to the preservation of Tasmania's scenic and 'wild' places had not come into direct conflict. However, when the

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<sup>76</sup> James Francis (Frank) Hurley (1885-1962) was a photographer and film maker, born in Sydney. In 1911-1913 he served as official photographer on Sir Douglas Mawson's Australasian Antarctic Expedition, and in 1914 -1916 he also joined Sir Ernest Shackleton's Antarctic Expedition. He later served in the AIF as official photographer, made films of Papua and the Torres Strait Islands, and returned again to Antarctica under Mawson's command. He published several books of Australian photographs (Pike A, 'Hurley, James Francis (Frank) (1885-1962)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www/adb/online.anu.edu.au/biogs/A090408b.htm>).



Reece<sup>77</sup> Labor Government announced plans to construct a dam on the Gordon River in May 1967 a conservationist backlash ensued. The dam would lead to the inundation of the Lake Pedder National Park in the remote south-west. Lake Pedder was renowned for its sandy quartzite beaches, rugged mountain scenery and distinctive flora. A Save Lake Pedder National Park Committee was formed to fight the proposed dam. Emotion over the issue ran high, but the government held firm and the Gordon scheme was adopted by parliament on 1 September 1967 (Lupton 2000, pp. 229-232). Protests about the flooding of Lake Pedder signalled a rising consciousness amongst Tasmanians that their island had a unique character worth preserving. They also demonstrated that the dominant view of Tasmania as ‘another England’ was now in decline.

An influx of migrants from continental Europe in the post-war period also brought with it new ways of looking at the Tasmanian landscape. Olegas Truchanas<sup>78</sup> was one such migrant who arrived in Tasmania in

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<sup>77</sup> Eric Elliott Reece (1909-1999) was a long-standing Premier of Tasmania. He was born in the gold-mining town of Mathinna in the north-east, and in 1923 moved with his family to the west coast where he worked in the mining industry. In 1934 Reece joined the Australian Workers Union and also helped establish a branch of the Australian Labor Party at Queenstown. He was elected to the House of Assembly in 1946 and served as Premier 1958-1969 and 1972-1975. His rapid expansion of the hydro-electric systems of the state gained him the nickname of ‘Electric Eric’ (Koshin 2005, p. 303; see also Koshin 2009).

<sup>78</sup> Olegas Truchanas (1923-1972) was born in Lithuania. He was active in the Lithuanian resistance during World War II, and moved to Germany in 1944. As a ‘displaced person’ he arrived in Melbourne in February 1949 before moving to Tasmania. He worked at the EZ Company at Risdon and then the HEC. He used photography as a means of expressing his deep affection for Tasmania’s wilderness scenery. He became active in the conservation movement, being a founding member of the Tasmanian Conservation Trust in 1968. He died during an expedition to the Gordon River in January 1972. (Dan Sprod, ‘Truchanas, Olegas (1923 - 1972)’, *Australian Dictionary of Biography*, Online Edition, updated continuously, viewed 20/5/2011, published by Australian National University, <http://www.adb.online.anu.edu.au/biogs/A160499b.htm>).

the post war period. He developed a deep love of Tasmania's remote wilderness areas, and his award winning photography played an important role in promoting the campaign to save Lake Pedder (as well as later environmental campaigns). Others contributed new insights into the island's agricultural potential. Claudio Alcorso,<sup>79</sup> an Italian migrant, was an important pioneer of the modern wine industry in Tasmania. He recalled how he embarked on transforming his 'Moorilla' estate at Berriedale north of Hobart according to Italian ideals by establishing Italian poplar trees and vines and building an Italian style farmhouse on the small peninsula that jutted into the River Derwent (Alcorso 1993, pp.147-148).

#### *5.1.4 A Scientific Approach; Predicting the Weather*

While government propaganda and tourist promotions continued to espouse 'idealistic' images of Tasmania's climate that often had little basis in fact, meteorological authorities were steadily building up a reliable database of weather observations based on scientific principles. However, as I argue here, the emphasis in the period up to the 1960s was increasingly upon short-range weather forecasting to the detriment of developing a scientific understanding of longer-term climatic cycles.

By Federation in 1901 a number of key meteorologists, such as Clement Wragge, were well aware of the benefits to be gained from interstate co-

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<sup>79</sup> Claudio Alcorso (1913-2000) was an Italian migrant who, in 1947, set up a silk and textiles factory at Derwent Park, north of Hobart. He was also a pioneer of the Tasmanian wine industry, establishing a vineyard at his 'Moorilla' property in the 1950s. Alcorso was a patron of the arts and became an advocate for the conservation movement in the 1980s (Rimon 2005, p. 15).

operation and collaboration in weather data collection, analysis and forecasting. In 1908 responsibility for the meteorological service passed to the Commonwealth with the establishment of a central Commonwealth Bureau of Meteorology. Henry Kingsmill was appointed Tasmania's first Divisional Meteorologist. Daily weather forecasting, however, remained a hit or miss affair. An article on Tasmania's meteorology service, published in the *Mercury* in 1923, alludes to the fact that few, if any, ordinary people consulted the forecasts in the daily paper, most dismissing them as too unreliable (*Mercury* 14 July 1923, p. 7).

Nicholls argues that while there had been some interest in longer-term climate patterns and predictions by such Australian meteorologists, as Charles Todd and Edwin Quayle in the late nineteenth and early twentieth century, this soon dissipated. This was driven in part by the advent of air travel in the 1920s and 1930s (Nicholls 2005 pp.19-20). Improved daily weather forecasting was considered crucial to aviation safety, and over the following decades significant advancements were made to short-term weather forecasting to service this sector (Day 2007, p. 192).

The trend away from research into longer-range climatic prediction to short-term forecasts was still evident at the end of the 1960s. Nicholls recalls how, on joining the Bureau in 1971, he was advised that the issuing of long-term climate forecasts was not considered feasible (2005,

p. 18). Instead, focus remained on improving short-term forecasting through the expansion of land-based networks, installation of coastal radar stations, the use of ship reports by radio, automatic offshore station and, in the 1960s, the use of satellite images (Day 2007, p. 345). Even with these advances, however, by the end of the 1960s daily forecasts were often still inaccurate, as the complexities of the ever-changing atmosphere were yet to be fully understood by meteorologists (Day 2007, p. 345).

This lack of long-range forecasting did little to assist those who needed to prepare for seasons of drought – such as farmers – or those agencies charged with ensuring adequate water storage capacity for town water supply or hydro-electricity generation. While the Bureau was issuing storm, fire weather and flood warnings by the 1960s, they were still often unreliable, and predictions did not extend beyond a few days in advance.

#### *5.1.5 Summary*

In this section I have traced the ‘Antipodean England’ myth from Federation in 1901 to the 1960s. With the advent of hydro-electric power an industrial vision for Tasmania gained impetus, based on a desire to recreate something of the industrial power of Britain. The celebration of an ‘English’ rural landscape was still evident in this period and ties to Empire remained strong until the 1960s. History was also increasingly enfolded into this landscape vision. In the post-war period, however, a

change became evident, with an increasing attachment by Tasmanians to the ‘uniqueness’ of wild country, as opposed to similarities with Britain. While weather science improved in terms of short-term weather forecasting and the implementation of warning systems, its practitioners failed to fathom the longer term periodic cycles of drought, flood and bushfire.

The following sections outline the most pertinent impacts of drought, floods and storms and bushfire in the period 1901-1960s and demonstrate how they were often in direct contrast with government claims of an idyllic ‘British-like’ climate used to attract new industry, tourism and settlement. It is argued that these images contributed to an under-estimation of climatic risks and left Tasmanians under-prepared.

## **5.2 Drought: Acute Water Shortages**

The period 1901–1960s was characterized by governmental pre-occupation with hydro-industrialisation as the means of attracting capital investment and population growth to Tasmania. Its industrial vision, however, was often at odds with the climatic reality. Rainfall in key hydro catchment areas proved highly variable, placing the power requirements of major industries at risk during drought periods. A series of power crises in the 1950s and 1960s was the consequence. Industrial development and an expanding population in Hobart and its suburbs also placed greater demands on water supply systems that continued to prove inadequate in dry periods. Farming suffered through drought periods as

the government failed to recognize the need for public irrigation schemes and continued an inappropriate policy of closer settlement. For much of this period the government generally gave agriculture a low priority, although by the 1950s and 1960s some advances were being made by the Department of Agriculture in the promotion of private irrigation, and soil and fodder conservation methods. At this time, too, drought relief became an official response to the rural stress caused by damaging drought periods.

Drought periods were experienced in the early years of the new century – in 1908-1910, 1913-1915, 1918-1921, 1926, 1933-34, 1935-1936, 1945-1946, 1949-1952, 1954-1956 and 1967-1968 (Gibbs and Maher 1966, pp. 22-24; *Tasmanian Yearbook* 1969, p.54). A number of these were influenced by very strong El Nino conditions in the years 1900, 1913-1915, 1918-1919 and 1968 (Gergis and Fowler 2009, pp.367-368). The following sections outline the effects of drought on hydro-electric power supply to industry, on water supply issues in the capital, Hobart, and on rural Tasmanians. By the close of the 1960s a shift in general attitude is more evident.

#### 5.2.1 *'A Reckless Gamble': Hydro-industrialisation and Power Supply*

Hydro-electric development in Tasmania had proved vulnerable to episodes of drought from its inception. The Launceston power supply at Duck Reach on the South Esk River, inaugurated in 1895, experienced

difficulties in maintaining supply during dry summers and droughts (*LE* 12 January 1898, p. 5; St. John David and Strike 1909, p. 2).<sup>80</sup>

Hydro-electric power was also increasingly used to run mining machinery in the north-eastern and western mineral districts. A number of mining companies, such as the Pioneer Company in the north-east, constructed their own power generation schemes at considerable expense (Dallas 1960, p. 91). These, too, often proved inadequate during drought.

In 1914 the Mt Lyell mining company opened the first stage of its west coast Lake Margaret power scheme (then the largest such scheme in the state). A second stage of the power scheme was opened in 1932. But, despite being situated in the highest rainfall district of Tasmania (with an average yearly rainfall of 3000mm), the Lake Margaret scheme was still vulnerable to drought periods. When an exceptionally dry period in 1933-1934 affected the west coast, the Mt. Lyell mine was forced temporarily to close due to lack of water to power mine and smelting machinery. Rainfall on the west coast in 1934 was 25 per cent below the annual average (*Statistics of Tasmania* 1934, p. 51). About 600 men were thrown out of work for several months (*Mercury* 18 January 1934, p.5; *Mercury* 14 March 1934, p. 9; *Mercury* 17 March 1934, p. 7; *Mercury* 10 April 1934, p. 7; *Mercury* 1 May 1934, p. 2; *Mercury* 5 June

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<sup>80</sup> Launceston was eventually connected to the power grid supplied from the Great Lake Scheme in 1922 (Launceston City Council Lord Mayor's Annual Report 1922).

1934, p. 7; *Mercury* 12 July 1934, p. 2; *Statistics of Tasmania* 1934, p. 52). While the Mt. Lyell mine was eventually connected to the hydro-electric department grid as a bulk consumer, power rationing imposed by the government in the early 1950s and 1960s meant that drought continued to affect the mine's operations.

In 1930 the Hydro-Electric Department was replaced by a Commission (HEC), and in 1944 was made an autonomous statutory authority. Extensions were made to the Great Lake hydro scheme in 1931, and a new scheme was constructed on the upper Derwent River at Tarraleah in the central highlands in 1938 (and expanded in 1951). By the 1940s offers of cheap abundant power had attracted two major pulp and paper mills to the state. These were the Australian Newsprint Mills (ANM) which was established at Boyer (near New Norfolk in the lower Derwent Valley) in 1941, and the Associated Pulp and Paper Mills (APPM) at Burnie on the north-west coast in 1936. The onset of World War II also saw increased demands for mineral products such as zinc, carbide and copper. Existing bulk users, including the EZ Company and the Australian Commonwealth Carbide works, boosted their production (Lupton 2000, p. 137). This demand did not ease at the war's end (Lupton 2000, p. 171). The state's hydro-industrialisation programme, together with the federal government's policy of attracting post-war migrants from Europe, reversed Tasmania's population drain to the mainland (*Tasmanian Yearbook* 1968, p. 124). The population of



Tasmania increased from close to 173 000 in 1900 to over 275 000 by 1950 (*Tasmanian Yearbook* 1968, p. 124). The manufacturing sector employed over 23 500 people (*Statistics of Tasmania* 1959-1960, p. 39). Electricity consumption in Tasmania was doubling every five years (well above the average eight years for developed countries) (*TPP 1951-52*, *HAI* no. 69, pp. 1-3; Lupton 2000, p. 185). In addition to its bulk industrial consumers, by June 1951 the HEC was supplying over 80 000 retail consumers through 5000 miles of transmission lines (*TPP 1951-1952*, *HAI* no. 69, pp.1-3). Electrical appliances and machinery were rapidly transforming life in the home and on the farm.

A dry period in 1949-1950 reduced the Great Lake's level to a third of normal capacity creating anxiety about the HEC's ability to meet demand (*Mercury* 19 February 1951, p. 1; Gibbs and Maher 1966, p. 24). Parliament was hastily convened to legislate for the introduction of power rationing in the state (as a safeguard against any claims for compensation by bulk users) (*Mercury* 17 February 1951, p. 1). The legislation was introduced from 3 March 1951 and led to power cuts to industrial users of nearly 20 percent (*TPP 1951-1952*, *HAI* no. 69, pp.1-4). This caused industry losses in production and a curtailment of plans for future expansion. At ANM a new paper machine, capable of producing 50 000 tons of newsprint a year, which had been installed at a cost of £4 million, was lying idle – it could not be started up due to the power restrictions (*Mercury* 1 May 1951, p. 2; *Mercury* 26 May 1951, p.

3). The Opposition and others criticized the government for attracting too many industries without making adequate provision for the supply of power to operate them (*Mercury* 23 February 1951, p. 5).

A parliamentary select committee found that the power shortages had resulted from a slow rate of planning and construction by the HEC due to delays caused by World War II, and since the war, by a lack of trained staff, materials and the slow delivery of equipment. Low levels of water storage due to drought had compounded the power supply problem, and the committee expressed the opinion that if this had been admitted and dealt with earlier the impacts could have been minimized. They pointed out that as early as 1949 a deficiency in water storages had been predicted by the HEC Commissioner (*TPP* 1951-1952, *HAI* no. 13). Their recommendations included a revision of the policy of assistance to new industries, pressing on with the development of hydro-electric resources as a matter of urgency, and a consideration of introducing daylight saving over the summer period as a power saving measure (*TPP* 1951-52, *HAI* no. 13). Despite this advice, Premier Robert Cosgrove<sup>81</sup> pushed ahead with plans to establish a power hungry aluminium refinery

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<sup>81</sup> Sir Robert Cosgrove (1884-1969) was born at Tea Tree in southern Tasmania. After school he entered the grocery trade and became involved in the union movement and Labor Party. He was first elected to the seat of Denison in 1919. In December 1939 he became Premier, a position he held almost continuously for 19 years. He saw Tasmania through World War II and the post war recovery period. He was knighted in 1959 (W. A. Townsley, 'Cosgrove, Sir Robert (1884 - 1969)', *Australian Dictionary of Biography*, Online Edition, viewed 20/5/2011, updated continuously, published by Australian National University, <http://www.adb.online.anu.edu.au/biogs/A130561b.htm>).

in the north of the state. He also approved plans for further hydro-electric schemes at Trevallyn in the north, and at Wayatinah on the Derwent River (Garvie 1962, p. 66) (see Fig. 10).

While the situation eased in 1952-1953, rainfall deficiencies were again experienced in 1954-1955. The south recorded its driest nine month period on record from May 1954 to the beginning of March 1955 (Gibbs and Maher 1966, p. 24). The drought again forced the HEC to impose power rationing, limiting energy use by industrial users to that outlined in their contracts (*Mercury* 23 March 1955, p. 1). As a result, production by the major bulk users fell by between 20 and 40 per cent. At EZ the company's newly completed sulphate of ammonia plant was unable to begin full operations (*Mercury* 23 March 1955, p. 1; *EZ Review* December 1956, p. 25; *Mercury* 24 March 1955, p. 1). This crisis was alleviated by the bringing into commission of the Tungatinah and Trevallyn power stations in May 1955 (*Mercury* 21 May 1955, p. 1; *Mercury* 25 May 1955, p. 1) (see Fig. 10).

With the completion of these two large hydro-electric schemes in 1955, the major industries began looking towards expansion. In the following years, the EZ Company, the Comalco aluminium factory, and APPM all announced plans for major new developments. Plans were also underway for the establishment of another bulk consumer – BHP's TEMCO, which was to produce ferro-manganese at Bell Bay. In 1958, HEC

Commissioner Allan Knight,<sup>82</sup> proudly announced that Tasmania had the second highest rate of consumption of electricity per capita in the world, behind Norway (Lupton 2000, p. 204). By the start of the new decade, the 1960s, secondary industry had surpassed the primary sector in its contribution to the state's net value of production (*Tasmanian Yearbook* 1970, p. 370). Domestic power usage had increased by 76 per cent since 1950 (Garvie 1962, p. 97). Struggling to keep pace with demand, the government brought into commission new power stations at Wayatinah (in two stages in 1957 and 1959), Lake Echo (1956) and Catagunya (1962). An ambitious new scheme at Poatina (on the northern side of the Great Lake) was also under construction (see Fig. 10).

Increasing consumption levels, together with low rainfall over the winter and spring of 1963, reduced water storages significantly (*Mercury* 31 October 1963, pp. 1-2). Western Tasmania experienced particularly low rainfall in this year (Gibbs and Maher 1966, p. 24). Power restrictions again became necessary (*EZ Review* December 1963, p. 8). Comalco executives announced that 40 men had been laid off and that major extensions to the plant, although complete, would have to wait for restrictions to be lifted before being brought into operation (*Mercury* 12 November 1963, p. 1). An article in ANM's *Newsprint Log* headed 'Glory without Power' outlined how the company had averted crisis

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<sup>82</sup> Sir Allan Knight (1910-1998) was born in Launceston. He studied science and engineering at the University of Tasmania, and in 1932 joined the Public Works Department. He designed the Hobart Floating Bridge across the River Derwent in 1943 and in 1946 was appointed Commissioner of the HEC, a position he held until 1977 (Shepherd 2005, p. 202).

through the efforts of its research division. It developed an alkaline grinding process using caustic soda as a significant power saving measure for the company (*Newsprint Log* June 1964, p. 9). By February 1964, the HEC, now desperate, called on the expertise of the CSIRO for cloud-seeding experiments<sup>83</sup> in its catchment areas (*Mercury* 4 February 1964, p. 1). Daylight saving was again discussed as a power saving measure, but was rejected by then Premier, Eric Reece (*Mercury* 5 December 1963, p. 1). Undeterred by the seriousness of the power situation caused by severe drought, the Premier embarked on a tour overseas in an effort to attract even more industry to the state. The Commission also pushed ahead unabated in its dam construction programme. The opening of the Poatina power station in March 1964 ended, for the time being, another trying episode of power rationing (*Mercury* 28 February 1964, p. 1).

The summer of 1966-67 was particularly dry, and marred by the disastrous bushfires of February 1967. For the period from January to June 1967 all areas of the island (except the west coast) recorded their lowest ever rainfall for the six month period (*TPP* 1966-67, *HAI* no. 68, p. 4). The HEC's aggregate water storages had dropped to 22 per cent of full capacity (*TPP* 1966-67, *HAI* no. 68, p. 4). Industry, however, was demanding more power than ever before (*Mercury* 26 May 1967, p.2, 7). Power restrictions were again introduced in April. In September, with

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<sup>83</sup> For more information on the history of cloud-seeding experiments in Australia see Home (2005).

the situation worsening, special legislation was passed giving the HEC greater powers to regulate the supply and use of electricity. This enabled further power rationing on the nine major bulk consumers to be enforced from 1 October. The HEC, and several of the major industries, such as Mt. Lyell mines, began supplementing their power supplies with auxiliary power plants, operated by gas, oil or diesel (*Mercury* 12 August 1967, p. 1; *Mercury* 30 August 1967, p. 1; *Mercury* 12 September 1967, p. 1). Plans for a new mining complex at Savage River in the west and a further expansion at Comalco's aluminium smelter were put on hold (*Mercury* 14 September 1967, p. 3). The HEC announced plans to construct a thermal power station at Bell Bay, to accelerate work on the Mersey-Forth scheme in the north-west, and to commence work on a major new power scheme on the Gordon River (*Mercury* 9 September 1967, p. 1). The government purchased a 'power' ship, capable of pumping an additional 10 000kw from turbo generators into the state grid. It was anchored in the Tamar River and also used to house workers employed on the Bell Bay thermal power station (*Mercury* 21 October 1967, p. 5; Lupton 2000, p. 234). The HEC also purchased three gas turbines from Britain to supplement supply (Knight 1968).

At this time the government finally decided to introduce daylight saving over the summer period as a trial power saving measure (*Mercury* 13 September 1967, p. 2; Newman 1984, pp. 21-35), making Tasmania the first state to introduce a daylight saving scheme in the post-war period

(Newman 1984, pp. 21-35). A ‘save our power’ campaign aimed at lowering domestic power consumption was also instigated (*Mercury* 21 September 1967, p. 5).

The deepening power crisis led the Leader of the Opposition, Angus Bethune,<sup>84</sup> to introduce a no confidence motion in the Reece Labor government, and he advocated a snap election over the issue (*Mercury* 14 September 1967, p. 1). He posed the question of whether ‘the people still have confidence in a government which has failed to provide proper safeguards against a severe shortage of electric power during extended dry periods and to deal expeditiously and effectively with the present power shortage’ (*Mercury* 14 September 1967, p. 1).

Bethune claimed that the government’s ‘blindness, arrogance, and refusal to heed the most obvious warnings’ had brought the power crisis on Tasmania. He went on: ‘there is a clear and unmistakeable picture – of power oversold, safety margins eroded, and a Government blindly gambling on a series of miracles to save it from its own blatant errors’ (*Mercury* 15 September 1967, p. 1). Bethune claimed further that the government had built the entire hydro-electric generating system in areas of uncertain rainfall without enough long term weather information, and

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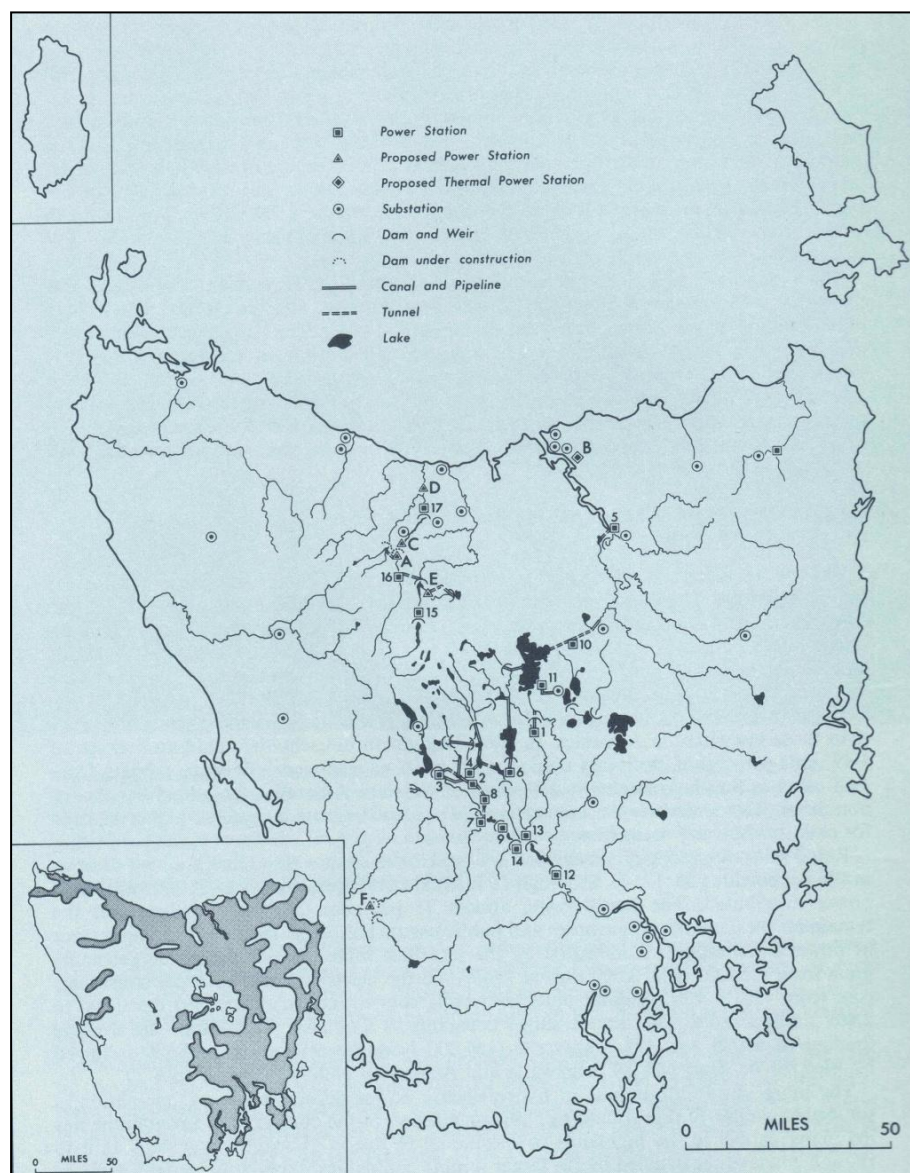
<sup>84</sup> Walter Angus (Angus) Bethune (1908-2004) was born and educated in Tasmania. In 1936 he became a councillor in the Hamilton district and he served in the RAAF from 1940- 1943. He was elected to the House of Assembly as a Liberal member in 1946 and in 1960 became Leader of the Opposition. He served as Premier from 1969-1972 before resigning from parliament in 1975 (Bingham 2005, p. 45).

that, in spite of two previous power shortages, ‘the Government continued to gamble recklessly’ (*Mercury* 15 September 1967, p. 1).

After a seven-hour debate in parliament the no-confidence motion was eventually defeated (*Mercury* 15 September 1967, p. 1). In a subsequent parliamentary session, the Liberal member for Braddon, Jack Breheny, challenged the government’s spending of \$64 000 for the year on industrial promotion and publicity to target potential new industries at a time when people were being told to take ‘luke-warm showers’ to save power (*Mercury* 28 September 1967, p. 1).

By December 1967 the state government had restricted power use to industrial consumers by a further 15 per cent (ie. to 65 per cent of their normal level) (*Mercury* 29 November 1967, p. 1). These new cuts, effective from 1 December, were the most severe in Tasmania’s history (*Mercury* 29 November 1967, p. 1). Production cuts were the inevitable result. At ANM changes were once again made to process technologies to alleviate the impacts of power shortages. Re-growth timber, which required less energy to pulp, was utilized, and bleaching abandoned (*Newsprint Log* December 1967, p. 5). A gas turbo alternator was acquired from the UK at a cost of \$1 000 000 (*Newsprint Log* December 1967, p. 5).





Power Stations	Operating Date	Av. Annual Output (mill. k Wh)	Power Stations	Operating Date	Av. Annual Output (mill. k Wh)
1. Waddamana 'B'	1944	in reserve	14. Repulse	1968	160
2. Tarraleah	1938	593	15. Rowallan	1965	40
3. Butler's Gorge	1951	63	16. Lemonthyme	1969	286
4. Tungatinah	1953	560	17. Devil's Gate	1969	300
5. Trevallin	1955	541	<i>Proposed</i>		
6. Lake Echo	1956	76	A. Wilnot	1970	126
7. Wayatinah	1957	274	B. Bell Bay (thermal)	1970	788
8. Liapootah	1960	455	C. Cethana	1971	409
9. Catagunya	1962	260	D. Palooa	1971	130
10. Poatina	1964	1,322	E. Fisher	1971	247
11. Tod's Corner	1966	13	F. Gordon	1975	1,333
12. Meadowbank	1967	209			
13. Cluny	1967	105			

Fig. 10 Location of Hydro-Electric Works completed and under construction in 1970. Inset map shows area covered by distribution network (from Solomon 1972).

The ANM Holdings Chairman had issued this warning at the company's annual meeting in October: Governments in all parts of Australia who encourage industry to spend large amounts of their shareholders' capital in new development must be very circumspect in fulfilling their obligations to industry in relation to power contracts and other vital facilities for production (*Newsprint Log* December 1968, vol. 23, no. 2). By March 1968, the situation had been alleviated somewhat when the Rowallan power station on the Mersey-Forth scheme became operational. The Lower Derwent scheme, including the Meadowbank, Cluny and Repulse power stations had also been commissioned in 1967. Above average rainfall in the HEC's catchment areas during the winter of 1968 assisted the situation (*Tasmanian Yearbook* 1970, p. 72). Power restrictions were reduced in July 1968 and then finally lifted on 1 October 1968 (*Mercury* 16 May 1968, p. 1; *Mercury* 24 August 1968, p. 2; *Tasmanian Yearbook* 1971, p. 61).

Despite the end of the state's most serious power crisis, Tasmania's hydro-electric capacity remained vulnerable to drought. By the close of the 1960s industry was still growing rapidly and outpacing the construction of new hydro schemes.

### *5.2.2 Hobart Water Supply, Industry and Suburban Expansion*

Hobart's water supply reservoirs had consistently proven inadequate to supply the needs of the growing city during early drought periods. Through its policy of attracting major industries to the state, the Tasmanian government also aimed to boost population numbers. Little thought, however, was given to providing adequate water supplies for industrial purposes and to service the rapidly expanding metropolis of Hobart and its satellite suburbs. The Hobart City Council continued to control water supply, but lack of funds was often prohibitive to constructing major new schemes. The development of a new sanitary system for the city at the turn of the century requiring large volumes of water, added to these pressures. The penchant of Hobart residents for water-thirsty 'English-style' gardens led to high levels of consumption, particularly in summer. In 1923, for instance, the City Engineer calculated that the average daily consumption in Hobart was 60 gallons per head per day in winter and double that in summer – the summer figure demonstrating that the water was mostly being applied to gardens. This compared with an average consumption in Sydney of 40 gallons per head per day (with only a small seasonal difference) (MCC16/177/1/1).

Several investigations into Hobart's water supply around the turn of the century, including a 1901 Royal Commission, had recommended that the council cast its net further afield, to the Styx River in the Derwent Valley in particular, to provide an ample supply. The Royal Commission also

suggested the formation of a water trust, and that meters be generally adopted to prevent wastage (MCC 16/177/1/1: *TPP* 1901 *HAI* no. 5, pp. ii-iii).

The Hobart City Council, concerned about the expense of such a scheme, continued with its policy of augmenting supply from the mountain reserve (MCC16/177/1/1). The North West Bay River was utilized to augment supply in 1906 (after a lengthy battle with riparian landowners), and a further reservoir was built at Ridgeway on the lower slopes of the mountain in 1919 (Petrow and Alexander 2008, pp.162-163). Neither alleviated shortages in dry periods, and water restrictions were imposed in the summers of 1908-1909, 1913-1914, 1919-1920 and 1925-1926 (*Mercury* 26 December 1908, p. 5, 8; *Mercury* 17 February 1914, p. 4; *Mercury* 30 December 1919, p. 4; *Mercury* 1 January 1920, p. 2; *Mercury* 16 February 1926, p. 7).

Veteran irrigation advocate, William Shoobridge,<sup>85</sup> suggested, in 1916, that the Derwent River and Lake St. Clair could be tapped to provide water for the growing city, as well as for power and irrigation. He considered the Ridegway Reservoir, a ‘costly blunder’ and castigated the council for a lack of vision: ‘for 50 years the City Council has gone on

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<sup>85</sup> William Ebenezer Shoobridge (1846-1940) was born at ‘Glenayr’, Richmond, and educated at Horton College, Ross. He studied engineering and took an active interest in irrigation schemes which he applied to the family property at Bushy Park in the Derwent Valley. He served in the House of Assembly in 1916-1919, 1922-1925, 1925-1928 and 1929-1931. He was a strong advocate of government irrigation schemes, but his desire to see irrigation incorporated into the state’s hydro-electric schemes was not achieved in his own life-time (Chapman, P. ‘Shoobridge, William Ebenezer (1846-1940)’, *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://adb.online.anu.edu/biogs/A110616b.htm>); see also Broinowski 1970).

patching up a deficient supply with costly makeshifts and in the end have spent far more money than would have secured an ample supply for domestic purposes and manufacturers, and also for irrigation' (Shoobridge 1916, p. 18).

In 1923, City Engineer, Herbert Bellamy, after investigating a number of possible future supply options, advocated utilizing the watersheds of the Lake Fenton area of the Derwent Valley. He also called for more water meters to be installed to discourage wasteful use (MCC 16/177/1/1). The council remained unmoved, and the Great Depression of the late 1920s and early 1930s sapped finances. However, as city water restrictions again became necessary, and concerns about health epidemics grew during the drought period of 1933-34, the council began to rethink its position. It first approved a scheme to draw water from the Derwent River at Hayes, but due to concerns over pollution, finally decided in 1937 to adopt the Lake Fenton scheme, originally mooted nearly 15 years previously (Petrow and Alexander 2008, p. 271). The Lake Fenton scheme, officially opened in April 1939, was claimed to have a holding capacity of 870 million gallons of water, which could be drawn off at a rate of 4 million gallons a day (*Mercury* 27 April 1939, p. 8; Lloyd 2008, p. 74).

However, as the industrial vision for Tasmania became reality, with the establishment of major industries in Hobart's northern suburbs, record amounts of water were required for industrial processing and to service

the newly established suburbs which had sprung up to house workers at the factories. The municipality of Glenorchy, north of Hobart, rapidly established itself as an industrial centre. Its reservoirs failed to keep pace, and in the post-war period a water 'war' erupted between it and the Hobart City Council. During a dry period in the summer of 1945-1946 Glenorchy was forced to acquire water from the Hobart City Council to meet demand. Even then, restrictions were necessary (*Mercury* 8 February 1946, p. 5). Glenorchy councillors urged the state government to consider a national scheme of water supply (MCC12/69/1 Minutes 17 December 1945). EZ had its water supply temporarily reduced by 500 000 gallons a week, and Cadbury chocolate factory's by 250 000 gallons (MCC12/69/1 Minutes 7 February 1946). Despite the augmentation of further supplies in both council areas, shortages were experienced in the summer of 1950-1951, and again in 1955 (*Mercury* 9 January 1951, p. 3; *Mercury* 8 February 1951, p. 2; *Mercury* 18 March 1955, p. 1).

Suburbs on Hobart's eastern shore were also still not adequately supplied – in 1946 a community of 5000 people was being supplied by water carted in tanks (*Mercury* 12 January 1946, p. 7). Suburban expansion accelerated in the post-war years, and the Australian desire for detached houses on quarter acre blocks became firmly entrenched (Timms 2006, p. 38). This trend required large areas of land for suburban subdivision and enormous quantities of water for the establishment of lawns and exotic gardens. Between 1951 and 1961 the population of the suburbs of

Hobart nearly doubled to reach close to 62 000 (*Statistics of Tasmania* 1951; 1961).

It became obvious that a more co-ordinated approach was necessary to deal with the water situation, not only in southern Tasmania, but throughout the island. The HEC had been given control of the state's water resources for hydro-generation, but there was as yet no body to administer water resources for town supply and irrigation. In 1957 this situation was addressed with the formation of the Rivers and Water Supply Commission, which was given the power to establish and maintain water supply schemes for domestic, agricultural and industrial use and to assist other authorities in doing this (Mason-Cox 1994, pp. 174-175). The Hobart City Council, however, maintained its control over the water supply to the Hobart municipality, and, when restrictions were once more imposed in 1960, residents complained about the council's lack of action on the issue. A letter to the *Mercury* by a resident of New Town demonstrates this anger and frustration:

Hobart's water supply has become too important to be controlled by councils. Whenever a dry spell comes along water restrictions are imposed, improvements are promised, certain alterations to dams and mains are made, and we are assured of a supply to meet all contingencies. However, the next dry spell finds us without water again (*Mercury* 12 April 1960, p. 4).

The author of the letter recommended the establishment of a water board. It also questioned the government's overseas trade mission, warning that 'if any firm became interested in Hobart and its environs, it would find that one of the first essentials, an adequate water supply is missing' (*Mercury* 12 April 1960, p. 4).

In 1961, during a severe water crisis, the government intervened and called a conference of the municipalities affected. The Rivers and Water Supply Commission requested that the HEC review the problem. The HEC subsequently recommended that a Metropolitan Water Board be established for the southern region, and that a water treatment plant be erected at Bryn Estyn (just above the reach of salt water on the River Derwent) to treat and pipe water to Hobart and suburbs. These recommendations were adopted and the new plant was opened in October 1963, just as another drought was beginning to grip the state (Lloyd 2008, p. 86-87; Petrow and Alexander 2008, p. 347). By 1970 the Bryn Estyn scheme could supply 10 million gallons a day, with possibilities for future expansion (Metropolitan Water Board 1971, p. 5). Whilst the new scheme improved the situation of Hobart's water supply considerably, some reticulation problems persisted. Residents in elevated areas, such as Fern Tree and the upper end of South Hobart, could still suffer shortages in dry periods. This became life-threatening when bushfires encroached on residential areas, such as in the terrible fires of February 1967 (Petrow and Alexander 2008, p. 347).



Another factor that improved Hobart's water woes in the 1960s was a growing interest in the use of Australian native plants in suburban gardens. This was a nation-wide trend that reflected a growing nationalistic sentiment and a greater appreciation of, and need to conserve, the Australian 'bush' and its distinctive flora. It was also, of course, more practical in a country prone to drought. Native plants are well adapted to drier conditions and require considerably less water to maintain (although they are more fire prone than traditional 'English-style' plants) (Timms 2006, p. 180; Elliot 2002, p. 57). In Tasmania, it may be that this trend towards using Australian natives in gardens also signals the beginning of a greater identification of its residents with mainland Australia, rather than England.

While this section has focused on Hobart's water woes in the period 1901-1960s, similar water issues were experienced in other towns across the island during drought periods. Rootes outlines how rural municipal governments,<sup>86</sup> in particular, struggled with low revenues, debts and inefficiencies, which were exacerbated in the post-war period. This affected their ability to deliver adequate town water supplies. Despite their obvious monetary problems, and the escalating cost of constructing new schemes, local councils insisted on maintaining control over town water supply and repeatedly resisted moves towards the amalgamation of municipalities. In 1964 a municipal commission, established to review

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<sup>86</sup> In 1906 the *Local Government Act* created 49 municipal councils throughout the island, replacing the hundreds of small local bodies such as road trusts, rabbit boards and town boards that had previously been formed to address local issues (Rootes 2008, p. 434).

municipal affairs, found that there were 30 towns with populations over 200 that had no reliable water supply (AA132/1/2, pp. 56-60; Rootes 2009, pp. 154-169).

### 5.2.3 *On the Land*

By the early years of the new century much of the pasture in the old settled districts had become a 'far cry' from the lush, green countryside that was being promoted in immigrant and tourist literature. Rabbit plagues, declining soil fertility and drought periods had led to pasture deterioration (Robson 1991, pp. 268-269).

The government pushed on with its vision for a class of 'yeoman' settlers in accordance with European 'ideals'. Closer Settlement Acts of 1901 and 1906 allowed the government to purchase established estates for division into smaller holdings. It was believed that this would attract new settlers to Tasmania and provide incentive for Tasmanians to remain on the land. Unlike the small-scale selectors who took up land under the Waste Lands Acts, many of those who acquired land under the closer settlement schemes did not have to expend enormous effort in clearing the land – that work had largely been done (Robson 1991, pp. 264-265). They were, however, often located on marginal land, and were still vulnerable to low prices, fluctuations in the weather and pests and weeds. Periods of drought highlighted their vulnerability.

The year 1908 was very dry in most areas, with the east coast towns of Swansea and St Helens recording their driest year to date. The protracted dry extended to April 1910 in the north as well as in parts of the south (Foley 1957, p.42). The *Mercury* reported at the end of March 1910:

...water has become very scarce all over the country... water for domestic use and for stock is being carted over immense distances... and all waterholes and dams have become dry... stock generally are in an emaciated condition owing to the disappearance of grass and want of water (*Mercury* 31 March 1910, p. 4).

In the eastern districts, in particular, thousands of stock had died and crops had completely failed (*Mercury* 1 January 1909; *Mercury* 27 April 1910, p. 5). The *Mercury* columnist expressed surprise that Tasmanian farmers, who were suffering greatly for the want of water, had not attempted irrigation to a greater extent (especially given the success of hop farmers in the Derwent Valley district) (*Mercury* 8 November 1910, p. 7).

The years 1913 to 1915 proved even drier. In 1914, record rainfall deficiencies were reported in more than half the state's rainfall stations, with most districts being affected. Bushfires wreaked havoc in the summer of 1913-1914, as well as October 1914 and February 1915 (Foley 1957, p. 43). The severe drought of 1914 led to a record number

of forfeitures of selections taken up for closer settlement. It was pointed out in the Legislative Council by H.A. Nichols that 76 000 acres had been forfeited between 1 June 1914 and 1 September 1915. He claimed that ‘the country was burnt over, drought had taken all the feed, and people were not able to make an ordinary living out of the land.’ (*Mercury* 18 November 1915, p. 2).

This predominantly dry period from 1908 to 1914 led to a revival in interest in a government irrigation scheme for the midlands, utilizing the waters of the highland lakes. In 1912 Edward Mulcahy, Minister for Lands and Works, investigated a scheme whereby the Tunbridge-Ross area would be irrigated to support closer settlement (Mason-Cox 1994, p. 161), but the Director of Agriculture, Albert Benson, advised Mulcahy that the costs of such a scheme would far outweigh the benefits (Mason-Cox 1994, p. 161).

Despite further investigations into a midlands irrigation scheme in the years 1915-1917 it failed to win government support. Attempts to revive the aborted Long Marsh dam scheme in the northern midlands also failed (*Mercury* 22 February 1915, p. 4). Each subsequent dry period saw increased agitation by farmers for government sponsored irrigation and calls for greater government control over water resources. At a time when the government was developing the Great Lake hydro-electric scheme to supply industry, hop grower and irrigation advocate, William Shoobridge, was adamant that surplus water from the scheme could also

be utilized for irrigating the midlands. He also envisaged that the waters of Lake St. Clair and the Derwent River could be harnessed for both power and irrigation, along the lines of similar schemes that he had seen in Canada. He blamed the indolence of the government and the apathy of the people for past failure to utilise the waters of the highland lakes for irrigation purposes (Shoobridge 1916, p. 3; pp. 18-19):

The State is the only authority competent to deal with the subject, and our State has neglected it, and has allowed private people to do what they could individually, or by Acts of Parliament, allowed small districts to control water supplies, and make what use they could of them, and the results have been very small (Shoobridge 1916, p. 6).

By comparison, in Victoria a State Rivers and Water Supply Commission had been established in 1905 to control and administer the conservation and distribution of water for irrigation, and a similar body, the Water Conservation and Irrigation Commission of New South Wales, had been formed in 1913.

Adding to the list of drought sufferers by this time were hundreds of returned World War I soldiers (*Mercury* 19 March 1934, p. 3). Soldier settlement on the land was part of a national policy of repatriation, continuing a misconceived policy of encouraging a 'yeoman' class of settler (Robson 1991, p. 408; Fry 1985; Lake 1987). In Tasmania,

existing estates were purchased for repatriated soldiers, who were advanced loans to acquire equipment, stock and seed. 168 000 acres of land were taken up by almost 2000 soldiers under the scheme (*TC* 1931, p. 49), but many had little or no prior training in farm skills, suffered from war injury disability, and lacked the capital to invest in equipment or irrigation. Holdings were too small and land prices were inflated (Beresford 1983, pp. 90-100; Richardson 2005a, pp. 274-393).

In 1919 William Shoobridge drafted a report on the need for irrigation to ensure the success of soldier settlement, arguing that the upper Derwent area would be highly suitable if an irrigation scheme carrying water from the Russell Falls River was constructed (UTAS archives S3/26). Like so many of his ideas, this went unheeded.

Soldier settlement following the First World War in Tasmania ultimately proved an abject failure. By the close of 1929 only 39 percent of returned soldiers settled under the programme remained on the land. This was the lowest percentage of any of the Australian states (Beresford 1983, p. 90; Richardson 2005a, p. 388). Its high failure rate did not deter the government from embarking on a similar scheme following World War II. Whilst in this instance substantial safeguards were put in place, many returned soldiers still found their holdings too small and vulnerable to climatic extremes. Failure rate was close to 30 per cent (Richardson 2005b, p. 341).

Despite obvious problems with the closer settlement and soldier settlement schemes, the government continued in its quest to attract settlers to the land, claiming in a handbook for intending emigrants in 1921: ‘the State, owing to its rainfall and fertility of soil, is well adapted to small holdings’ (*Tasmania Handbook* 1921, pt. 1, p. 47).

While Shoobridge won support among landowners and some prominent officials, his efforts achieved little in his own life-time. Over the decades a number of reports were commissioned by the government on the feasibility of a national irrigation scheme, but without result (*Mercury* 14 July 1924, p. 3; *Mercury* 24 May 1924, p. 12; *Mercury* 10 August 1927, p. 11; *Mercury* 27 March 1930, p. 8; *Mercury* 29 July 1938, p. 7; Mason-Cox 1994, p. 173). Shoobridge’s calls for state control of all watercourses, and his concerns about the monopoly of the HEC, were ignored (*TPP* 1927, *HAI* no. 36, pp. 1-8; Broinowski 1970, p. 37).

During a parliamentary debate on the irrigation issue in 1924, opponents of a government-funded scheme expressed the views that irrigation was not necessary in Tasmania due to sufficient rainfall, or that irrigation would prove a ‘costly’ experiment (*Mercury* 21 November 1924, p. 8). Even the Department of Agriculture denied the need for irrigation schemes. In its *Bulletin* of January 1939 (a season, incidentally, that was characterized by drought) it claimed, in information for intending new settlers;

The regular and abundant rainfall and mild climate give the Tasmanian countryside a garden-like appearance that proves very attractive to visitors from the more arid parts of the Commonwealth... In general, the provision of adequate water for stock does not represent a big outlay in this state. Over most of the rural areas the rainfall is such that stock water can be had from rivers and streams (*TDAB* January 1939, no. 11, p. 13).

A further dry period in 1945-46 intensified pressure on the government to re-assess its irrigation policy. In its 1945-46 annual report, the Tasmanian Farmers, Stockowners and Orchardists Association resolved that 'owing to the prolonged drought the Association requests the Government to immediately undertake an irrigation scheme for southern Tasmania' (TFSOA Annual Report 1945, p. 63). The Long Marsh Dam scheme was again raised – again, to no avail (*Mercury* 4 December 1945, p. 7).

In 1957 the government formed a Rivers and Water Supply Commission with more extensive powers to issue water rights, approve farm dams and give advice to farmers (Mason-Cox 1994, pp. 174-175). The HEC, however, still maintained control over much of the state's water resources. Some commentators blamed this monopoly and a government committed to industrialisation over agriculture for rural suffering during drought periods. By comparison, on mainland Australia the Snowy River



hydro-electric scheme had incorporated the use of the water surplus into a large-scale irrigation network (*Tasmanian Yearbook* 1967, p. 215).<sup>87</sup>

Though the Tasmanian government had failed to produce a satisfactory response, private farmers increasingly recognized the value of irrigation and began investing in small-scale works on their own properties. Each successive drought, particularly the severe droughts of the 1960s, reinforced this trend. By 1967 the total area under irrigation was 47 000 acres, compared with only 13 500 in 1958-59 (*Mercury* 13 December 1967, p. 46; *Tasmanian Yearbook* 1967, p. 217). About 70 per cent of Tasmanian orchardists were using some form of irrigation and this increased apple and pear production ‘enormously’ (*Mercury* 13 December 1967, p. 45). Also, 40 per cent of the state’s potato crops were irrigated, compared with just 3 per cent in 1957 (*Mercury* 13 December 1967, p. 46). The construction of farm dams and the spray irrigation method played a significant part in this expansion (*Tasmanian Yearbook* 1967, p. 215).

The Department of Agriculture, re-invigorated with Commonwealth assistance during the 1930s, was, by the post-war era, also raising awareness amongst farmers of the need for soil conservation methods to guard against drought effects, and of the need for growth and storage of fodder crops. A research farm had been established at Cressy in 1937,

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<sup>87</sup> The damaging environmental effects of such large-scale irrigation works, in terms of raising soil salinity levels, were not then known, of course.

heralding a 'new scientific age' in the state's agricultural history.

Extension services and staff also increased (Rentsch 1995, p. 65, p.70).

Grassland farming, with the use of sown pastures and artificial fertilizers, burgeoned in the post-war era, largely as a result of research and promotion by the department. The acreage under sown pasture increased by 1 million acres from 1944-45 to 1963-64 (*Tasmanian Yearbook* 1967, p. 186).<sup>88</sup> As a consequence of these grassland developments the number of sheep and cattle doubled in the period from the end of World War I to 1967 (*Tasmanian Yearbook* 1967, p. 186). Myxomatosis had largely wiped out the rabbit population, with a consequent increase in stock carrying capacity (Kirkpatrick 2007, pp. 23-24). The extensive increase in introduced grasses and fodder crops resulted in more demand for water than had been the case with native pastures, and in 1966-67 half the total acreage of land under irrigation in Tasmania was devoted to pasture or green fodder crops (*Statistics of Tasmania* 1966-67, p.46). Fodder conservation had also become standard practice on many farms, with hay and silage production reaching record levels (*Statistics of Tasmania* 1966-67, p. 47).

While the dramatic increase in stocking rates of lowland pastures could lead to greater profits in 'good' years, it could also leave farmers over-

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<sup>88</sup> Land clearance, the cultivation of sown grasses and clovers, and the use of pivot irrigation and fertilizers for extensive pasture development had significant ecological consequences for some native plant species. It would also lead to salinity problems in the future (Kirkpatrick 2007, p. 39; Kirkpatrick and Bridle 2007, p. 210).

stocked at times of prolonged and severe drought. Higher capital investment in farms also increased the risks of loss by drought.

According to midlands farmer, Barney Gatenby: ‘...the lower country is developing all the time, we are running more and more sheep all the time except when you get a drought and then you wonder why you have got so many sheep’ (in Gilfedder et. al, 2003, p. 6). Land that was marginal or too hilly or rocky for improved pasture was often used for alternative grazing runs in times of drought (Kirkpatrick, Bridle and Leith 2007, p. 55).

Despite advances made in grassland farming methods, private irrigation schemes and fodder conservation over this period, severe and prolonged droughts, such as in the late 1960s, still left many stockowners in short supply of feed and water. As irrigation dams dried up, introduced pastures withered and fodder reserves diminished, farmers struggled to maintain their properties and livelihoods. At such times the government gave railway concessions for the transport of fodder to drought-stricken areas or for the movement of livestock to agistment areas, as well as drought relief in the form of cheap loans (*Mercury* 7 April 1960, p. 5; *Mercury* 1 February 1964, p. 5; *Mercury* 13 February 1968, p. 6).

Severe drought in 1967-1968 reinforced concerns that the state’s water resources were not being effectively managed. Rural communities once again raised the issue of government irrigation schemes to combat drought. Farmers in the north-east, for example, called on the

government to construct an irrigation scheme utilizing the old Cascade Dam of the Briseis Mining Company (Beswick 2003, p. 314). At this time, the proposal fell on deaf ears.<sup>89</sup> The Rivers and Water Supply Commission, however, investigated a number of potential irrigation schemes, including the Coal and Jordan River Valleys and the Cressy-Longford district (re-using water spent from the Poatina power station). Funding for a Cressy-Longford scheme was finally achieved by a Commonwealth grant under the National Water Resources Programme in 1969, which was supplemented by state government funds. Work commenced in 1971 and it was officially opened in 1974 (Mason-Cox 1994, p. 175). It had taken almost 170 years of rural suffering from periodic drought for the Tasmanian government to take full responsibility for the construction of a public irrigation scheme (albeit even then with Commonwealth funding). The success of this scheme paved the way for further state sponsored irrigation schemes. In more recent years the environmental consequences of irrigation schemes have been increasingly recognised.

The 1960s also saw the final collapse of the government's long-standing closer settlement policy (*Mercury* 6 November 1963, p. 2). Such a policy undoubtedly contributed significantly to the extent of rural suffering by drought in this period. The importance of farm planning to minimize drought impacts was beginning to be recognized. A study by Wadsley

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<sup>89</sup> The Cascade Dam was finally incorporated in a Derby-Winnaleah Irrigation scheme constructed by the government in 1985-1987 (Beswick 2003, p. 315).

into the severe drought in 1979-1983 found that farmers who ran less stock than the maximum carrying capacity of their farms, who reduced stock numbers early in a drought, who planted cash crops that could be sold or used for feed, and who stored fodder, generally fared better than those who continuously overstocked their land and failed to conserve fodder (Wadsley 1983, p. 36).

More recently it has become apparent that over-use of irrigation can have negative environmental impacts, for example, increased salinity levels in the soil. The need for a range of drought mitigation measures besides irrigation, such as better farm planning, land use selection and cultivation methods, is now recognised (Smith 1998, pp.162-190; 210-212). In retrospect, it is fortuitous that government-funded irrigation schemes came relatively late to Tasmania given the environmentally damaging outcomes now attributed to the large-scale schemes constructed on the mainland in the late nineteenth and early twentieth centuries.

#### *5.2.4 Drought Relief*

Floods and bushfires are generally of short duration and sudden in their onset, but drought is insidious and its effects are less immediately obvious. Relief for city flood and rural bushfire victims had been given since the nineteenth century, but relief for drought victims was less forthcoming. In 1935 the Commonwealth legislated for the formation of a Rural Debt Adjustment Board, under which farmers could apply for

assistance to cope with debt caused by a range of factors including drought. The Tasmanian government was a reluctant participant in the scheme and its committee refused a large number of applications for assistance, blaming the incompetence of small farmers for their plight (Rentsch 1995, p. 61). I would argue, however, that these farmers were victims of a government policy that was intent on settling small-scale farmers on the land, but negligent in the provision of the resources necessary for their success, such as water for irrigation.

The Commonwealth provided more specific drought relief for farmers during the widespread drought of 1939-1941. This assistance, available throughout Australia, was specifically targeted at wheat farmers.

Tasmanian Premier, Robert Cosgrove, at first rejected the Commonwealth offer of grant relief, claiming that Tasmania was not in need (AD9/1/2718). However, ministers of his government and farmers were not going to let the opportunity pass, and insisted that the state take up the offer. Due to the strict terms of the grant, only £622 of the £10 000 offered by the Commonwealth was taken up by Tasmanian growers (AD 9/1/3408). By this time only 4000 acres of wheat was being grown in the State (Tilt 1965, p. 5). Despite the limitations of this relief package, the Commonwealth scheme opened the way for more government relief in subsequent droughts. In the drought of 1967-1968, for instance, \$570 000 worth of cheap loans were provided throughout

the state (in addition to the costs of fodder and stock cartage) (Wadsley 1983, p. 93).

#### 5.2.5 *Summary*

This section has outlined the changing impacts of drought on Tasmania's industries, city dwellers and rural communities in the era 1901-1960s. A government policy of unfettered industrial development and population expansion, coupled with a failure to plan for drought added to these impacts. Throughout this era the government consistently maintained an over-optimistic view of Tasmania's climate and rainfall and continued to advertise to attract new industries and settlers. In effect, it failed to plan effectively for drought periods. Power 'crises' were the result, and the government was forced to implement the 'crisis' related response of power rationing. A more permanent power saving response was the introduction of daylight saving – Tasmania being the first state to trial daylight saving in the post war period. Some industries, such as ANM, instigated significant innovations in process and technology to reduce power usage, or provided alternative power sources as a backup. In Hobart and its suburbs, industrial and suburban expansion, together with a lack of adequate planning, created 'water woes' that periodically afflicted its citizens. City and town councils were charged with the responsibility for water supply, yet suffered from inadequate financial resources and a lack of co-ordination between centres. Not until the

1960s was a metropolitan water board established in the south and the Bryn Estyn scheme completed.

On the land, desperate farmers continually warned of the need for public irrigation schemes to guard against drought, but it was not until the close of this era that government support was forthcoming. This governmental indifference, together with continuing policies of closer and soldier settlement, ensured that small-scale farmers were heavy losers. While advances were made through the work of the Department of Agriculture in promoting private irrigation, as well as soil and fodder conservation, many farmers still continued to suffer during severe and prolonged droughts. In this period drought relief increasingly became a means of alleviating rural stress caused by drought.

### **5.3 Cataclysmic Floods**

In this era, ferocious floods and storms periodically caused widespread damage and disruption to rail and road networks, to HEC power supply, to mines and factory buildings, to farms and to the cities and their suburbs. The opening up of highland areas for HEC workers' villages and infrastructure, and for tourist development, placed more people at risk from snowstorms and severe weather experienced in these areas. Air travel, increasingly popular from the 1930s, also saw an exacerbation of disruption to communications and travel during stormy and inclement weather.



As mining companies and industry expanded their scale of work, the potential damage to infrastructure and production caused by floods also escalates. The pushing of small-scale settlement (for closer and soldier settlement) into the marginal swamp areas of the far north-west and Bass Strait islands, without provision for adequate drainage, also increased the potential risks of flooding for the rural sector. Many decades of clearing water catchment areas and of poor land management practices added to the soil erosion and increased run-off during floods. The growth of towns and ports along the major waterways of the flood-prone Huon and Derwent Rivers also put these communities increasingly at risk.

This section focuses particularly on the impacts of flooding and storm events on mining, industry and HEC operations, on the two major cities of Launceston and Hobart, and on the rural sector. The impacts of, and responses to, major floods in the cities highlight that plans for an expanded population in Tasmania were not always matched by appropriate measures to safeguard residents, businesses, farms and industries from deluge.

Major flood episodes occurred in the north-east in March 1911, and over large parts of the island in December 1916 and July 1922. Particularly severe flooding occurred in April 1929, with the north and north-east being hardest hit. Over 20 people lost their lives in these floods. Rainfall recorded in eastern Tasmania during 1929 was over 40 per cent above average, and in the north, over 25 per cent above (*Statistics of Tasmania*

1929, p. 46). In June 1952 widespread flooding also occurred in the Mersey River basin of the north-west, in the Derwent and Huon Valleys and on the west coast. Further widespread floods in April 1960 caused serious damage and losses in the Derwent Valley and Hobart areas. In May 1969 the north of the state was once more subject to severe flooding.

### 5.3.1 *Mining, HEC and Industry*

Ravage of the landscape, wrought by decades of mineral exploitation, fire and the denudation of timber, had created vast changes in the catchment areas of rivers and streams in the mineral districts, increasing runoff and the severity of floods. Massive tailings heaps built up over long dry periods could also be deposited downstream during heavy downpours, causing the siltation and contamination of rivers and adjoining lands (*Mercury* 1 October 1902, p. 2). The potential risk to mining operations and associated water races and dams by floods also increased as the scale of mining operations grew larger. This is evident in the enormous financial losses and tragic fatalities that were incurred by the Briseis Tin Mine in north-east Tasmania in April 1929.

The Briseis Tin Mine and Briseis Extended Mine near Derby were regular sufferers of flooding (*Mercury* 27 February 1904, p. 9; *Mercury* 1 June 1906, p. 6; *Mercury* 4 August 1909, p. 2). While this mostly caused temporary loss of production and inconvenience, during the floods of April 1929 the results were nothing short of calamitous. After

several days of incessant rain, an exceptionally heavy downpour on 4 April caused the mine dam on the Cascades River, situated three miles from Derby, to break its banks. The dam, completed in 1927, consisted of walls to a height of 70ft, covered an area of 20 acres and held 750 000 000 gallons of water (Beswick 2003, pp. 209-210). As it burst a terrifying avalanche of water swept through the town of Derby and into the mine workings. Several houses and mine buildings were swept away, and eight mine employees, including engineer, William Beamish, were killed, along with a young girl and a family of five in Derby. Low-lying streets and buildings in the town became inundated (*NEA* 5 April 1929, p. 2; *Mercury* 5 April 1929, p. 7; *Mercury* 6 April 1929, p. 9; *Mercury* 8 April 1929, p. 9; *WC* 17 April 1929, p. 24). The inquest into the Briseis disaster attributed no blame to the company for the breach in the dam – the weather conditions at the time were described as ‘abnormal’ and ‘unprecedented’ (*Mercury* 20 June 1929, p. 5). The Mines Department was apparently powerless to investigate the dam’s construction – a situation which was rectified in legislation the following year (Beswick 2003, p. 227). The 1929 floods also damaged other mines in the north-east, such as the Monarch and Pioneer mines at Moorina, but none to the tragic extent of the Briseis mine (*NEA* 12 April 1929, p.3).

Heavy rainfall on the west coast also caused a huge landslip on the Mt. Lyell railway, forcing a closure of the line (*Mercury* 9 April 1929, p. 9). The Minister of Mines, in his report for 1929-1930, claimed:

This year will be remembered as that marking the greatest cataclysm in the history of the State. In addition to the regrettable loss of valuable lives, not a mine in the north-eastern district escaped the effects of abnormal floods, and a few suffered serious damage, the Briseis Mine, of Derby, in particular. The set back to tin-mining as a result of the floods will be felt in particular (*TPP* 1929-1930, *HAI* no. 18, p.3).

The cost to the Briseis Tin and General Mining Co. Ltd of rebuilding the dam and repairing damage to the mine and equipment was estimated at £62 000, and its directors recommended that the company be put into voluntary liquidation and a new company formed (BTGM Co. Ltd, 1930). However, the Great Depression intervened and the company failed to raise the necessary finance (Beswick 2003, p. 236). The mine was then taken over by a local syndicate working on a tribute system, before being sold to the Burma-Malay Company which formed the Briseis Consolidated No Liability (Beswick 2003, p. 236; 243-244). On the day the re-constructed mine was due to re-start full production, in August 1936, heavy rains led to rapidly rising flood waters in the nearby Ringarooma River. Floodwaters broke through a retaining wall and poured into the mine workings to a depth of 140ft. Some valuable machinery was submerged and the damage bill put at £10 000. Although no-one died in this episode, about 140 men were put out of work (*Mercury* 25 August 1936, p.7; Beswick 2003, pp. 247-249). The

manager of the mine vowed to re-construct the mine once again, and repairs took another year to complete (*Mercury* 25 August 1936, p.7; Beswick 2003, p. 250). In ensuing years the Briseis mine, situated in a district prone to heavy rainfall and cloudbursts, remained vulnerable to flooding events, such as in 1944 and 1946 when overburden collapsed, covering the mine workings (Beswick 2003, pp.265-266; *Mercury* 1 August 1946, p. 2). These problems and declining productivity saw the mine close in 1948 before being transferred to local interests (Beswick 2003, p. 269).

As well as impacting severely on the mining industry, floods, storms and heavy snowfalls periodically interrupted construction work and operations of the HEC. The Duck Reach power station at Launceston was swept away during the floods of April 1929. As further hydro-electric development extended into other waterways around the island, they, too, became vulnerable (*Mercury* 25 July 1946, p. 4; *Mercury* 3 June 1948, p. 4). In January 1949 heavy rains caused a landslip at Tarraleah which damaged the canal carrying water to the power station. This episode led to over two weeks of power cuts while repair work was carried out, causing losses in production at ANM and the EZ company (*Mercury* 5 January 1949, p. 1; *Mercury* 10 January 1949, p. 1; *Mercury* 15 January 1949, p. 1). Severe floods in June 1952 caused a temporary closure of the Tarraleah and Butlers Gorge power stations and flooded

the construction works underway at Pine Tier dam and the Tungatinah power station (*Mercury* 25 June 1952, p. 1; *Mercury* 26 June 1952, p. 1).

Hydro camps and villages, such as Butler's Gorge, Bronte Park and Tarraleah, were also located in Tasmania's highland regions of the central plateau – prone to severe winds and freezing conditions. Heavy snow in winter and spring could considerably slow construction works, and at times construction workers were left idle due to the harsh conditions (*Mercury* 18 May 1935, p. 11; *Mercury* 22 May 1955, p. 10). Storms and heavy snow dumps damaged the many miles of transmission lines, leading to power outages and consequent loss of production to affected industries (*Mercury* 1 June 1936, p. 7; *Mercury* 14 February 1951, p. 2).

Floods also affected industries and businesses located on, or near, flood-prone waterways. The floods of April 1960, for instance, caused substantial damage to ANM's Boyer mill near New Norfolk. Many of its employees were made homeless, the pump house and riverfront stores became inundated and production was cut, with a loss of £50 000 to the company (*Newsprint Log*, June 1960, pp. 2-5).

Throughout this era, floods and storms proved capable of causing considerable damage to mining and industry, as well as to the HEC infrastructure that supported them. Loss of dams and buildings,

inundation of workings and, at times, loss of life, were the result. The costs of repairing such damage and in lost production were substantial.

### *5.3.2 Floods in the Major Cities*

#### *Launceston, April 1929*

As we have seen in previous chapters, Launceston was partly situated on a floodplain, and subject to periodic inundation. Authorities had responded by building embankments to protect flood-prone areas of the city and suburbs. These often proved inadequate. Following floods in 1889 and 1926 remedial work was undertaken to raise the embankments that protected the suburbs of Inveresk and Invermay (Munro 1959, p. C53). As the government reclaimed more former swamp land and low-lying areas became more densely populated, however, the potential risks of flood damage increased. Siltation in rivers caused by agricultural development in the catchments may have also increased the chances of flooding (Munro 1959, p. C56). Lack of town planning to avoid flood risk created a situation ripe for disaster. The city was largely unprepared when a tremendous downpour caused widespread flooding across northern Tasmania in April 1929.

An exceptionally heavy downpour over northern and north-eastern Tasmania from 3–6 April 1929 caused severe flooding in the South Esk and North Esk Rivers which converged at the Tamar River in Launceston. A semi-tropical rain-laden depression over the east coast dropped nearly 500mm of rain over three days in the worst affected

areas (BOM 2004, p. 22). On 5 April, following the Briseis Mine disaster, the Mayor of Launceston issued warnings urging residents of low-lying suburbs to be prepared for the worst. Requests were also sent asking citizens and community groups to be ready should assistance be required (*LE* 8 April 1929, p.7; *Mercury* 8 April 1929, p. 7). The danger period was predicted to be around 9 pm that night at high tide, but as this time passed relatively uneventfully, many residents retired to their beds (*Mercury* 8 April 1929, p. 7). However, in the early morning of 6 April floodwaters broke through the Invermay embankments. Many residents were asleep, unaware of the scale and immediacy of the disaster. The Launceston fire bell and town clock were sounded at 1.30am as a warning and evacuations became a matter of extreme urgency. Floodwaters raging down the Cataract Gorge swept away the Duck Reach power station and suspension bridge. The city was plunged into darkness and telegraphic and railway communications were also cut (Fotheringham 1929, pp. 3-4). The floods caused the loss of over 150 bridges throughout Tasmania (*TPP* 1930 *HAI* no. 27; *Mercury* 21 February 1934, p. 9). The northern town of Longford was also hard hit (Fotheringham 1929, p. 24).

Even though it has been estimated that the flow of water in the South Esk was less than in the floods of August 1852 and December 1863, this flood was more catastrophic due to the intensification of land use in the flood-prone areas of the city (Munro 1959, pp. c58-c59).



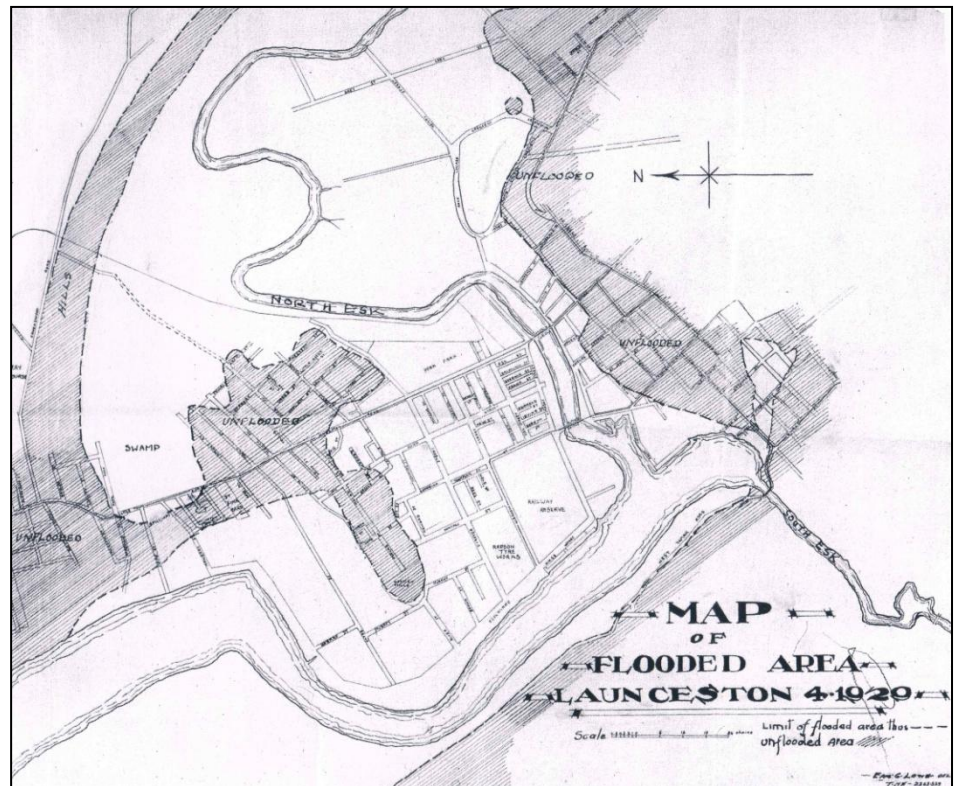


Fig. 11. Map showing extent of flooding in Launceston in April 1929 – Note: The unshaded sections denote the area flooded. Collection of the Queen Victoria Museum and Art Gallery, Tasmania QVM:1958:79:245.

In all, the floodwaters inundated 1550 acres, including 94 acres in the city of Launceston and nearly 400 acres in the suburbs of Inveresk and Invermay (Dare 1942 in QVM: LCC 3 20/1-18). Over a thousand homes at Inveresk and parts of Invermay were flood-damaged and 4000 people had to be evacuated. The rising water inundated a number of factories in the area, including the Rapson Tyre Company, the Tasmanian Produce and Cool Stores (*Mercury* 9 April 1929, p. 11), and the works of the Launceston Gas Company (QVM: CHS 30). Building premises in the low-lying parts of the city itself, particularly on the south side of the North Esk River, were also flooded. Amazingly, there was no loss of life in Launceston itself. The *Weekly Courier* claimed: ‘Tasmania has been in the deadly grip of a flood so cataclysmic in its fury as to completely overshadow any such visitation in its history’ (WC 10 April 1929, p. 3). The article likened the flooding experience to being at war: ‘[Tasmania] has been fighting a relentless foe – not the armies of another land, but the flood waters of her own swollen rivers – a civil war’ (WC 10 April 1929, p. 4). It was labelled Tasmania’s ‘greatest disaster’ (WC 17 April 1929, p. 23), and relief for the flood victims was organised on a scale never before known in Launceston. The Mayor organised an executive relief committee and a number of sub-committees to co-ordinate the relief effort. Volunteer organizations provided emergency accommodation, food, clothing and blankets to the homeless. By late April a camp had been established at the Elphin Showgrounds to house refugees. A Tasmanian Flood Relief Fund administered by a trust established by the

state government was established. £116 000 was raised with about £80 000 of that being distributed to Launceston sufferers (QVM: LCC15/1).

When the floodwaters finally receded the full extent of the damage became apparent. Residents returned to find their homes unlivable. Many were uninsured:

Mud, slime, and dirt had penetrated everywhere... Carpets and linoleums were in a deplorable condition and bedding was sodden and dirty. Much of the furniture was ruined and either twisted, or came to pieces, on being moved ... The small shopkeepers had a particularly bad time as, most of their stocks were ruined (Fotheringham 1929, p. 38).

Once the immediacy of the disaster faded, it was argued by some that these low-lying areas of the city should not be re-built upon – that houses should be re-located to higher ground and the area turned over to parks and grazing land where periodic flooding would do little lasting damage. Modifying existing houses to raise the floors above flood level was another suggestion (*Mercury* 10 April 1929, p. 10; *LE* 22 April 1929, p. 4). Property speculators and landlords who had interests in the area, however, were strongly opposed to such measures (*Mercury* 12 April 1929, p. 10). Faced with such pressure, the council dismissed these controversial options and turned its attention to the very costly alternative of building further embankments and diverting the North Esk

River (*Mercury* 12 April 1929, p. 10). A plan was drawn up in 1931 by City Engineer, W. Potts, but though it was finally approved by council, a lack of funds, concern over legal liabilities, and other priorities intervened. The council advised residents in flood-prone areas of Launceston to make sure that their properties were insured for flood damage (QVM: LCC 3 20/1.19). Meanwhile, they continued to be at risk (*Mercury* 25 August 1936, p. 7).

A consulting engineer, H. Dare, was appointed by the council in 1937 to investigate the proposed flood protection scheme (QVM: LCC3 20/1-18). However, little progress was made until the post-war era. In 1956 Parliament passed the *Launceston Flood Protection Act*. The Act set up a separate authority, the first of its kind in Australia, and charged with implementation of a suitable flood protection scheme for the city (QVM: CHS77 3/12). The Professor of Civil Engineering at the University of New South Wales, C. H. Munro,<sup>90</sup> was appointed Principal Executive Officer. Following extensive testing, a flood control scheme was devised which involved the building of seven levees to divert floodwaters away from the city and suburbs. Work on the scheme was commenced in 1961 and completed in 1969 (40 years after the 1929 floods) (Burrows 1981,

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<sup>90</sup> Crawford Hugh Munro (1904-1976) was an engineer and university professor from Toowoomba, Queensland. He studied civil engineering at the University of Sydney before joining the Metropolitan Water, Sewerage and Drainage Board in 1926. He later served with the Royal Engineers in World War II. In 1949 he was involved in the formation of the NSW University of Technology (later the University of New South Wales) and became associate professor in 1951. The Centre for Civil and Environmental Engineering was named after him in 1992 (Horne, J, 'Munro, Crawford Hugh (1904-1976)', *Australian Dictionary Biography*, Online Edition, updated continuously, published by the Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu.au/biogs/A150511b.htm>).

pp. 4-7). A fierce storm and flooding in July 1964 reinforced the need for such measures (Fisher 2002, p.1, 3). By the time a further flood crisis hit Launceston in June 1969, the new flood control measures had been completed at a cost of \$3 million. In this instance a flow of 100 000 cubic ft. of water was recorded (compared with 150 000 in 1929) and the city and suburbs of Invermay and Inveresk were protected from the rising floodwaters by the new levees (*LE* 2 June 1969, p. 1: *Mercury* 2 June 1969, p. 1). While the new Launceston works were deemed successful, other northern towns suffered considerably from the floods (*Mercury* 2 June 1969, p. 1).

The problems with a heavy reliance on engineering solutions such as the 1960s flood levees have been highlighted by Devin and Purcell (1983) who argue that, while such measures may prove effective, they can lead to an unwarranted sense of security and further inappropriate development in flood-prone areas. A more recent study of Launceston flood policies emphasizes the need for a range of flood management strategies, such as council building and planning measures and public education (Vince and Atkins 2009, pp. 32-37), whilst a 2007 consultant's report determined that the flood levees installed in the 1960s would be inadequate in the face of a major flood today (*Mercury* 27 June 2007).

#### *Hobart: April 1960*

Although significant improvements had been made towards flood-proofing the Hobart Rivulet towards the end of the nineteenth century,

the suburb of Wapping remained vulnerable (*Mercury* 14 March 1911, p. 5; *Mercury* 31 January 1916, p. 4). This situation worsened early in the new century when the council completed a further diversion of the Hobart Rivulet via a tunnel to the Domain. This measure was aimed at allowing reclamation and further development in the wharf area (HRFPA 1963, pp.8-9; Button 1978, p. 66). While a flood relief channel was considered at the time, it was deemed unnecessary by the council (*Mercury* 6 December 1923, p. 7). During a heavy downpour in December 1923, the blocking of the twin culvert to the Domain tunnel by debris caused a backup and overflow of water into Lower Collins Street. A portion of the rivulet's retaining wall also collapsed, instantly submerging about three acres in the lower part of the city. Houses and factories were flooded, including Aiken's woollen mills, the city's tram sheds, and city market (*Mercury* 6 December 1923, p. 7). Petrow has outlined how town planning measures were largely absent in the capital in this period. Despite the work of a few concerned citizens and professionals who warned of the dire consequences of failing to prepare for an influx of industries and migrants attracted by hydro-industrialisation, town planning was widely perceived as under-mining the rights of property owners and placing an unnecessary drain on public funds (Petrow 1989, pp. 99-111). Such a stance exacerbated avoidable impacts of floods at this time.

A severe flood recurred in June 1954, when once again Wapping residents were left unprotected. In this instance, after several days of heavy rain, the swollen rivulet overtopped its banks in Lower Collins Street, inundating the tram sheds and city hall. Residents in Wapping suffered and a number of city businesses had their basements flooded. The Hobart suburbs of Moonah and Glenorchy also recorded flooding (*Mercury* 7 June 1954, pp. 1-2). Premier Cosgrove, claimed that the Hobart Rivulet would always present a flooding menace, and thought the Hobart City Council should consider diverting it into the Sandy Bay Rivulet above Gore Street to protect the city (*Mercury* 8 June 1954, p. 1). The use of the Rivulet as a ‘dumping’ ground was also blamed for the flood damage.

When further flooding of the Rivulet occurred in June 1956, the council was castigated for its inaction. A *Mercury* correspondent identified the build up of rubbish and debris in the Hobart Rivulet and an inadequate wooden bridge at Elizabeth Street as hazards that had contributed to the flood (*Mercury* 9 June 1956, p. 3). While the council had obviously been neglectful, it had not been totally apathetic. A new outlet to carry water from behind the city hall to the wharf area was then under construction – a measure designed to discharge excess water from torrential downpours (*Mercury* 9 June 1956, p. 3). However, the unpreparedness of the city and surrounding suburbs to deal with a major flood would become all too obvious during the severe flooding event of April 1960.

Hobart rainfall for April 1960 was recorded at 250.5mm, compared to just 11.8mm for the previous month of March (BOM 2011). After 48 hours of torrential rain and gale force winds severe floods were experienced throughout the island on 22-23 April. The Hobart CBD was particularly hard hit, but damage was also recorded in the outlying suburbs of New Town, Lenah Valley and Glenorchy. The Rivulet broke its banks at Lower Collins Street on the afternoon of 22 April. At 6 pm it was flowing over the Harrington Street bridge before floodwaters swept away a wall adjacent to the bridge, causing water to gush into nearby streets to a depth of three feet. The CBD was completely cut off, and some 40 to 50 people had to be rescued by emergency officials (*Mercury* 23 April 1960, p. 1; *Mercury* 25 April 1960, p. 2; MCC16/2/1/232; HRFPA 1963, p. 10). Damage to businesses in Hobart amounted to £360 000, and the Hobart City Council, Post Master General's Office and HEC had repair costs totalling £400 000 (HRFPA 1963, p. 14).

The Lord Mayor established a flood relief fund to assist sufferers (*Mercury* 18 May 1960, p. 1). Concerned citizens once more raised the issue of diverting the flood-prone rivulet away from the city and recriminations were once again aimed at the council for its claimed inaction. Chairman of the Hobart Town Planning Committee, Mr Colin Philp, claimed:

Our forefathers should never have built up to the Hobart  
Rivulet or over it... Had it been retained as a creek reserve



running through the city it would be a magnificent asset now instead of an ugly liability (*Mercury* 25 April 1960, pp.1- 2).

Philp drew attention to the fact that buildings had been allowed to encroach upon the Rivulet, citing two HEC substations as examples (*Mercury* 25 April 1960, p. 2). Substantial clearing of the catchment areas of the Rivulet for suburban development was also blamed for accelerating runoff and for the ferocity of the floods in the city (*Mercury* 25 April 1960, p. 4).

Leader of the Opposition, Angus Bethune, called for a state-wide body to deal with all the state's water issues. He claimed:

There had never been a state-wide conservation plan and there had never been any attempt to deal with flood prevention except in isolated circumstances... The danger from the Hobart Rivulet had been known for years (*Mercury* 29 April 1960, p. 15).

In December 1960 the government established a Hobart Rivulet Flood Protection Authority to address the issue. The authority's ambit was strictly confined to Hobart city, even though a great number of streams in the suburbs had also proven flood-prone. This limitation was considered short-sighted by the Post Master General's engineer, J. F. Ponsonby (MCC 16/2/1/232).

The Hobart Rivulet Flood Protection Authority investigated options for the construction of diversion tunnels as a means of flood-protecting the city, but found this to be uneconomic. It instead recommended an increase in capacity of the Rivulet channel through a detailed programme of works, such as the installation of boulder traps and trash racks at key points, the removal of obstructions, the re-design of the Harrington St bridge, and some realignment of the Rivulet walls to increase capacity (HRFPA 1963). In spite of funding problems, by November 1967 the council had undertaken many of the improvements outlined by the HRFPA report (MCC16/2/1242).

Despite these measures in response to the 1960 floods, over 15 years later, in 1976, the geographer, Bob Solomon, claimed that the low-lying parts of Hobart city were still potentially at risk of flooding (Solomon 1976, p. 209).

### *5.3.3 Flood Hazards on the Land*

Major floods, such as in December 1916, April 1929, June 1952 and April 1960, led to significant stock and crop losses and damage, as well as the destruction of farm buildings and equipment throughout the island. Excessively wet seasons could also lead to outbreaks of pests or disease such as black spot in fruit and rust in wheat, ruining whole crops.

Lack of preparation for floods in the form of soil conservation practices and adequate drainage, heightened the damage caused by flood events to

rural production. The close proximity of orchards and hopfields to rivers and streams in the Derwent and Huon Valleys also ensured that farmers in these localities continued to be heavy losers in flood events. As towns and ports developed along these waterways, residences and businesses also became increasingly vulnerable to inundation by floodwaters, for instance, in the floods of June 1952 and April 1960 (AB96/1/1-11, *Mercury* 26 April 1960, p. 1; *Mercury* 27 April 1960, p. 1; Terry 2003, pp. 25-29).

Following the 1960 floods the Department of Agriculture issued advice on methods of reducing flood damage to orchards, such as the re-location of extremely flood-prone trees, the construction of levee systems and grassing between rows to prevent washaway of soil (*TJA* August 1960, pp. 299-300). The serious extent of soil erosion in Tasmania's farmlands was outlined in a further report by the department: 'The serious erosion pattern existing in Tasmania today indicates that there has been little, if any, appreciation of these facts, and in this is the basic reason for the soil erosion on agricultural, horticultural, grazing and other lands within the State' (*TJA* August 1964, pp. 158-159).

The department also blamed road and hydro-electric developments in the highland catchment areas for concentrating water runoff onto agricultural land. It advocated better farm planning, wise land use and the application of soil conservation principles (*TJA* August 1964, pp.157-167). Despite this advice, widespread devastation to orchards,

hop fields and farms continued in further flooding events in the late 1960s (for example, *Mercury* 5 August 1968, p.1).

#### 5.3.4. *Closer and Soldier Settlement – Reclaiming the Swamps*

Throughout this era, the government's policy of closer and soldier settlement in marginal areas also contributed to flood risks. Settlers located on small, under-resourced holdings through the closer and soldier settlement schemes proved vulnerable to exceptionally wet seasons, just as they were to drought and bushfire. For example, in 1924 soldier settlers in the Huon region suffered from spoilage of crops, decimated orchards and poor pasture growth for dairying due to the overly wet conditions (Richardson 2005a, p. 349). Floods in April 1929 led to widespread losses in closer settlement areas. In that season alone 70 per cent of the potato crop on the north-west coast was destroyed (*TPP* 1929-1930, *HAI* no. 39, p. 8). As rural settlement expanded into areas previously considered marginal, such as former swamps, the potential risks of floods increased.

By the 1920s and 1930s the government had begun a programme of converting large areas of swampland in the far north-west and the Bass Strait islands to closer settlement. Problems were experienced from the outset. A Royal Commission held in 1923 into the reclamation of Welcome Swamp near Smithton in the north-west, found that no proper surveys of the area had been made prior to land clearing, that the Public Works Department had not been consulted over the works and that there

were extensive problems with the drainage systems installed (*Mercury* 13 March 1924, p. 5). Settlement of this area ultimately proved unsuccessful. Likewise, drainage works for closer settlement undertaken at Egg Lagoon on King Island in Bass Strait were found to be defective (AB19/1/1; *Mercury* 7 March 1932, p. 6). A report into swamp reclamation projects in 1930 highlighted some of these deficiencies, but also recommended further areas for settlement, including Britton's Swamp in the north-west, which was subsequently developed (*Mercury* 8 March 1930, pp. 9, 11). A select committee was appointed in 1944 to address problems facing struggling farmers at Britton's Swamp. The drainage works undertaken prior to settlement, in this case, had been deemed too effective, with dry periods causing cracking of the clay subsoil. The committee also found that most blocks were too small for successful dairy production and that farm values had been set too high (*TPP* 1944-1945, *HAI* no. 43, pp. 2-3).

At the end of World War II, with the use of bulldozers and other heavy machinery, many thousands of acres of swamp were cleared and drained for soldier settlement on King and Flinders Islands, as well as at the Montagu Swamp in the far north-west of Tasmania. Such land was considered suitable for dairying. By this time the need for adequate drainage systems was better appreciated, with the work being carried out by the government prior to offering allotments for settlement. Even so, severe flood events could impact heavily on these low-lying lands. In

1956, when the wettest year on record at Flinders Island was experienced, the conditions severely retarded pasture growth for dairy cattle (Mainwaring 2006, pp. 129-130). At Mowbray Swamp, where 45 farms had been established for war service land settlement, severe flooding occurred in the years 1966 and 1968 (Brown 1997, p. 70; p. 85).

#### *5.3.5 Summary*

This section has demonstrated that the risks of flood and storm damage were still being under-estimated in the period 1901-1960s. Their potential impact on mining, industry, farming and population centres was considerable, yet authorities were often caught unawares. The devastation of the widespread floods of April 1929 and April 1960 demonstrates this. Floods were not new – they had occurred many times before – but the risks had increased through industrial and population expansion, changes in catchment areas, the spread of rural settlement into marginal ‘swamp’ areas, and a general failure to plan effectively. By the close of this era, however, substantial improvements had been made, such as the formation of flood protection authorities and flood control works in the major towns.

### **5.4 Bushfire: Catastrophic Firestorms**

Bushfire too, continued periodically to have a severe impact on Tasmania’s image as another ‘England’, with catastrophic bushfires causing considerable damage to timber, mining and other industries, and to scenic assets. Both rural and urban communities suffered.

As the new century opened, Tasmanians continued to experience unpredictable flare-ups and terrifying ordeals by bushfire during hot and dry conditions. The situation was made worse by a blasé attitude to fire and a lack of measures to minimise damage. As the road network was extended throughout the island, and hitherto remote regions were opened up for hydro-electric development, new mining and pulp and paper industries and tourism, the state's forested and highland areas and a growing number of 'bush' communities increasingly came under threat from wildfire. The growing population of the capital, Hobart, saw increased encroachment upon the thickly forested slopes of Mt. Wellington and its ranges. This, together with inadequate resources and planning for bushfire management, placed residents in these fringe areas at great risk, culminating in the tragedy of the 'Black Tuesday' fires of February 1967. Rural communities' vulnerability to bushfire escalated as closer and soldier settlement schemes increased the population density of rural areas in, or close to, bushland.

Major fire seasons were experienced in the years 1913-1914, 1933-34, 1938-1940, 1959-1960 and 1967. During the autumn of 1913 fires were recorded in many parts of the island, but particularly in the north-west (Foley 1947, p. 182). The early months of 1914 were also marred by widespread and damaging bushfires in the midlands, south-east and southern districts, as well as in the north-west and on King Island (Foley 1947, p. 182). During the dry early months of 1934 major outbreaks

were reported throughout the Derwent Valley, the Huon, north-west and northern districts. The Derwent Valley timber industry was particularly hard hit (Foley 1947, p. 182). Widespread fires were again experienced in the summer of 1938-1939, with the north-west region again suffering severely. King Island and parts of the north-east also received considerable damage. In the following summer and early autumn further destructive fires were reported in southern and eastern districts (Foley 1947, p. 193-196). The 'Black Tuesday' fires of 7 February 1967 burnt out much of south-east Tasmania, and are widely considered to be the 'worst' in Tasmania's history. A lush spring in 1966 had created abundant vegetative growth that quickly dried out in the very dry months of October to February. High temperatures, low humidity and strong north westerly winds, together with the high fuel load, created extreme fire conditions that summer (*Statistics of Tasmania* 1967, p. 70). Several fires coalesced on 7 February and burned uncontrollably for weeks, with 650 000 acres burnt over, the loss of 62 lives, and over 1400 houses and other buildings lost, including churches, schools, shops, factories and farm buildings. More than 1800 farms suffered damage (Wettenhall 1975, p. 79) and over 275 000 acres of improved and native pastures were lost, with stock losses in rural areas very high and communications and power supply disrupted (CBE24/1/1; *TPP* 1967, *HAI* no 28, p.8). It is estimated that the fires caused \$40 million worth of damage (Wettenhall 1975, p. 79). The scale of this tragedy shocked the



Tasmanian and wider Australian communities. In the words of a Chief Fire Officer, looking back on that day a year later:

Before Black Tuesday, bush fires on this scale were things that happened only in other Australian States... We were apathetic, there is no doubt about that. We were careless about fire hazards. We lit fires pretty indiscriminately. We didn't really worry if one got away (*Mercury* 7 February 1967, p. 1).

The following sections outline not only how changes in land-use, industrial development and population added new risks in this era, but also demonstrate how a lack of planning and preparation for bushfire at the individual, community and government levels actually increased those risks. Tasmania lagged seriously behind other states in bushfire policy and organization. The 1967 fires were a watershed and demonstrated clearly that community and government attitudes to bushfire needed to change. The following sections focus particularly on the impacts of bushfire on forest and other industries, on remote bush communities and the city of Hobart and suburbs.

#### *5.4.1 Forest Industries, National Parks and Remote Communities*

This era is marked by a growth in forest industries, including the establishment of pulp and paper industries. Remote mining, hydro and timber communities, situated in heavily forested, mountainous areas were also established, placing those communities at risk. National Parks,

set up to protect scenic assets from destruction by logging and fire, were also at risk from escaped fires by park users, and from fires encroaching from outside their borders.

State forestry had long been under-resourced. At the turn of the century it remained subsumed under the auspices of the Lands and Survey Department. Vocal critics of the lack of forest planning in Tasmania included farmer and politician, William Shoobridge, Col. W. Legge,<sup>91</sup> and botanist, Leonard Rodway. In 1912 they were instrumental in forming a Tasmanian Forest League in order to lobby the government to form a separate forestry department with the responsibility of protecting and properly managing the island's rapidly depleting timber resources. Tasmania was the only state yet to do so (Petrov 2002, pp.163-183). Rodway thought Tasmanians were too complacent about their forest assets (*Mercury* 5 May 1913, p. 2). The league's concerns were echoed in a scathing report released in 1916 by international forestry expert, D. E. Hutchins, which claimed that Tasmanian forestry was 'the worst in Australia'. He attributed this partly to the 'Britishness' of the population in outlook:

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<sup>91</sup> William Vincent Legge (1841-1918) was born at Cullenswood near St. Mary's on Tasmania's east coast. He was educated in England and Europe before joining the Royal Artillery in 1862. In 1883 he retired from the imperial forces with the rank of lieutenant-colonel, to take command of the volunteer units of the Tasmanian defence force. Legge also had a passion for natural history and was a member and vice president of the Royal Society of Tasmania (Dollery E, 'Legge, William Vincent (1841-1918)', *Australian Dictionary of Biography*, Online Edition, updated continuously, published by Australian National University, viewed 12/11/2010, <http://www.adb.online.anu.edu.au/biogs/A050091b.htm>).

Tasmania, this gem of the South, seems like an English county that has slipped through the globe and emerged in the great watery waste of the Southern Hemisphere. Its population of 200,000 is English to the core, intensely conservative, and with all the Englishman's virtues and failings. There has been no State Forestry in England and there has been none in Tasmania (Hutchins 1916, pp. 329-330).

He was also scathing about the lack of fire protection in the state's first National Park, created in 1915 and placed under the control of a Scenery Preservation Board:

Since I have been in Tasmania a National-park has been proclaimed, and the beautiful scenery well warrants it, but where is the machinery for fire-protecting it? You cannot in this climate have a frequented forest without fires and it is only waste of money to think you can keep down fire by merely appointing guards or watches (*Mercury* 28 November 1916, p. 8).

Hutchins predictions proved correct when bushfires scorched the picturesque Mt. Field National Park in the summers of 1918 and 1919 (*Mercury* 4 February 1918, p. 4; *Mercury* 9 April 1919, p. 3; *TPP* 1920-21 *HAI* no. 62).

Under mounting pressure, in 1920, the government created a Forestry Department with enabling legislation prohibiting the lighting of potentially damaging fires in state forests or timber reserves (*Mercury* 1 July 1922, p. 11). By 1931 the Forestry Department was managing over 1 million acres of state forest (*TC* 1931, p. 56). Although the necessity for such fire prevention measures as fire breaks and patrols had been identified by forestry officials, a lack of resources and bureaucratic clout meant that the newly created department failed effectively to deal with the ‘bushfire menace’.

In addition to the state forest reserves managed by the department, exclusive concessions to large areas of Tasmania’s crown land were granted to milling interests in the early 1900s and to companies intent on establishing pulp and paper industries in the 1930s. This effectively removed control from government over vast areas of forest, placing it in private hands (Borschmann 1999, p. 43). Large concessions included 80 000 ha in the giant mountain ash (*Eucalyptus regnans*) forests of the Florentine and Styx Valleys to the Derwent Valley Paper Company (which later became ANM) in 1932 (Carron 1985, p. 77; Hoysted 1981, p. 18), and 250 000 hectares in the far north-west of the island (adjacent to the railway between Burnie and Zeehan) to APPM in 1936. Both companies were granted further concessions as their industries expanded in later decades (Carron 1985, pp. 77-79). Other concessions were granted to companies working in the southern forests (Carron 1985, pp.

77- 79), guaranteeing companies' access to a plentiful supply of cheap timber resources (Carron 1985, p. 75), In return, the companies had to submit working plans for the forests for approval by the department. Damaging fires in state forests and these timber concessions could rapidly wipe out thousands of acres of valuable timber, as well as threaten sawmills, work camps and even entire towns.

By the 1920s the small townships of Tyenna, Junee and Fitzgerald, home to several hundred people, had sprung up near sawmills in the mountain forests of the Styx and Florentine Valleys. By the 1930s ANM had also established a logging village at Karanja and in 1948 founded its own company town at Maydena (MacFie 1999, pp. 293-308). These 'bush' communities and the timber industry on which they heavily depended were frequently subject to terrifying forest fires. During a devastating summer of 1933-1934 a total of 18 sawmills were destroyed in Tasmania, and large areas of timber concessions were wiped out (*TPP* 1934, *HAJ* no. 21, pp. 3-6). In the town of Fitzgerald, fires razed a sawmill, church and several homes (*Mercury* 8 January 1934, p. 7; *Mercury* 17 January 1934, p. 7; Graeme-Evans 1995, pp. 202-203). The heavy losses at Fitzgerald were due, in part, to the lack of any fire-fighting regime. Conservator of Forests, W. Steane, reported: '...there was neither organization nor equipment for effective fire-fighting - not even the nucleus of any organization' (*TPP* 1934, *HAJ* no. 21, p. 6). The need for local bushfire brigades, he observed, was now blatant (*TPP*

1934, HAJ no. 21, p. 6; Steane 1935, pp. 24-29). In this scorching summer nearby Mt. Field National Park also suffered. A scenic fern glade at the park's entrance was burned out and trees, some 70-80ft tall, crashed down across walking tracks (*Mercury* 20 January 1934, p. 11; *Mercury* 22 January 1934, p. 7).

These fires also wiped out large tracts of timber held in the concession area of the Derwent Valley Paper Company (*Mercury* 12 February 1934, p. 7). Thorold Fink, a director of the company, placed partial blame for the Fitzgerald blazes on sparks from trains on the Derwent Valley line and called for locomotives to be run on fuel in the summer months. In addition, he called for an amendment to the Bushfires Act to control burning off in areas adjacent to the forest concessions, and for supervision of the area by forestry officials over summer (*Mercury* 13 February 1934, p. 9).

The enormity of the damage caused by the fires of 1933-1934 led to the drafting of the first new bushfire legislation in the state since 1854. The *Bushfire Act 1935* allowed the government to proclaim a period of high fire danger for any region and imposed heavy restrictions for the lighting of open fires on or near crown land during these periods (*TPP* 1934, *HAJ* no. 33). There was no provision in the Act, however, for introducing a system of bushfire brigades, even though several other states, by this time, were actively encouraging them (Luke and McArthur 1978, p. 325).

In addition to the new legislation the Forestry Department undertook a number of preventative measures on its reserves, such as establishing fire lookout stations, and improving communications with the Bureau of Meteorology in developing a fire warning system. The Derwent Valley Paper Company also introduced fire patrols and two fire lookout posts in its concession areas (*Mercury* 23 January 1936, p. 6).

Despite these initiatives, Tasmania's forest assets and industries continued to suffer heavily in bushfire seasons. Destructive outbreaks in state forests in the summer of 1938-1939 highlighted problems (*Advocate* 25 January 1939, p. 7; *Advocate* 26 January 1939, p. 7; *Advocate* 27 January 1939; *Mercury* 25 January 1939, p. 7; *Mercury* 31 January 1939, pp. 7-9; *Mercury* 1 February 1939, p. 11; *Mercury* 9 February 1939, p. 7; *Mercury* 10 February 1939, p. 11). While catastrophic fires on the mainland at this time led to sweeping reforms of bushfire legislation and fire-fighting organization in other states, in Tasmania the outcome was a number of minor amendments to the current legislation which, with a lack of public support, had little effect (Pyne 1991, p. 292). Pyne points out the 'paradox' of such attempts at fire protection – that by focusing on excluding and suppressing fire in forested areas, the long-term likelihood of catastrophic bushfires increased, as fuel loads became untenable (Pyne 1991, pp.247-274).

The general superintendent of the Derwent Valley Paper Company continued to pressure the Forestry Commission, arguing that, if the

forests could be proofed against rampant wildfire, investment in the industry would be in the order of millions of pounds, creating employment (both directly and indirectly) for a very large number of people:

You will, therefore, see how important it becomes to protect the forests, because from now on the jobs and the prosperity of so many people will depend upon being able to get wood from them practically for all time. We ask you to help us keep fire out of those forests so that future supplies for keeping the mills going and providing continuous employment will be assured (FC 5/1/1439).

Bad fire seasons in 1939-1940 and 1944-1945 further highlighted the state's continuing vulnerability to the bushfire threat, and the lack of planning and dedicated resources to deal with such destructive outbreaks. Forestry, sawmilling and pulp and paper industry interests and isolated 'bush' communities continued to bear the brunt (*Mercury* 14 March 1940, p. 1; *Mercury* 15 March 1940, pp. 1-2; *Mercury* 16 March 1940, p. 2; *Mercury* 28 December 1940, p. 4; *Mercury* 31 December 1940, p. 10; *TPP* 1946, *HAI* no. 23; *Mercury* 29 December 1945, p. 2).

In a report on Tasmanian forests and forestry administration in 1945,



forestry expert, Stephen Kessell,<sup>92</sup> found that bushfires had taken such a heavy toll on Tasmanian forests that far more timber had been destroyed than the logging industry had cut. While some improvements had recently been made by the Forestry Department its resources were generally inadequate to deal with a major fire season (*TPP* 1945, *HAI* no. 42, pp. 13-14). The difficulties involved in catching and prosecuting those who started fires illegally was outlined in a subsequent departmental report (*TPP* 1950, *HAI* no. 44, p. 8).

As forestry experts began to accumulate considerable knowledge of the effects of fire on timber resources and water catchment areas, and on the prevention methods used overseas and in other states, it became clear that a substantial increase in resources and planning would be necessary for the successful minimisation of bushfire risks to forests. Increasingly it was recognized that fire could not be totally eliminated from Australian forests, and that, at least, some controlled burning to reduce hazards was necessary. The issue of lighting widespread seasonal fires as ‘protective’ burns through forest areas – that is, of ‘fighting fire with fire’ – was more controversial and tended to be unpopular with foresters (Pyne 1991, p. 273; UTAS archives - Gilbert 1946, pp. 8-19).

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<sup>92</sup> Stephen Lackey Kessell (1897-1979) was born in New South Wales. He joined the Australian Imperial Forces in 1917, before studying at Oxford University. In 1920 he was employed by the forests department of Western Australia, and was made Controller of Timber for the Commonwealth Department of Munitions in 1941. In 1944 Kessell advised the Tasmanian government on forest policy, and in 1946 was appointed managing director of ANM. He retired in 1962 (Michael Roe, 'Kessell, Stephen Lackey (1897 - 1979)', *Australian Dictionary of Biography*, Online Edition, viewed 23/5/2011, updated continuously, published by Australian National University ,<http://www.adb.online.anu.edu.au/biogs/A150016b.htm>).

By the mid-1940s ANM had become well-established in Tasmania, having invested large sums of money in the construction of its Boyer pulp and paper mill in 1941 (MacFie 1999, pp. 293-308). The company developed quite sophisticated fire plans for its forest concessions which provided for controlled burns, lookouts and patrols, the establishment of a telephone communication network between logging camps, the acquisition of a number of fire-fighting pumps and other equipment, fire-training for personnel, and dedication of about 70 men to the task of fire-fighting if required (FC 5/1/1439; FC4/1/784; *Newsprint Log* December 1950, p. 15). Kessell, who became Managing Director of the company, urged the government to introduce a system of regional fire control to prevent further forest destruction by fires (*Mercury* 3 December 1946, p. 5). Chief Officer of the Hobart Fire Brigade, N. A. Skinner, had also tried unsuccessfully to garner support for a state-wide system of detecting and suppressing bushfires (*Mercury* 21 January 1947, p. 2).

Further legislation in the form of *The Rural Bushfires Act 1950* was passed, but also failed adequately to address the issue. The Act introduced a system of fire wardens to control the issuing of fire permits to landholders. Although it did allow for the formation of rural fire brigades, it did little to actively encourage brigade formation. Very few municipalities enacted this part of the legislation. A table of yearly progress showed that in the years 1952-1955 only one such brigade was formed. By 1960 there were just 17, though by the time of the 'Black

Tuesday' fires in 1967 there were 48 throughout the whole of the island (TPP 1967, HAJ no. 28, p. 15). None, however, were fully equipped (Mercury 12 June 1967, p. 1). Difficulties in policing illegal fires remained. An article in ANM's *Newsprint Log* for 1951 denounced public apathy towards fires:

In no State have I seen such a complacent attitude and the lack of appreciation to the possible consequences of uncontrolled burning... Legislation has been passed to help combat the problem of fire, but without the whole-hearted support and understanding of every man, woman and child within a community the efforts of any authority to have a fire free State over a bad fire summer is virtually impossible (*Newsprint Log*, December 1951, p. 2).

The new legislation seemed largely ineffective – tellingly, a total ban on the lighting of fires was not applied in Tasmania before February 1967 (TPP 1967, HAJ no. 28, p.15, 20).

Serious fire damage to forest assets was experienced again in the summers of 1950-1951, 1952-1953, 1958-1959, 1959-1960, 1960-1961 and 1963-1964 (TPP 1960, HAJ no. 72; Mercury 22 January 1959, p. 1; Mercury 26 December 1963, p. 3). In the summer of 1958-1959 a bushfire seriously threatened the highland HEC town of Wayatinah and

ANM's concessions in the Florentine Valley (*Mercury* 22 January 1959, p. 1)

With lost resources and production at stake, ANM used scientific research undertaken in Australia and overseas to make improvements in fire planning and preparation (*Newsprint Log* December 1964, pp. 3-5). However, other new practices increased the fire risks. The introduction of regeneration burns by the Forestry Commission and ANM, as a means of preparing beds for seedlings, heightened the potential risk of bushfire. The timing of such burns was critical, and it was not unusual for escaped fires to occur (*TPP* 1966-67, *HAI* no. 69, p.4). During the summer of 1966 an unextinguished fire from a burn carried out by ANM employees on its Florentine Valley concessions flared up and rapidly crossed over into the Mt Field National Park, burning about one fifth of the park area and destroying a hut (AA579/1/5). It was revealed that the National Park was woefully equipped to deal with fire. The National Park Board had at its disposal four staff and four knapsack spray units to detect and suppress park fires. There were few or no access roads, fire breaks or lookouts in the park (AA579/1/5).

Remote towns and industries in the western districts also suffered fire in this period. Queenstown and the Mt. Lyell mine were periodically threatened (*Mercury* 23 January 1948, p. 1; *Mercury* 28 November 1950, p. 1; *Mercury* 2 February 1951, p. 2). EZ's mines in the Rosebery district were also at risk. In January 1960 the company's Hercules mine, located

in hilly terrain and thick scrub at Williamsford near Rosebery, had all its surface buildings wiped out by bushfire (*EZ Review* June 1964, vol.3, no.4, p. 1). Re-building took 16 months (*EZ Review* June 1961, vol.2, no. 8, p. 12). More threats were experienced to the EZ's mine at Rosebery in the following summer, as well as to nearby residences, but on this occasion damage was averted. The company seems to have taken the threat of bushfire very seriously. A fire brigade had been established at Rosebery and training for surface staff carried out. Following the 1961 fire season the company purchased more up-to-date equipment, including two water tankers and wireless radio transmitters. Preventative measures such as bulldozing fire breaks and clearing around buildings was also carried out every spring in preparation for the fire season. Light aircraft and helicopters were sometimes used for fire spotting and transporting equipment in emergencies (*EZ Review* June 1964, vol.3, no. 4., pp. 1-5).

A catastrophic fire season in February 1967 drew government and public attention to persisting problems of bushfire management for forest areas and the risks to industries dependent on their resources. The 1967 fires led to thousands of acres of state forest and crown land being burnt out, the worst hit areas being in the Huon and far south. The fires destroyed an estimated 20 small mills and logging industries and employment in the industry was seriously affected (*Mercury* 8 February 1968, p. 1). ANM's Boyer mill and housing estate near New Norfolk was also

severely damaged by these fires. The fires completely destroyed the single men's quarters that housed 100 employees, burnt 2500 tons of kraft pulp stock and 5000 tons of logs and damaged the chemical pulp store. In addition 11 employees lost their homes (*Newspring Log* June 1967, pp. 16-19).

Other industries, unrelated to the timber industry, also suffered greatly in the 1967 fires. The Australian Carbide Company works at Electrona in the south were gutted and many employees lost their homes as the company's housing estate was ravaged. Production was stopped for four months (*Mercury* 9 February 1967, p. 1; *Mercury* 6 August 1970, p. 7). The Cascade Brewery and cordial factory at South Hobart was extensively damaged, along with the loss of nine brewery homes. The company's damage bill was close to \$2.5 million, and it took three months to re-build (Bingham 1992, pp.84-90; *Mercury* 9 February 1967, p. 2). Other industrial losers included a fish factory at Margate and an alginate plant at Orford (*Mercury* 9 February 1967, p. 1). The HEC network lost 3000 power poles, 200 electricity transformers and substations and many miles of transmission lines, causing major disruptions to power supply (Wettenhall 1975, p. 79).

In response to the widespread devastation the *Bushfires Act 1967* was passed later that year. The new legislation aided the establishment of a state-wide system of rural volunteer fire brigades, finally bringing Tasmania into line with mainland developments (a move that forestry

experts had been advocating for decades). Under the new legislation the Forestry Commission retained responsibility for fire protection in state forests, some other public lands and private property that was within designated fire-protected areas. The legislation also allowed for the declaration of special fire areas (including national parks) in remote locations to aid the resourcing and co-ordination of fire-fighting efforts in areas with difficult access (Luke and McArthur 1978, p. 325). While detection and suppression measures were vamped up following the 1967 fires, the use of controlled burning as a protective measure for forest areas remained controversial.

#### *5.4.2 Fire Invades the City: Hobart February 1967*

Mt. Wellington, together with the villages and suburbs situated within its foothills, had long experienced damage by bushfire, including the devastating fires of 1897-1898. As these suburbs grew in popularity and fingers of residential and industrial development radiating from the city extended further into hilly bushland, the threat of bushfire increased dramatically. The growth of the industrial centres of Moonah and Glenorchy to the north of Hobart pushed subdivisions and housing further up the slopes of the Wellington ranges. A government policy of closer settlement led to a mosaic of small clearings within the forested slopes of the ranges. Routine burning-off by land-holders in these locations often got out of hand, threatening properties and lives. Potential risks were frequently ignored, and on hot summer days the city

was often surrounded by small fires. In January 1914 the *Mercury* reported that after two very hot and windy days:

... the city was ringed around with smoke from numerous bushfires, which were fanned into great activity by yesterday's wind... From the top of Mt. Wellington dozens of fires, burning in all directions, could be made out yesterday, and the sky was obscured with smoke on every hand (*Mercury* 26 January 1914, p. 5).

The bad fire seasons of 1933-34, 1938-1939, 1939-1940 and 1945-1946 saw damage to dwellings, orchards and fences on the urban-bush fringe that separated the city proper from the mountain ranges. The village of Fern Tree, the hotel at the Springs on Mt. Wellington and the Cascade Brewery, located on the outskirts of Hobart on the lower slopes of the mountain, often came under threat from such outbreaks. Such fires left hundreds of acres of mountain scenery desolated, and tourist huts and tracks burnt (*Mercury* 14 February 1927, p. 7; *Mercury* 21 January 1932, p. 7; *Mercury* 10 February 1934, p. 11; *Mercury* 12 February 1934, p. 9; *Mercury* 31 January 1939, p. 9; *Mercury* 14 March 1940; *Mercury* 27 December 1945, p. 2).

A lack of co-ordinated and effective organization for preventing and suppressing fires on the mountain and surrounds, and the apathy shown by the general public all came under notice. Fire prevention and fighting



on the mountain was the responsibility of the Hobart City Council. Battling large bushfires was also a drain on the resources of the Hobart Fire Brigade and pulled men away from the city, which was its primary responsibility to protect (*Mercury* 20 March 1940, p. 5). The military and police forces and volunteers were often called upon to assist with fire-fighting efforts (*Mercury* 14 March 1940, p. 1). Letters to the editor of the *Mercury* by concerned citizens highlighted some of the problems:

As long as I can remember, fires have occurred on Mt. Wellington with monotonous regularity. Not the least result of these disasters is the destruction of mountain scenery, but the possible loss of homes is becoming increasingly apparent as Fern Tree is developing rapidly into a residential area... Many residents live in a 'fool's paradise'. It is not uncommon to find homes erected in the heart of the bush with thick undergrowth right up to the walls (*Mercury* 7 January 1946, p. 12).

Following extensive fires on the mountain in the summer of 1945-1946 a number of improvements were enacted. The powers of the Hobart Fire Brigade were strengthened to allow it to issue hazard notices to landowners (Wettenhall 1975 p. 71). A volunteer auxiliary brigade was also formed at Fern Tree (*Mercury* 10 January 1947, p. 4), and the Hobart City Council established a summer fire watch in park areas (*Tasmanian Yearbook* 1968, p. 595). Forestry Commission and Hobart Fire Brigade officers also made several suggestions for improving fire

management on the mountain, but it remained an under-resourced problem for the council (FC 5/1/2518; *Mercury* 10 January 1947, p. 4).

In subsequent years, newer suburbs located near hilly bushland, such as Taroona and Mt. Nelson to the south of the city, also experienced the threat of bushfire (*Mercury* 31 January 1957; *Mercury* 8 January 1964, p. 1). The increase in such occurrences should have served as a severe warning to Hobart's citizens and authorities, for they were the precursor to a fire season that would shatter all illusions about Tasmania's propensity for catastrophic and deadly fires.

When firestorms invaded the city of Hobart and suburbs in February 1967, their ferocity and deathly toll surprised not only all Tasmanians, but the whole nation. No-one had died in a bushfire in Tasmania since the loss of one life in 1939, and there was a complacency evident that, no doubt, contributed to the heavy toll on life and property incurred in the fires of 'Black Tuesday' 1967. The warning signs had been present for decades, but were largely ignored.

On the day of the 'Black Tuesday' fires, 7 February 1967, despite bushfire warnings having been issued in preceding days, 110 separate fires were burning within a 35 mile radius of Hobart city, many of which had been burning for several days. Most of these stemmed from illegal burning off activity in rural or semi-rural areas (*Tasmanian Yearbook* 1968, p. 591; *TPP* 1967, *HAI* no. 16, p. 17). City people were largely

undeterred by such warnings and the working day began much as usual. However, under the extremely hot and windy conditions, with temperatures soaring to 103°F (39°C), a number of smouldering fires quickly became uncontrollable and spread rapidly through dry, and highly volatile scrub and bushland towards the city's edge (*Tasmanian Yearbook* 1968, p. 591). A State of Emergency was declared later in the day as the scale of the impending disaster became apparent to authorities (*TPP* 1967, *HAJ* no. 16, p. 36). The strong winds and fires threw communications into chaos and brought down electricity transmission lines, cutting off power supplies. Thick smoke closed the airport, and some schools and hospitals were evacuated (Wettenhall 1975, p. 76). Infernos of fire swept down from nearby bushland to within a mile of the GPO in the heart of the city, setting alight houses, factories and suburban gardens, not only in the fringe areas, but also in high density 'established' suburbs. Most residents were totally unprepared for such a disaster. Wettenhall, who published a study of the disaster some years later, claimed:

I was one of those who too easily succumbed to the myth of my own community's immunity from disaster... How surprised I was, and how ill-prepared, to find myself fighting fire that afternoon. It wasn't in some remote bushland area, but in my own suburban front garden and backyard (Wettenhall 1975, p. xv).



Fig. 12 Waterworks Rd, Dynnyrne (Hobart) following 'Black Tuesday' fires (Tasmanian Archive and Heritage Office: PH30/1/8553).

The social dislocation and property damage caused were huge. The Hobart area recorded the highest toll of all municipalities, with over 400 houses destroyed and 20 people dead, mostly in the suburbs of South and West Hobart, Fern Tree, Taroona and Mt. Nelson. The Glenorchy municipality also suffered severely, as did the country town of Snug (Solomon 1976, p. 209; *Tasmanian Yearbook* 1968, p. 595, 598). The Prime Minister, Harold Holt, after a visit to the fire struck city, claimed that Hobart and suburbs 'was the nearest thing to a blitzed, paralysed city he ever wanted to see in Australia' (*Mercury* 10 February 1967, p. 1).

In contrast to Hobart, which was quite unprepared for the scale of disaster of 'Black Tuesday', the Derwent Valley town of New Norfolk was largely saved by the preparation and organisation of its town fire brigade. Bill Purkiss, the chief fire officer and also a fire officer at ANM's Boyer mill, had his men well-drilled for such an emergency. The alarm was sounded early on the 7 February and Purkiss' organizational and fire-fighting skills, together with the men from his units, as well as volunteers and prisoners from Hayes farm, managed to reduce the damage bill in the township to a minimum. Although the fires surrounding the town were intense, only the golf club, three huts, two garages and an old house were lost (*Mercury* 18 February 1967, p. 11; McNeice 1993, pp. 309-312).

In all, the fires left 3350 people homeless and many others in need of assistance (Wettenhall 1975, p. 147). A massive relief effort ensued. The Hobart Town Hall and other municipal buildings in fire affected areas served as temporary relief centres, and the military and government agencies, as well as charity and community groups, swung into action to assist victims, to clean up the blackened rubble and to restore services. A military base at Brighton, north of Hobart, was turned into a refugee camp with accommodation for 500 fire sufferers, and a similar camp was established to the south at Snug recreation ground. A Governor's Appeal Fund was launched (an act usually carried out by the Lord Mayor, but in this case, given the scale of the disaster, set up by higher authority). Teams of insurance assessors descended on Tasmania and the outcome was the then largest insurance claim in Australia's history (Wettenhall 1975, p. 142). The Premier, Eric Reece, who had been out of the state on the day of the fires, returned to pledge re-building of houses for those left homeless and who were uninsured or underinsured. This was a bold and controversial move that had no precedence in Australia. It was estimated that about 800 new homes would be needed (this number blew out to 950) (Wettenhall 1975, p. 172). In total, the funds supplied for the relief of sufferers in rural and urban areas included \$14 500 000 from the Commonwealth Government, \$750 000 by the State Government, and over \$5 000 000 raised through the Governor's Relief Fund.

In the wake of the fires recriminations abounded against the Hobart City Council and other government authorities for failing to protect citizens from such a catastrophic event (*Mercury* 9 February 1967, p. 2; *TPP* 1967, *HAI* no. 16, pp. 21-22). One writer to the *Mercury* thought all Tasmanians were to blame:

We, the people of Tasmania, have every reason to look back with shame on Tuesday, February 7, 1967, because on that day we paid the collective penalty for our actions, omissions, and attitudes... We had been warned many times that a great danger existed, but in spite of these warnings, the fateful day dawned with everything set for the major disaster which was inevitably to follow (*Mercury* 9 February 1967, p. 4).

Some called for a Royal Commission into the disaster. Instead a number of reports and enquiries followed in the coming months, all of which cast a dark shadow on the lack of planning and preparation that had contributed to the losses of 'Black Tuesday'. A visiting fire expert, Mr W. E. Webber of Melbourne, argued how better planning could have averted such a holocaust. He blamed an inadequate water supply, under staffing of fire brigades and outdated equipment, a lack of clear authority for fire control and an apathetic public (*Mercury* 13 February 1967, p. 3).

A committee appointed by the state government found that several factors had contributed to the intensity of the fires in built-up areas,

including the failure to remove hazards from around buildings, the extension of urban areas into bushland, a dearth of fire-fighting resources and a lack of appreciation of the fire danger. It argued that this latter attitude contributed to the severity of the losses incurred:

The vast majority of people had had no experience of such a widespread disaster, and never contemplated that such a thing could occur. Official thinking was undoubtedly in line with community thinking on this problem evidenced by the fact that the fire fighting services operated on a restricted budget (*TPP* 1967, *HAI* no. 28, p. 8).

The committee recommended a range of measures, including better co-ordination between rural and urban fire services, controlled burning to reduce hazards and fuel build up, the creation of fire breaks between residential areas and bushland, and regular home maintenance and cleaning up of properties by residents in preparation for the fire season. They also recommended that the fringe area to the west of Hobart be declared a special fire area, administered by a special committee (*TPP* 1967 *HAI* no. 28, p. 34). While these recommendations were generally adopted, some municipalities were more vigilant than others. A year after the 1967 fires it was reported that, outside the Hobart area, some municipalities had been 'rather half-hearted' in their attempts at fire prevention, and had spent little more than the previous year in hazard reduction (*Mercury* 13 February 1968, p. 3).



Many felt that the post 1967 fire reforms had not gone far enough – that a good opportunity for introducing town planning reforms had been missed. The government's re-housing policy was aimed at building new houses on existing blocks, and no new town planning measures were adopted during the reconstruction process to mitigate future bushfire damage.

The Professor of Botany at the University of Tasmania, W. D. Jackson, was one to express doubts that some semi-bush residential areas, such as Fern Tree and parts of South Hobart, should be re-built upon. He believed that Hobart would never have a fire brigade big enough to cope with such half-cleared bushland if there was a repeat of the 'Black Tuesday' fires (*Mercury* 23 February 1967, p. 11). But such advice was ignored, and suburban areas on the urban-bush fringe continued to be at risk from future fires.

#### 5.4.3 *Summary*

This section has outlined the severe impacts that bushfire had on Tasmania's urban and bush communities in the period 1901-1960s. Despite a concerted effort by the government to attract large industries to Tasmania in the period 1901-1960s, provision for managing bushfire risk to industry was under-resourced. At various times, the losses to these companies by bushfire damage could be huge. Throughout this era, the government also keenly promoted Tasmania as a tourist destination

based on its scenic assets. However, it failed to manage the bushfire risk to its national parks.

Hobart city was also ill-prepared when bushfires enveloped its suburban fringe and penetrated high density areas in February 1967. Although fires had threatened the outer suburbs of Hobart on numerous occasions, warnings by concerned citizens and officials went unheeded. Bushfire planning measures were virtually non-existent and fire-fighting agencies were badly co-ordinated and starved of resources, reflecting a general belief that such a bushfire disaster ‘would never happen here’. The 1967 fires provided a turning point for the introduction of more effective legislation and a more co-ordinated system of brigades.

## **5.5 Conclusions**

This chapter has charted the course of Tasmania’s history from Federation in 1901 to the close of the 1960s – a period marked by a shift from a predominantly rural-based economy to an industrial one based on the rapid development of the state’s waterways for hydro-electric power. A population shift toward the major cities was an outcome of this change in economic base. At the same time, however, small communities of timber, hydro and mining workers were established in remote and often mountainous forests to provide the power and resources for developing industries. Tourism and recreation boomed with the creation of national parks and new roads and tracks in the island’s highland areas. All these changes created new risks associated with drought, floods, storms and

bushfire. Tasmanians, however, clung dearly to their emotional ties with the British Empire, and continued to represent their island as a 'British' gem within the southern ocean. They sought to emulate Britain's advancing industrial power, as well as maintain a long-held nostalgia for the rolling hills and lush pastures of the British countryside. Such views were at odds with the climatic reality in Tasmania – drought impinged on the power requirements of industry and devastated farms; floods and storms interrupted mining and hydro construction works and transport networks; and bushfires wiped out the timber resources for industry and threatened remote communities. Cities were not immune either. Drought continued to create water woes in the capital, Hobart; floods periodically brought chaos and destruction to city residents and businesses; and bushfire encroached upon, and then invaded Hobart's suburbs.

The clearing of highland catchment areas for hydro and road developments heightened the potential dangers of flood events in this era. Soil erosion caused by inappropriate farm practices also added to the negative effects of rainfall extremes. High fuel loads created during periods of ample rainfall set conditions that were ripe for bushfire disaster when succeeded by a hot, dry summer, such as occurred in 1966-1967. Towns and suburbs built in, or adjacent to, bush areas were ill-equipped to deal with the consequences.

It is argued in this chapter that the dominant industrial, tourist and rural visions for Tasmania were largely inappropriate given the climatic risks

posed by drought, floods and bushfires. Such 'idealistic' visions underestimated risks and contributed to a lack of planning and preparation to minimize these risks. Nevertheless, some individuals and companies took measures to protect their own businesses, for example, by investing in irrigation works on farms, or bushfire controls in timber concession or mining areas.

By the close of the 1960s some changes in attitude were evident – an emerging Tasmanian identity based on an attachment to the island's natural and historic features, rather than on its ties to Britain, began to gather strength. The 1960s is also marked by the installation of flood control measures in the major cities; by the implementation of a state-wide system of bushfire control and suppression; and by the state government's recognition of the need for public irrigation schemes. More comprehensive risk assessment procedures and town and country planning measures were, however, still lacking.

## **Chapter Six: Conclusions**

### **6.0 Introduction**

In this chapter I provide a summary of the thesis argument and its significance as well as a discussion of its limitations and suggested avenues for future studies.

### **6.1 Summary**

I have traced the evolution of the image of Tasmania as an ‘Antipodean England’ from 1803-1960s. From the first impressions of the British occupiers of 1803-1804 (chapter two), through the pastoral era of the 1820s-1855 (chapter three), from the advent of responsible government in 1856 to the eve of Federation in 1900 (chapter four), and finally as a federated state from 1900 to the 1960s (chapter five), the image of Tasmania as the ‘most English’ of the Australian colonies predominated. Climatic factors played a pivotal role in this image, which was used to lure migrants, industry and tourists to the island and which also became embedded in the Tasmanian psyche. It was repeatedly claimed by government and those promoting the island that Tasmania’s climate was largely devoid of the excesses of drought, heat, floods and bushfire of mainland Australia, creating a virtual paradise in which those of European background could establish a successful farm, industry, or business; feel ‘at home’; and maintain a ‘salubrious’

lifestyle. In this thesis I have argued that this image was both inaccurate and inappropriate – inaccurate because drought, floods, storms and bushfires are all part of the natural weather cycle of Tasmania (as in mainland Australia), at times severely affecting all aspects of Tasmanian life; and inappropriate because such images downplayed the potential risks posed by climatic variability and contributed to a state of unpreparedness within government and the wider population. Across the different eras the following themes were evident:

- The reality of Tasmania's climatic variability was often at odds with the 'ideal' climate that was widely promoted.
- The potential impacts of severe weather events intensified during the period 1803 to the 1960s as the population of the island increased and settlement became more geographically spread.
- Perceptions of a low risk climate increased the potential impacts of severe weather events due to a lack of planning and preparation for them.
- Modification of the physical and social landscape generally increased the impacts of severe weather events.
- Government responses were often 'crisis' related, taking the form (for example) of relief for sufferers, water restrictions and power rationing during drought.
- Long-term preventative measures were often absent or ineffective due to inadequate resourcing or administration, or failed to keep pace with the spread of settlement and urban expansion.

- Private farmers, mining interests and timber companies with the means to do so were often better prepared for potential risk; for example, by constructing irrigation works, storage dams and alternative power sources to deal with drought; drainage and levees to deal with flood; and purchasing fire-fighting equipment and organising brigades to deal with fire.
- By the close of the 1960s there is a greater official awareness of the need to prepare for severe weather events, as evidenced by the construction of the Launceston flood levees, the introduction of new bushfire legislation and reforms, and the government sponsorship of irrigation.

These themes have been demonstrated through closer examination of Tasmania's drought, flood/storm and bushfire history, with the following themes apparent.

#### 6.1.1 *Drought*

- Government was reluctant to exert effective control over the island's waterways and to invest in public irrigation schemes. Some individual farmers recognised the value of irrigation and constructed their own works.
- Government policy that encouraged small-scale settlement without providing water security ensured settlers' vulnerability to drought.
- Consumption and demand for hydro-power and town water often exceeded supply capacity during drought.

### 6.1.2 *Floods/storms*

- Government and town councils failed to effectively plan, regulate and prepare for flood events.
- Communication systems failed to keep pace with the spread of settlement (particularly in outlying areas).
- Landscape modifications often had significant consequences for flood impact (in both town and country).

### 6.1.3 *Bushfire*

- The benefits of fire for land clearing and mineral exploration were widely seen to outweigh the potential risks.
- Legislation to control fire use was often ineffective. The Bushfire Acts of 1854 and 1935 and the Rural Bushfire Act of 1950 are examples.
- There was a lack of co-ordination between fire-fighting agencies.
- Government forestry and scenic reserves were inadequately resourced to deal effectively with fire.
- Councils and fire brigades were inadequately resourced to deal with bushfire when it invaded city and town.
- Tasmania lagged behind other states in bushfire legislation and management.
- Larger companies with timber/forestry concessions, such as Australian Newsprint Mills, were generally better prepared than government agencies responsible for Tasmania's forested areas.



## 6.2 Significance of the Study

The significant role that climatic factors played in the history of Tasmania from British settlement in 1803 to the 1960s – a role that has hitherto been largely overlooked – has been demonstrated. By adopting an environmental history approach I have also shown that severe weather ‘events’ have a long history in Tasmania and should be considered as part of a natural cycle, rather than ‘unusual’ or ‘abnormal’. An historical perspective also demonstrates that such ‘events’ occur within wider environmental, cultural and societal contexts that influence the impact of, and response to, them. It also demonstrates how these impacts may change over time, as well as the role of cultural constructs, such as ‘image-making’, in the ongoing human-nature dialectic. Applying Cronon’s (1993) synopsis of an environmental history approach (see chapter one), I have demonstrated the following:

*Tasmanian history has a natural context and climate has been an important part of that context.* Climate has significantly affected all sectors of the Tasmanian community. At times drought has detrimentally affected farming operations, and has hindered the supply of water for mining and industry, as well as for domestic use in towns and cities. In the twentieth century drought impacted significantly on hydro-generation capacity, causing interruptions of power supply to industry, business and other consumers. Floods and storms, from the

earliest years of settlement, have caused disruptions to transport and communication networks, including shipping, road transport, railways, mail distribution and telephone communication. They have also caused damage to crops and farm infrastructure and contributed to the spread of livestock and crop diseases such as foot rot and liver fluke. Floods and storms have also, at times, impacted heavily on mining and heavy industry sectors, and on the infrastructure of water supply and power generation that supports them. Floods have caused major property losses in vulnerable cities and towns through damage to residential and business properties and their contents. Bushfires have, over the years, significantly affected rural properties, including buildings, livestock, crops, fencing and pasture. Mining operations, timber resources and forest-dependent industries, tourist assets and remote communities have also suffered significant losses, and towns and the fringe areas of major cities have also been subject to fiery ordeals.

*The relationship between human settlement and climate in Tasmania is not static and has changed over time.* The effects of climatic variables on Tasmanian society have not remained static. Several factors increased the impacts of drought on the farming sector, such as the introduction of closer settlement policies, the diversification of farming into dairying, hops and orchard development, and the introduction and over-grazing of species, such as sheep, cattle and rabbits, that contribute to soil erosion and deplete the moisture-retaining properties of the land.

Other developments, such as the use of irrigation and fodder conservation techniques have assisted in the mitigation of drought. In the cities a policy of rapid industrial development and population growth based on hydro-electric generation in the twentieth century created new challenges during drought. The impact of flood has also changed over time. Improved road and shipping transport may have alleviated the impact of floods in some areas, but the forging of new farming, timber and mining operations in remote areas left other road and transport networks woefully under-prepared for floods and storms. The advent of railway travel in the 1870s also presented new challenges, as did the introduction of air travel in the twentieth century. The clearing of catchment areas for farming, mining or new settlements increased the potential dangers of flood by increasing the runoff into river systems. Reclamation of swamps for farming or town development also created new risks. The diversion of key waterways and the largely unregulated growth of cities, industries and towns along flood-prone waterways also increased dangers to life, businesses and property. Mitigation measures undertaken at various times, such as the installation of flood levees, trash racks and the widening or deepening of waterways, reduced the risks, but did not eliminate them entirely. Changing fire usage and vegetative cover since European settlement have also influenced the frequency and intensity of bushfires. As settlement encroached upon, and then invaded, former forested areas, the risks of bushfire damage to property, farms, mining operations, and

even whole towns increased. The widespread use of fire for land clearing and mineral prospecting without adequate regulation, created potentially destructive situations. The growth of timber and tourist industries that were reliant on forested areas for income added to the potential economic consequences of bushfire. Urban areas were also increasingly at risk during the twentieth century with the development of suburban areas in bush or semi-bush settings.

*Environmental knowledge in Tasmania has been culturally constructed and historically contingent.* The cultural background of Australian colonisation was essentially British. British attitudes to weather and land use heavily influenced the way in which the continent's natural environment and climate were viewed, and consequently settled. Tasmanians, particularly those from the upper and middle classes, displayed a strong emotional attachment to Britain and all things 'British'. The desire to transform the Tasmanian landscape according to British 'ideals' influenced the ways in which the land was settled, the building of roads and towns, and the establishment of industries.

Environmental knowledge also developed according to local experience. Adaptations were made to meet the challenges posed by the Tasmanian environment and climate, such as the use of bush resources in the early years of the colony (see Boyce 2008), the adoption of an extensive form of farming in the pastoral era, the widespread use of fire

for land clearing and mineral prospecting, and innovation in irrigation for the hop and orcharding industries.

I have focused particularly on the role of ‘image-making’ processes and how they influence the human-nature relationship in regards to climate, and have argued that for much of Tasmania’s post-settlement history the dominant image of Tasmania as an ‘Antipodean England’ contributed to a lack of planning for the negative impacts of drought, floods and fire.

*The wisdom of an environmental history approach lies in the form of parables, rather than policy recommendations.* So what is the parable in this thesis? By way of moral, I have argued that learning to live in the Tasmanian climate is, and has been, an ongoing process of adaptation and adjustment since the first years of European settlement. Clearly, in this process Tasmanians needed to develop an identity that is carved from local experience and a realistic view of their island’s natural and climatic features, rather than from a romantic, nostalgic and misplaced attachment to Britain. There remains a need to learn from past weather events and for all Tasmanians to be aware of the climatic risks that they face – that is, to see drought, floods and bushfire as ‘normal’ periodic occurrences in the Tasmanian landscape. While significant improvements in this regard have been made since the 1960s, there is still much more that can be done. All levels of community and government need to be prepared to implement a

range of measures to minimize the negative outcomes of severe weather events.

Historical awareness is an important part of this process. Commentators on recent events in other Australian states, such as the 2009 Victorian bushfire tragedy and the Brisbane floods of 2010, have highlighted the role that an historical perspective can play in better understanding the impacts of such events, for generating greater public awareness of potential risks, and in being more prepared in the future (for the Victorian bushfires see Griffiths 2010a and 2010b; for the Brisbane floods see Funnell 2011). Paton et. al have demonstrated in a survey of bushfire prone residents in the Hobart area that those who discussed the local bushfire history of their area with others in the community and who had strong local knowledge and attachment to place were more likely effectively to prepare their homes and properties for bushfire risk (Paton et. al., 2008, pp. 41-48). Strategies that focus on communicating the history of such events (as well as the necessary information on potential future risks) through public education programmes, museums, exhibitions, and the media, may assist with the evolution of a more 'realistic' view of climatic risks in the general community. The language used to report or discuss such events is also important. As Griffiths has argued, the use of words such as 'unprecedented' or 'unnatural' is the 'beginning of our forgetting' (Griffiths 2010a). This is especially pertinent given the time-lag between events of potentially destructive magnitude.

### **6.3 Limitations**

Given the very broad scope of the topic, I have necessarily taken an overarching approach. This has precluded in-depth examinations of particular events and their specific environmental, political and socio-economic contexts, as well as their full range of impacts on, or responses by, particular communities or regions.

In assessing the role of ‘image-making’ on perceptions of climatic risk I have focused on the dominant ‘Antipodean England’ image throughout the period under investigation. Alternative or competing images are also worthy of further investigation, including the representation of Tasmania’s climate in other media such as literature, the arts, radio and television.

Discussion of the situation in other states has also been minimal, due to the complexities of comparing the Tasmanian situation with regions that have different climatic features, as well as incommensurable (in part or whole) social and political environments. International comparisons, for these reasons, have also not been attempted.

### **6.4 Avenues for Further Research**

It is envisaged that this thesis will provide a framework for more detailed studies to examine more fully some of the issues that have been raised. These may include detailed histories of particular events, including their impacts and responses to them in different regional areas

or by various individuals or sectors of the community. Examples may include comparisons of the way in which different government agencies or communities have dealt with climatic variability; conflicts in resource use that have arisen as a result of climatic factors; inequities in outcomes between the rich and poor (in towns and country); and more in-depth comparisons between the Tasmanian situation and the experience in other states and overseas.

An avenue of additional study that should prove particularly fruitful would be to trace the history of Tasmania from the 1970s to the present in order to identify how land use patterns, town developments, and attitudes have changed since that time, and to identify potential new risks. Drought, for instance, still poses a significant issue to the HEC's operations, to many town water supply systems and to farming. It would be useful to see how these risks have changed and to identify new ones that have emerged. Atkins and Vince have traced the history of Launceston's flood policies from the 1960s (when the current flood levees were installed) and highlight how, over 50 years later, Launceston residents are still in potential danger. They document the measures currently being taken to address that risk (Atkins and Vince 2009, pp. 32-36). Similar studies may be carried out for other cities, towns or areas subject to flooding. In regards to bushfire, new land-use developments, such as the growing popularity of hobby farms and 'lifestyle' residences in steeply sloped bush or semi-bush areas, and the



establishment of timber plantations in former farming regions, pose new risks to lives and property. Predictions of a greater frequency of severe weather events in the future due to rising global temperatures add urgency to such further research.

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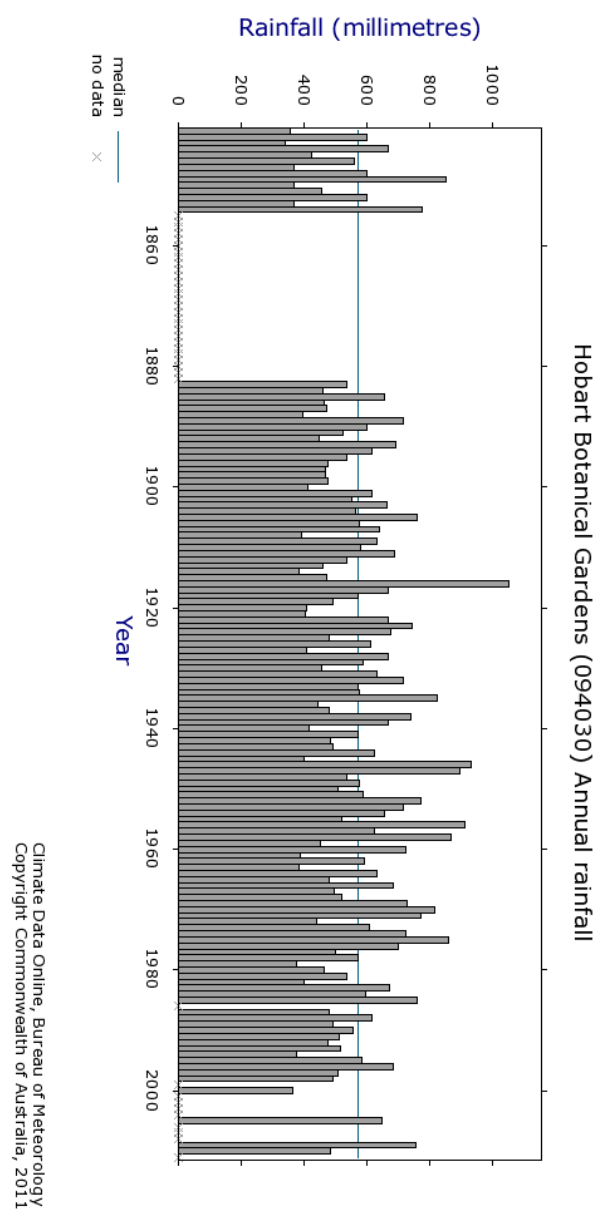
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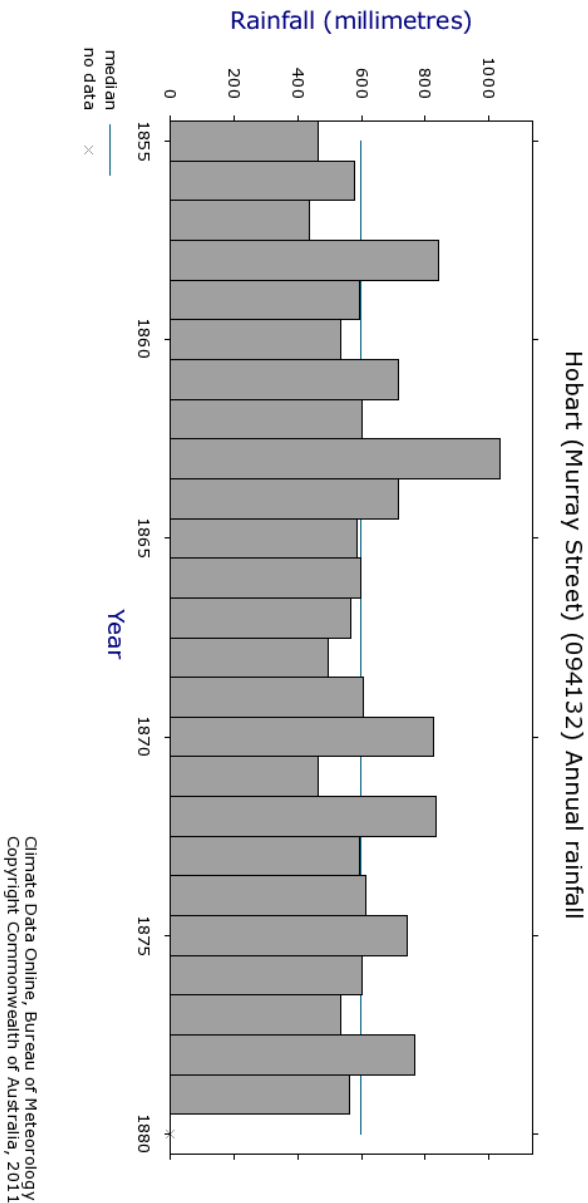
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Appendix 1:



Appendix 2:



## **Appendix 3:**

### **Table of Severe Weather Events**

**(based on available evidence)**

**for the period 1803-1969**

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

Year	Date/s	Event	Region/s	References
1803	Nov-Dec.	Drought	South	Nicholls 1977, p. 44
1804	Jan - July	Drought	South	HRAs3, v1, p. 247
1804	22 July-3 August	Heavy snow	South	Nicholls 1977, p. 57;HRAs3v1, p. 257
1804	1 October	Gale	South	Nicholls 1977, p. 62
1804	November -December	Drought	North	HRAs3v1,p. 629
1805	Jan-Feb?	Drought	North	HRAs3v1,p.629-631
1805	Jan?-April	Drought	South	Nicholls 1977, p. 81
1805	18 August	Gale	South	Nicholls 1977, p. 89
1805	August-October	Cold, floods	North	SG8/9/1805; HRAs3v1, p. 639
1806	Jan?-March	Drought	South	Nicholls 1977, pp.101-103
1806	February	Fire	South	Nicholls 1977, pp. 101-102
1806	Nov-Dec	Drought	South	Nicholls 1977, pp119-123
1806	December	Fire	South	Fawkner, p. 62; Nicholls 1977, p. 123
1807	Jan-March?	Drought	South	Nicholls 1977, p. 129
1807	22 July	Heavy snow	South	Nicholls 1977, p. 139
1808	16 January	Fire	South	Nicholls 1977, p. 153
1809	Jan-Feb	Drought	North	HRAs3v1, p. 695
1809	Jan-Feb	Fire	North	HRAs3v1, p. 695
1809	March	Flood	South	HTG13/7/1816
1809	Winter	Flood	North	HRAs3v1, p. 761
1811?	?	Flood	South	HTC27/9/1828
1814	17 January	Fire	South	Nicholls 1977, p. 166
1814	30 June	Heavy Snow	South	Nicholls 1977,p.182
1815	14 May	Gale	South	Nicholls 1977, p. 204
1816	July-August	Floods	South; North	HTG13/7/1816; HTG20/7/1816; HTG 10/8/1816
1817	All or most of year	Drought	South; North	HRAs3v3, p. 253; LA 4/1/1830
1818	January-March	Drought	South; North	HRAs3v2, p. 310
1818	June	Floods	South; North	HRAs3v2,pp332-333

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1818	August-September	Floods	South; North	HRAs3v2, p. 482, 484; Jevons 1859, p.64
1819	February-March	Floods	South	HTG20/3/1819
1819	June	Heavy snow	South	HTG19/6/1819
1819	August	Frost	South	HTG 7/8/1819
1819	23-25 September	Floods	South	HTG25/9/1819
1819	October-November	Floods	South; North?	HRAs3v2,p.423;HTG30/10/1819
1820	Spring/summer	Drought	South	HRAs3v4, p. 4;HTG6/1/1821; HTG20/10/1821
1820	20 June	Frost	South	Nicholls 1977,p. 333
1820	30 August-2 September	Heavy snow	South	Nicholls 1977, p. 337; HTG2/9/1820
1822	September-October	Floods	South; North	HTG21/9/1822
1823	2 April	Gale	South	Nicholls 1977, p. 387
1823	By October	Drought	South	HRAs3v4, p. 527
1824	October? -December	Drought	South	Nicholls 1977, p. 436-438;461
1825	All or most of year	Drought	South	HRAs3v4, p. 293
1825	October-November	Floods	South	Nicholls 1977, pp.461-462
1826	August-October	Floods	South; North	McKay p.21-22;HTG30/9/1826; Nicholls 1977, p. 488
1827	All or most of year	Drought	South	HTG24/3/1827;Nicholls 1977, p. 507-509;HTC15/12/1827; HTC22/12/1827
1827	December	Fire	South	HTC22/12/1827
1828	January-May	Drought	South	HTC5/1/1828; Nicholls 1977, pp513-515; HRAs3v7, p. 296
1828	July-September	Floods	South; North	Nicholls 1977, p.521,523; HTC 20/9/1828; HTC27/9/1828
1828	January-February	Drought	South	Nicholls 1922, p. 533
1828	February	Fire	South	HTC28/2/1829
1829	June-July	Floods	North	LA22/6/1829;LA6/7/1829
1829	September-November?	Drought	South	Nicholls 1977.p.543,546
1829	November-December	Drought	North	LA7/12/1829
1830	January	Drought	South; North	Nicholls 1977, p.550; LA1/3/1830
1830	July	Heavy snow	South	Nicholls, p.558;HTC17/7/1830
1830	December	Gales	South; North	Nicholls 1977, p. 568; LA20/12/1830
1830	November-December	Drought	South; North	HTC12/1/1831; LA29/11/1830

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1831	January-May; Nov-Dec.	Drought	North	LA30/5/1831; HTC17/12/1831
1831	All or most of year	Drought	South	HTC5/11/1831; HTC17/12/1831; Nicholls 1977, p. 598
1832	January-May	Drought	South; North	Nicholls 1977, p.598; HTC7/4/1832
1832	May	Gales	South; North	LA23/5/1832; HTC26/5/1832
1832	June-July	Floods	South; North	HTC8/6/1832; LA19/6/1832; LA3/7/1832; LA10/7/1832; HTC13/7/1832
1832	August	Heavy snow	South	Nicholls 1977, p. 602
1833	October-December	Drought	South	Nicholls 1977, p. 621, 622, 625.
1834	January-February	Fire	South; North	HTC24/1/1834; LA 6/3/1834
1834	January-August	Drought	South; East	HTC6/6/1834; HTC25/7/1834
1834	September	Floods	South	Nicholls 1977, p. 636; HTC12/9/1834
1835	February	Fire	South; North	HTC13/2/1835
1835	All or most of year	Drought	South; North; NW	CC18/7/1835; TAAR 21/8/1835; HTC25/9/1835
1836	25-27 February	Floods	South; North	HTC4/3/1836; HTC 28/4/1837; Mercury 13/4/1882
1836	17 December	Gale	South	Nicholls 1977, p.656-657; HTC20/12/1836
1837	All or most of year	Drought	South; North	Nicholls 1977, p.660,663,666; CC25/11/1837
1837	July	Frost	South; North	Nicholls 1977, p.666; CC1/7/1837; CC8/7/1837
1838	June	Floods	South	HTC29/6/1838
1838	November-December	Drought	North	CC1/12/1838
1838	All or most of year	Drought	East	True Colonist 30/8/1839
Year	Date/s	Event	Region/s	References
1839	All or most of year	Drought	South; North; East	Brown 1941,v2,p212; 288; CC29/6/1839; True Colonist 30/8/1839; L1H/80
1839	January	Fire	North	CC5/1/1839
1839	November	Frost	North	CC16/11/1839
1840	All or most of year	Drought	South	HTC29/5/1840; Brown 1941v2, p.362.385
1840	Jan-Feb; December	Drought	North	LA3/12/1840
1840	December	Fire	West	Mercury24/6/1896
1841	January	Fire	South; North	CC20/1/1841; HTC22/1/1841; LA 28/1/1841; CC30/1/1841
1841	All or most of year	Drought	South	HTC26/3/1841; HTC 16/4/1841; HTC17/12/1841; Gibbs and Maher, p. 22

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1842	January-April	Drought	South; North; West; NW	VDL Co 28/3/1842; CC9/4/1842; Burn 1973 [1842] p.13
1842	July	Frost	North	CC3/7/1842
1842	July-August	Floods; snow	South; East	HTC8/7/1842; Meredith v1, p.223
1842	25 November	Floods	South; East	HTC2/12/1842; Meredith v1, p.229
1843	All or most of year	Drought	South	BOM1936, p.120; Gibbs and Maher, p. 22; Col. Times27/6/1843
1843	March	Fire	North	CC18/3/1843; CC25/3/1843
1843	July	Floods	East	Meredith 1852 vol.2, pp.61-65
1844	June	Heavy snow	South	Col. Times 26/6/1844
1844	July	Frost	North	CC24/7/1844
1844	30 September- 1 October	Floods	South; North	HTC8/10/1844
1844	December	Drought	North	CC19/3/1845
1845	January	Fire	North	HTC23/1/1845; CC1/2/1845
1845	January-May	Drought	South; North	HTC4/1/1845; CC4/1/1845; CC19/3/1845; HTC10/5/1845
1845	July	Floods	North	CC19/7/1845
1846	20-21 March	Floods	South; North	HTC25/3/1846; HTC28/3/1846; CC28/3/1846
1847	February	Fire	North; South	HTC6/2/1847; HTC 24/2/1847; CC27/2/1847
1847	January-May	Drought	North	HTC3/3/1847;CC6/3/1847; HTC21/4/1847
1847	All or most of year	Drought	South	HTC15/9/1847; HTC18/12/1847; Gibbs and Maher, p. 22
1847	June	Frost	North	CC16/6/1847
1847	November	Floods	North	HTC10/11/1847
1848	January-May	Drought	South	HTC23/2/1848; HTC17/5/1848; Gibbs and Maher, p. 22
1848	February	Fire	South; North	CC19/2/1848; HTC23/2/1848
1848	November	Floods	North; NE	HTC22/11/1848; CC18/11/1848; CC22/11/1848
1849	July	Floods	North, East	CC11/7/1849; CC21/7/1849; CC8/9/1849
1850	March	Fire	South	HTC20/3/1850
1850	All or most of year	Drought	South; North	CC8/10/1850; CC 15/10/1850; Mundy p. 214; Gibbs and Maher, p. 22
1851	January-May	Drought	South	HTC3/5/1851
1851	February	Fire	West	RSTPP1854, vol.2, pt.3, p.43

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1851	November	Floods	South	HTC12/11/1851; HTC22/11/1851
1852	February	Fire	South; North	HTC18/2/1852; HTC6/3/1852
1852	July	Floods	South; North;	HTC21/7/1852; LE21/7/1852; LE24/7/1852
1852	10 August	Floods	North; NE	LE11/8/1852; HTC14/8/1852; LE18/8/1852
1853	All or most of year	Drought	South	HTC 14/12/1853; BOM 1936, p. 120; Gibbs and Maher, p. 22
1853	December	Fire	South	HTC16/12/1853
1854	January-February	Fire	South; North	HTC13/1/1854; HTC14/1/1854; HTC19/1/1854;LE 9/2/1854; HTC13/2/1854;LE16/2/1854
1854	26-27 February	Floods	South	HTC27/2/1854
1854	22 March	Floods	South; North	HTC22/3/1854; HTC23/3/1854; HTC27/3/1854; LE25/3/1854
1854	April	Drought	NE	HTC25/4/1854
1854	August	Floods	North	LE11/8/1852
1854	August	Heavy snow	South	HTC 5/8/1854
1855	January	Fire	North	LE13/1/1855; HTC30/1/1855
1855	All or most of year	Drought	South	BOM 1936, p. 120; HTC1/5/1855
1855	May; November	Gales	North	LE17/5/1855; LE26/5/1855; HTC 30/5/1855; LE10/11/1855
1856	January	Fire	North	Mercury16/1/1856; LE19/1/1856
1856	March	Fire	South	Mercury3/3/1856
1856	April	Floods	South; North; NW	Mercury21/4/1856
1856	June	Floods	NE	Mercury25/6/1856
1857	February-May	Drought	South	Mercury22/6/1857; Mercury 29/6/1857; BOM 1936, p. 120
1857	June	Floods	South	Mercury22/6/1857
1858	January; March	Fire	South; East; North	Mercury7/1/1858; Mercury14/1/1858; Mercury20/3/1858;LE11/3/1858
1858	January-April	Drought	South; North	Mercury19/3/1858; Mercury20/3/1858; Mercury10/4/1858;LE11/3/1858
1858	11 August	Floods	South; North	Mercury13/8/1858; Mercury 14/8/1858; Mercury16/8/1858; LE17/8/1858
1859	February-March	Fire	South	Mercury 8/2/1859; Mercury 9/2/1859; Mercury 17/3/1859
1860	March	Fire	West	Mercury13/4/1860 (Calder)
1862	February-March	Fire	South; North	Mercury 12/2/1862; Mercury 25/2/1862; Mercury 26/2/1862; Mercury 27/2/1862; Mercury4/3/1862; Mercury 6/3/1862; LE27/2/1862; LE22/3/1862



Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1862	January-April; (longer in the east)	Drought	South; East	Mercury 11/3/1862; Mercury 9/4/1862; Mercury 17/4/1862; Mercury8/11/1862
1862	June	Heavy snow	South	Mercury28/6/1862
1862	July	Floods	NW	Mercury19/7/1862; LE31/7/1862
1863	February	Fire	South; NE; NW	Mercury 4/2/1863; Mercury 16/2/1863; LE21/2/1863
1863	March	Floods	South	Mercury23/4/1863
1863	June-July	Floods	NW; North; South	LE11/6/1863; LE13/6/1863; LE18/6/1863; Mercury 8/7/1863; Mercury 9/7/1863; LE23/7/1863
1863	14 -16 December	Floods	South; North	Mercury 15/12/1863; Mercury 17/12/1863; Mercury 18/12/1863; Mercury 19/12/1863; LE17/12/1863; LE19/12/1863; LE23/12/1863
1864	July	Floods	South; north	Mercury19/7/1864; LE19/7/1864; LE21/7/1864; LE26/7/1864
1864	October; November	Heavy snow	South	Mercury28/10/1864; Mercury 28/11/1864
1865	All or most of year	Drought	East	UTASc7/119 (Dr. Storey)
1866	February- March	Fire	North; NW; NE; South	Mercury23/3/1866; Mercury26/3/1866; LE10/3/1866; LE24/3/1866; Mercury23/3/1866
1868	March	Fire	South	Mercury 4/3/1868; Mercury 7/3/1868; Mercury 25/3/1868
1868	All or most of year	Drought	South; East	Mercury21/3/1868; Mercury4/6/1868;Mercury30/12/1868; Mercury30/1/1869: Mercury 9/10/1869; UTASc7/119 (Dr. Storey)
1868	July	Heavy snow	South	Mercury20/7/1868
1868	July	Floods	North; NE	Mercury25/7/1868; Mercury 28/7/1868; LE25/7/1868
1868	September	Floods	NW; West	Mercury8/9/1868
1869	All or most of year	Drought	East; North; South	Mercury23/1/1869; Mercury9/10/1869; Mercury13/11/1869; 12/1/1869; LE30/1/1869; LE21/9/1869; LE23/10/1869; UTASc7/119 (Dr. Storey).
1869	January	Fire	NW	LE12/1/1869
1870	January-February	Fire	South	Mercury24/1/1870; Mercury 23/2/1870
1870	January-April	Drought	East	Mercury20/4/1870
1870	April	Floods	East	Mercury20/4/1870
1870	September	Floods	North; NW; NE	Mercury12/9/1870; Mercury 13/9/1870; LE10/9/1870; LE13/9/1870; LE24/9/1870
1870	December	Drought	South	Mercury19/6/1871

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1871	January-July	Drought	South ;NE; East	BOM 1936, p. 120; Mercury15/3/1871; Mercury 20/4/1871; Mercury22/4/1871; Mercury31/5/1871; Mercury15/6/1871;Mercury19/6/1871; Mercury22/6/1871; Mercury13/7/1871; UTAS c7/119 (Dr. Storey)
1871	February-March	Fire	South; West	Mercury5/4/1871; Mercury24/3/1871
1871	July-August	Floods	NW; South; NE;	Mercury26/7/1871; Mercury 3/8/1871; Mercury 10/8/1871; Mercury28/8/1871; LE20/7/1871
1871	November-December	Drought	South; NE	Mercury4/11/1871; Mercury13/11/1871;Mercury1/12/1871; Mercury 30/12/1871
1872	January-February	Drought	South	Mercury16/3/1872
1872	April- May	Floods	North; East	Mercury18/5/1872; Mercury27/5/1872; LE21/5/1872; LE23/5/1872
1872	June	Floods	South; East; North	Mercury 5/6/1872; Mercury6/6/1872; Mercury12/6/1872; Mercury15/6/1872;LE6/6/1872; LE15/6/1872
1872	August	Heavy snow	South	Mercury12/8/1872
1873	November-December	Drought	South; West	Mercury 21/1/1874; Mercury13/12/1874
1874	January-March	Drought	South; NW	Mercury23/2/1874;Mercury18/4/1874; LE17/2/1874
1874	February	Fire	South; NW	Mercury14/2/1874; Mercury23/2/1874
1874	July	Floods	East	Mercury4/7/1874; Mercury7/7/1874
1874	September	Heavy snow	South	Mercury8/9/1874
1875	January	Fires	North; East	Mercury26/1/1875; Mercury27/1/1875
1875	January-April	Drought	South; East?; North	Mercury12/4/1875; Mercury27/1/1875; LE17/4/1875
1875	May-June	Floods	North; NW	Mercury18/5/1875; Mercury26/6/1875; Mercury 28/6/1875; LE13/5/1875; LE15/5/1875; LE26/6/1875
1875	29 -31 December	Floods	South; North	Mercury29/12/1875; Mercury30/12/1875; Mercury31/12/1875; Mercury24/1/1876' LE30/12/1875; LE1/1/1876
1876	January-March	Drought	West; NE; NW	Mercury 10/3/1876; Mercury14/3/1876
1876	All or most of year	Drought	South; East	Mercury 12/7/1876; Mercury8/7/1876; Mercury18/10/1876; Mercury22/1/1877
1876	13 June	Gales	South; East; NE	Mercury14/6/1876; Mercury17/6/1876; Mercury8/7/1876;Mercury21/6/1876
1876	June	Floods	South (Huon)	Mercury16/6/1876
1876	December	Fire	NE; West	Mercury29/12/1876; LE19/12/1876; LE30/12/1876
1877	January-April	Drought	South; North; NE; NW	Mercury 10/3/1877; Mercury12/3/1877; Mercury30/3/1877; Mercury6/4/1877; Mercury18/4/1877; Mercury24/4/1877; LE17/2/1877; LE3/3/1877
1877	December	Drought	South; North	Mercury21/1/1878; LE11/12/1877

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1878	January-February/March	Drought	North; NW; NE	Mercury 22/1/1878; Mercury 6/2/1878; LE11/2/1878; LE15/2/1878
1878	January-April	Drought	South; East	Mercury21/1/1878; Mercury17/4/1878; Mercury30/3/1878
1878	January	Fire	NW; South; North; NE	Mercury15/1/1878; Mercury16/1/1878; Mercury22/1/1878; Mercury24/1/1878; Mercury25/1/1878; Mercury2/2/1878; LE19/1/1878; LE22/1/1878
1878	August	Floods	North-NE	Mercury16/8/1878; Mercury19/8/1878; LE13/8/1878; LE14/8/1878; LE16/8/1878
1879	January-February	Fire	South	Mercury17/1/1879; Mercury22/2/1879
1879	January-October	Drought	South	Foley 1957, p. 41; Mercury6/8/1879;
1879	January-April/May	Drought	North; NE; NW; West	Mercury30/4/1879; Mercury7/6/1879' LE8/3/1879; LE15/3/1879; LE22/4/1879
1879	August	Frost/Snow	South; East	Mercury13/8/1879; Mercury 6/8/1879
1880	January-March	Drought	South; North; NE; NW	Mercury 20/2/1880; Mercury24/3/1880; LE6/2/1880; LE24/3/1880
1880	February	Fire	North; South; NE; NW	Mercury20/2/1880; LE6/2/1880; LE23/2/1880
1880	25 April	Gales	South: North; NE; NW	Mercury28/4/1880; Mercury 29/4/1880; Mercury4/5/1880; Mercury 1/5/1880; LE27/4/1880
1880	April	Floods	North; NE	Mercury28/4/1880; Mercury1/5/1880; Mercury 3/5/1880; Mercury 10/5/1880; LE28/4/1880
1880	May	Floods	West; East	Mercury25/5/1880; Mercury2/6/1880
1880	August	Floods	South; North; NW; NE; East	Mercury20/8/1880; Mercury 23/8/1880; Mercury24/8/1880; LE5/8/1880; LE7/8/1880; LE24/8/1880; LE30/8/1880
1880	27 December	Gales	South; East	Mercury29/12/1880; Mercury5/1/1881
1880	September-December	Drought	South	Mercury3/1/1881; Mercury 16/2/1881; Mercury 2/3/1880
1881	All or most of year	Drought	South; NW; North; NE	Mercury2/2/1881; Mercury9/2/1881; Mercury9/3/1881; Mercury12/3/1881; Mercury25/3/1881; Mercury2/5/1881; Mercury10/10/1881; Mercury16/11/1881; Mercury23/11/1881; LE16/3/1881; LE26/5/1881
1881	January-March	Fire	South; NW	Mercury21/1/1881; Mercury24/1/1881; Mercury25/1/1881; Mercury27/1/1881; Mercury2/2/1881; Mercury25/3/1881; LE15/2/1881; LE10/3/1881; LE14/3/1881
1881	17 November	Floods	South	Mercury18/11/1881; Mercury21/11/1881; Mercury23/11/1881

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1882	February	Fire	South; East; NE; North; NW	Mercury25/2/1882; LE16/2/1882; LE20/2/1882; LE21/2/1882; LE28/2/1882
1882	February-March	Drought	East	Mercury22/3/1882
1882	July	Floods	North; NE	Mercury25/7/1882; Mercury29/7/1882; LE22/7/1882; LE31/7/1882
1882	June-July	Heavy snow	South; West	Mercury 19/6/1882;Mercury 21/6/1882; Mercury15/7/1882; Mercury31/7/1882
1883	All or most of year	Drought	NE; East	Mercury11/4/1883; Mercury21/5/1883; Mercury27/6/1883; Mercury1/9/1883; LE24/4/1883; LE31/5/1883
1884	January; March	Fire	South; East; NE	Mercury19/1/1884; Mercury23/3/1884
1884	All or most of year	Drought	South	Mercury3/4/1884; Mercury30/4/1884; Mercury22/11/1884
1884	January-April	Drought	NE	Mercury26/4/1884; Mercury30/4/1884
1884	June	Floods	South; NE	Mercury14/6/1884; Mercury16/6/1884; Mercury19/6/1884; Mercury26/6/1884;LE21/6/1884
1884	September	Floods	South; North; West; NW	Mercury 25/9/1884; Mercury30/9/1884; LE24/9/1884
1885	14 August	Floods	North	Mercury 17/8/1885; LE15/8/1885; LE15/8/1885
1885	23-24 September	Floods	South	Mercury25/9/1885
1885	28-30 November	Floods	South; East; North	Mercury30/11/1885; Mercury1/12/1885; Mercury4/12/1885; Mercury10/12/1885; Mercury1/12/1885; LE1/12/1885
1885	24 December	Floods	North	Mercury24/12/1885
1886	January-February	Fire	South; NE	Mercury7/1/1886; Mercury9/1/1886; Mercury12/1/1886;Mercury25/2/1886
1886	February-April	Drought	NE	Mercury20/4/1886
1886	August-September	Floods	North; NE; NW	Mercury5/8/1886; Mercury6/8/1886; Mercury9/8/1886; Mercury16/8/1886; Mercury20/8/1886; Mercury16/9/1886; LE5/8/1886; LE6/8/1886; LE7/8/1886; LE12/8/1886; LE8/9/1886; LE18/9/1886
1886	December	Drought	South	Mercury20/12/1886; Mercury30/12/1886
1887	January-February/March	Drought	South; NE; West; NW	Mercury14/1/1887; Mercury20/1/1887; Mercury27/1/1887;Mercury12/2/1887; Mercury3/3/1887; LE20/1/1887
1887	January-February	Fire	South; North; NE; NW; West	Mercury11/1/1887; Mercury13/1/1887; Mercury14/1/1887; Mercury15/1/1887; Mercury20/1/1887; Mercury12/2/1887; Mercury14/2/1887; Mercury18/2/1887; Mercury19/2/1887; LE10/2/1887; LE12/2/1887; LE15/2/1887; LE24/2/1887; LE25/2/1887
1887	31 July	Floods	North; NW	Mercury1/8/1887; LE1/8/1887

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1887	October-December	Drought	South; North; NW	Foley 195,p.41; Mercury8/12/1887; Mercury15/12/1887; Mercury 23/12/1887; Mercury2/1/1888; LE27/12/1887; LE31/12/1887
1888	All or most of year	Drought	South; North; NE; East; NW	Foley 1957, p.41; Mercury3/2/1888; Mercury4/2/1888; Mercury18/2/1888; Mercury24/2/1888; Mercury7/3/1888; Mercury19/3/1888; Mercury5/5/1888; Mercury17/5/1888; Mercury5/9/1888; Mercury22/9/1888; Mercury17/11/1888; Mercury10/12/1888; Mercury21/12/1888; LE20/2/1888; LE6/3/1888; LE16/3/1888; LE5/4/1888; LE28/4/1888; LE1/11/1888; LE17/11/1888
1888	January- February	Fire	South; NE; NW; East; North	Mercury9/1/1888; Mercury28/1/1888; Mercury4/2/1888; Mercury6/2/1888; Mercury8/2/1888; Mercury18/2/1888; Mercury19/2/1888; Mercury21/2/1888;Mercury24/2/1888; Mercury25/2/1888; Mercury3/3/1888; LE10/1/1888; LE17/1/1888; LE23/1/1888; LE3/2/1888; LE9/2/1888; LE11/2/1888; LE13/2/1888; LE24/2/1888; LE27/2/1888
1888	July-August	Heavy snow	South; West	Mercury23/7/1888; Mercury30/8/1888
1889	January	Fire	West	Mercury1/2/1889
1889	January-April	Drought	South; East; NE; NW	Foley 1957, p. 41; Mercury3/4/1889; Mercury4/4/1889; Mercury11/4/1889; Mercury7/6/1889; LE12/1/1889; LE15/3/1889; LE16/4/1889
1889	12-17June	Floods	South; North; NE; East; NW	Mercury14/6/1889; Mercury17/6/1889;Mercury19/6/1889; Mercury21/6/1889 Mercury22/6/1889;LE17/6/1889
1889	November	Floods	North; NE; East	Mercury2/11/1889; Mercury29/11/1889;LE29/11/1889; Mercury30/11/1889;Mercury4/12/1889;LE29/11/1889
1890	January	Fire	West	Mercury16/1/1890
1890	February	Floods	South; East; North; NE	Mercury15/2/1890; LE15/2/1890
1890	June	Floods	NE; North; East; South; West	Mercury17/6/1890; Mercury 24/6/1890; LE23/6/1890; LE24/6/1890; LE28/6/1890
1891	All or most of year	Drought	NE; NW; North; South	Foley 1957, p. 41; Mercury17/2/1891; Mercury27/3/1891; Mercury25/6/1891;LE28/3/1891; LE1/4/1891; LE19/5/1891
1891	March	Fire	NW; East	Mercury3/4/1891; Mercury11/4/1891; LE4/3/1891; LE10/3/1891; LE23/2/1891; LE27/3/1891
1892	January	Fire	West	Mercury25/1/1892
1892	January-March	Drought	North; NW	Mercury17/3/1892; LE25/2/1892; LE9/3/1892; LE18/3/1892; LE24/3/1892
1892	All or most of year	Drought	South	Mercury25/3/1892; Mercury22/9/1892; Mercury3/12/1892

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1892	July	Heavy snow	South	Mercury22/7/1892
1892	December	Drought	NE; NW; North	Mercury24/12/1892;Mercury 12/1/1893; LE29/12/1892
1893	January	Floods	North; South	Mercury19/1/1893
1893	February-March	Drought	North; South	Mercury22/3/1893; Mercury24/3/1893
1893	9 February	Gale	South	Mercury10/2/1893
1893	February	Fire	South; NE; NW	Mercury16/2/1893; Mercury2/3/1893; Mercury3/3/1893; Mercury17/3/1893
1893	29 May	Floods	NW	Mercury30/5/1893; Mercury5/6/1893; LE30/5/1893
1893	21 July	Floods	North	Mercury21/7/1893; Mercury22/7/1893; LE22/7/1893; LE24/7/1893
1894	January-May	Drought	South; North; NW; NE	Mercury6/2/1894; Mercury7/3/1894; Mercury20/3/1894; Mercury23/3/1894; Mercury9/6/1894; LE26/1/1894; LE26/2/1894
1894	February	Fire	South; NE; NW	Mercury7/3/1894;Mercury13/3/1894; LE7/2/1894; LE15/2/1894; LE16/2/1894; LE17/2/1894; LE19/2/1894
1894	July	Heavy snow	West	Mercury24/7/1894; Mercury25/7/1894
1894	September	Floods	North; NW	Mercury10/9/1894; LE8/9/1894; LE11/9/1894
1894	December	Drought	NE; North; NW	Mercury4/12/1894; Mercury6/12/1894; Mercury14/12/1894; LE10/12/1894; LE14/12/1894; LE17/12/1894
1895	January-February	Drought	South; North; West; East; NE; NW	Mercury19/2/1895; Mercury7/3/1895; LE20/2/1895; LE25/2/1895
1895	January-March	Fire	South; West; Flinders Is. ; North	Mercury31/1/1895; Mercury1/2/1895; Mercury9/2/1895; Mercury15/2/1895; Mercury19/2/1895; Mercury28/2/1895; Mercury15/3/1895; LE5/2/1895; LE8/2/1895
1895	July	Heavy Snow	NW	Mercury15/7/1895; Mercury20/7/1895
1895	22-23 September	Gales	South	Mercury23/9/1895
1895	November-December	Drought	NE; South; North; NW	Mercury 19/11/1895; Mercury2/12/1895; Mercury5/12/1895; LE2/12/1895; LE9/12/1895
1895	7 December	Floods	West	Mercury23/12/1895
1896	January-March	Drought	NE; South	Mercury17/1/1896; Mercury25/4/1896
1896	January	Fire	NE	Mercury17/1/1896; LE13/1/1896; LE15/1/1896
1896	June-July	Floods	South; North	Mercury15/6/1896; Mercury16/7/1896; LE15/6/1896
1896	August	Floods	North; NE	Mercury28/8/1896; Mercury29/8/1896; Mercury2/9/1896; Mercury11/9/1896

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1896	September-December	Drought	North; South; NE; West	Foleu1957, p.42;Mercury8/10/1896; Mercury12/10/1896; Mercury14/11/1896; Mercury23/11/1896; Mercury27/11/1896; Mercury1/12/1896; Mercury17/12/1896; Mercury22/12/1896
1896	December	Fire	West; South; NW	Mercury14/12/1896; Mercury15/12/1896; Mercury19/12/1896; Mercury30/12/1896
1897	All or most of year	Drought	South; NE; North; NW	Foley 1957, p.42; Mercury27/1/1897; Mercury6/2/1897; Mercury7/4/1897; Mercury9/4/1897; Mercury13/5/1897; Mercury 20/11/1897; Mercury8/12/1897; LE25/8/1897
1897	January-February	Fire	South; West	Mercury6/2/1897; Mercury16/2/1897
1897	12-17 March	Gales	South; NE	Mercury20/3/1897; Mercury22/3/1897; Mercury26/3/1897
1898	December	Fire	West	Mercury31/12/1898
1899	February	Fire	South; West	Mercury15/2/1899; Mercury27/2/1899
1899	All or most of year	Drought	South	Mercury13/9/1899; Mercury23/9/1899; Mercury22/11/1899; Mercury30/12/1899
1899	April	Floods	North; West	Mercury10/4/1899; Mercury24/4/1899
1899	December	Fire	West	Mercury30/12/1899; LE2/1/1900
1900	January-May	Drought	NE	Mercury2/6/1900; LE2/4/1900
1900	All or most of year	Drought	South; East	Mercury28/3/1900; Mercury2/4/1900; Mercury4/4/1900; Mercury19/10/1900; Mercury8/5/1901
1900	January-March	Fire	South, North; NE; NW; West	Mercury2/1/1900; Mercury3/1/1900; Mercury4/1/1900; Mercury5/1/1900; Mercury6/1/1900; Mercury10/1/1900; Mercury11/1/1900; Mercury3/2/1900; Mercury6/2/1900; Mercury14/3/1900; Mercury21/3/1900 LE2/1/1900; LE3/1/1900; LE6/1/1900; LE31/1/1900; LE10/2/1900; LE26/2/1900; LE27/2/1900
1900	March	Gales	South; NE	Mercury7/3/1900
1900	August	Floods	NE; NW	Mercury29/8/1900; Mercury22/8/1900
1900	November-December	Drought	South; NE; NW	Mercury24/11/1900; Mercury27/11/1900; Mercury13/12/1900; LE3/12/1900; LE4/12/1900
1901	January-May	Drought	East; NE	Mercury9/5/1901; Mercury16/5/1901
1901	January-March	Fire	West; NE; South; NW	Mercury26/1/1901; Mercury31/1/1901; Mercury9/2/1901; Mercury11/2/1901; Mercury 16/2/1901;Mercury 20/2/1901; Mercury23/2/1901; Mercury11/3/1901; Mercury13/3/1901; LE6/2/1901; LE8/2/1901; LE11/2/1901; LE16/2/1901; LE18/2/1901; LE19/2/1901; LE20/2/1901
1902	All or most of year	Drought	South; North; NE	Foley 1957,p.42; Mercury2/2/1902; LE6/6/1902
1902	January	Floods	North; NE	Mercury7/1/1902; LE8/1/1902; LE11/1/1902
1902	January- February	Fire	NE; West	Mercury14/1/1902; Mercury1/2/1902; Mercury6/2/1902;

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1902	December	Fire	West	Mercury8/12/1902; Mercury17/12/1902
1903	January	Drought	East; South	Foley 1957, p. 42; Mercury 18/2/1903
1903	January-February	Fire	South; North; West; NW; NE	Mercury 3/2/1903; Mercury2/2/1903; Mercury4/2/1903; Mercury6/2/1903; Mercury9/2/1903; LE20/1/1903; LE22/1/1903; LE2/2/1903; LE3/2/1903; LE4/2/1903; LE6/2/1903; LE9/2/1903
1903	June-July	Floods	South, North; NE	Mercury11/6/1903; Mercury16/6/1903; Mercury21/7/1903; Mercury20/7/1903; LE12/6/1903; LE16/7/1903; LE17/7/1903
1903	November-December	Fire	West	Mercury23/11/1903; Mercury28/12/1903
1904	January	Fire	West	Mercury13/1/1904; Mercury16/1/1904
1904	February	Floods	NE; NW	Mercury27/2/1904; LE27/2/1904; LE29/2/1904
1904	June	Floods	NW	Mercury2/7/1904; LE21/6/1904; LE24/6/1904
1905	January	Fire	West; NE; East; North; Flinders Is.	Mercury 12/1/1905; Mercury13/1/1905; Mercury 14/1/1905; LE12/1/1905; LE13/1/1905; LE14/1/1905; LE16/1/1905; LE17/1/1905; LE18/1/1905
1905	May-June	Floods	North; South	Mercury1/6/1905; Mercury2/6/1905; Mercury3/6/1905; Mercury6/6/1905; Mercury8/6/1905; LE1/6/1905; LE5/6/1905
1905	September- December	Drought	East; NE	Mercury19/10/1905; Mercury8/2/1906; LE12/10/1905
1906	January-March	Drought	NW; South; North; NE; West	Mercury25/1/1906; Mercury26/1/1906; Mercury10/2/1906; Mercury12/2/1906; Mercury16/2/1906; Mercury22/2/1906; Mercury11/4/1906; LE13/1/1906; LE7/2/1906; LE16/2/1906; LE23/2/1906; LE22/3/1906; LE30/3/1906
1906	January- February	Fire	NW; South; West; North; NE	Mercury24/1/1906; Mercury25/1/1906; Mercury31/1/1906; Mercury2/2/1906; Mercury3/2/1906; Mercury6/2/1906; Mercury8/2/1906; Mercury9/2/1906; LE 5/1/1906; LE6/1/1906; LE8/1/1906; LE9/1/1906; LE11/1/1906; LE25/1/1906; LE26/1/1906; LE29/1/1906; LE30/1/1906; LE1/2/1906; LE2/2/1906; LE3/2/1906; LE5/2/1906; LE7/2/1906; LE9/2/1906; LE12/2/1906; LE15/2/1906; LE19/2/1906
1906	April-May	Floods	NE; West	Mercury17/4/1906; Mercury20/4/1906; Mercury 19/4/1906; Mercury1/6/1906;
1906	June- July	Floods	West; NE; NW; North; South	Mercury21/6/1906; Mercury23/6/1906; Mercury25/6/1906; Mercury26/6/1906; Mercury26/6/1906; Mercury28/6/1906; Mercury28/6/1906; Mercury 13/7/1906; Mercury18/7/1906; Mercury19/7/1906; Mercury2/8/1906; LE19/6/1906; LE21/6/1906; LE25/6/1906; LE26/6/1906; LE27/6/1906; LE17/7/1906



Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1906	September	Floods	North; NW	Mercury29/9/1906; Mercury2/10/1906; Mrecury3/10/1906; Mercury4/10/1906; Mercury8/10/1906; LE29/9/1906
1907	January	Fire	West	Mercury18/1/1907; Mercury21/1/1907
1907	February	Floods	NE; East	Mercury8/2/1907; LE7/2/1907; LE8/2/1907; LE9/2/1907
1907	January-June	Drought	South	Mercury9/5/1907; Mercury17/6/1907; Mercury1/7/1907; Mercury15/7/1907
1907	August	Floods	West	Mercury27/8/1907
1907	October	Floods	South	Mercury3/10/1907
1908	All or most of year	Drought	North; South; East; NW; NE; Flinders Is.	Foley 1957, p. 42; Mercury23/4/1908; Mercury5/5/1908; Mercury5/5/1908; Mercury19/5/1908; Mercury15/6/1908; Mercury21/7/1908; Mercury13/8/1908; Mercury15/8/1908; Mercury3/9/1908; Mercury24/11/1908; Mercury18/12/1908; Mercury24/12/1908; Mercury26/12/1908; Mercury1/1/1909; LE20/5/1908; LE22/7/1908; LE20/10/1908; LE4/11/1908; LE24/11/1908
1908	January	Fire	West	Mercury6/1/1908; ZDH20/1/1908; ZDH21/1/1908; Mercury20/1/1908; Mercury23/1/1908; Mercury25/1/1908;
1908	May	Floods	West	Mercury9/5/1908; Mercury13/5/1908
1908	October	Floods	South	Mercury10/10/1908
1908	November-December	Fire	West; South	Mercury27/11/1908; Mercury1/12/1908; Mercury4/12/1908; Mercury17/12/1908
1909	January-March	Fire	North; South; NW; NE	Mercury2/3/1909; Mercury1/3/1909; LE8/1/1909; LE23/1/1909; LE25/1/1909; LE26/1/1909; LE29/1/1909; LE1/2/1909
1909	April	Floods	South; West	Mercury5/4/1909; Mercury6/4/1909; Mercury12/4/1909
1909	June	Floods	South	Mercury25/6/1909
1909	August	Floods	NE; North; NW; West	Mercury4/8/1909; Mercury7/8/1909; LE21/8/1909; LE23/8/1909; LE24/8/1909
1909	August	Heavy snow	West; South	Mercury7/8/1909
1909	September-December	Drought	North	Foley 1957, p.42
1910	January-April	Drought	North; NW; NE; West; South	Foley 1957, p. 42; Mercury3/3/1910; Mercury8/3/1910; Mercury11/3/1910; Mercury29/3/1910; Mercury31/3/1910; Mercury27/4/1910; LE24/1/1910; LE5/2/1910; LE10/3/1910; LE26/4/1910; LE27/4/1910
1910	January-February	Fire	NW; NE	Mercury4/1/1910; Mercury18/2/1910; LE4/1/1910; LE6/1/1910; LE4/2/1910; LE18/2/1910; LE22/2/1910
1910	April-May	Floods	South; West; NW	Mercury27/4/1910; Mercury3/5/1910; Mercury28/5/1910; LE28/5/1910; LE30/5/1910

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1910	June-July	Floods	North; NE	Mercury30/6/1910; Mercury1/7/1910; LE30/6/1910; LE1/7/1910; LE13/7/1910
1910	September	Floods	North; NW	Mercury12/9/1910; LE12/9/1910
1911	March	Floods	North; NE; South	Mercury9/3/1911; Mercury10/3/1911; Mercury11/3/1911; Mercury13/3/1911; Mercury14/3/1911; LE10/3/1911; LE13/3/1911; LE15/3/1911
1911	November	Floods	West	Mercury15/11/1911
1912	January-February	Fire	South; King and Flinders Islands; North; West; NE; NW	Foley 1947, p. 182; Mercury15/1/1912; Mercury16/1/1912; Mercury24/1/1912; Mercury29/1/1912; Mercury3/2/1912; Mercury5/2/1912; Mercury6/2/1912; Mercury7/2/1912; Mercury13/2/1912; LE29/1/1912; LE1/2/1912; LE5/2/1912; LE7/2/1912; LE9/2/1912; LE16/2/1912; LE17/2/1912; LE20/2/1912; LE22/2/1912
1912	January-March	Drought	South	Mercury4/3/1912; Mercury5/3/1912;
1912	April	Floods	West	LE13/4/1912
1912	November	Floods	South; West	Mercury9/11/1912; Mercury10/11/1912
1913	13 January	Gales	South	Mercury15/1/1913
1913	All or most of year	Drought	South; North; NE; West	Foley 1957, p. 43; BOM 1936, p. 120; Mercury 24/2/1913; Mercury24/3/1913; Mercury13/10/1913; LE2/5/1913; LE20/5/1913
1913	January-May	Fire	South; NW; NE; West; East; King Is.	Foley 1947, p. 182; Mercury20/1/1913; Mercury29/1/1913; Mercury5/2/1913; Mercury20/2/1913; Mercury28/2/1913; Mercury4/3/1913; Mercury5/3/1913; Mercury15/4/1913; Mercury17/4/1913; Mercury20/5/1913; Mercury21/5/1913; LE29/1/1913; LE5/2/1913; LE14/2/1913; LE21/2/1913; LE28/2/1913; LE27/2/1913; LE5/3/1913; LE20/5/1913; LE22/5/1913
1913	August	Floods	North	Mercury 7/8/1913; Mercury8/8/1913; LE7/8/1913; LE8/8/1913; LE9/8/1913
1913	November	Floods	South (Huon); West	Mercury 15/11/1913; Mercury17/11/1913; Mercury18/11/1913
1913	December	Fire	West; South	Mercury23/12/1913
1914	All or most of year	Drought	South; North; NW; East; NE	Foley 1957, p. 43; Mercury5/2/1914; Mercury10/2/1914; Mercury2/3/1914; Mercury4/3/1914; Mercury13/3/1914; Mercury15/6/1914; Mercury2/11/1914; Mercury24/11/1914; Mercury1/1/1915; LE 11/3/1914; LE16/3/1914; LE24/3/1914; LE25/9/1914; LE17/10/1914; LE23/10/1914

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1914	January-March	Fire	South; King Is.; Flinders Is. NW; West; NE	Foley 1947, p. 182; Mercury26/1/1914; Mercury27/1/1914; Mercury16/2/1914; Mercury17/2/1914; Mercury18/2/1914; Mercury19/2/1914; Mercury20/2/1914; Mercury23/2/1914; Mercury24/2/1914; Mercury25/2/1914; Mercury2/3/1914; Mercury4/3/1914; Mercury10/3/1913; Mercury13/3/1914; LE6/1/1914; LE16/2/1914; LE17/2/1914; LE20/2/1914; Le6/3/1914; LE13/3/1914; LE24/3/1914
1914	25 September	Heavy snow	South	Mercury26/9/1914
1914	October	Fire	South; North; West; NW	Foley 1947, p.182; Mercury9/10/1914; Mercury10/10/1914; Mercury13/10/1914; Mercury26/10/1914; LE7/10/1914; LE10/10/1914; LE14/10/1914
1915	January	Drought	South	Foley 1957, p. 43
1915	January-March	Drought	North; NW	Foley 1957, p. 43; LE9/3/1915; LE15/3/1915; LE18/3/1915
1915	January-February	Fire	South; NW; West; NE	Foley 1947, p.184; Mercury26/1/1915; Mercury27/1/1915; Mercury28/1/1915; Mercury2/2/1915; Mercury18/2/1915; Mercury19/2/1915; Mercury20/2/1915; LE27/1/1915; LE15/2/1915; LE16/2/1915; LE18/2/1915; LE19/2/1915; LE20/2/1915; LE27/2/1915
1915	20-21 February	Floods	South	Mercury22/2/1915; Mercury22/2/1915
1915	April	Floods	South; West	Mercury13/4/1915; Mercury14/4/1915
1915	August	Floods	North	Mercury4/8/1915; LE4/8/1915
1915	20-22 September	Gales/ Floods	West; North; NW; NE	Mercury21/9/1915; Mercury22/9/1915; LE22/9/1915; LE23/9/1915
1916	30-31 January	Floods	South	Mercury31/1/1916; Mercury1/2/1916; Mercury2/2/1916; Mercury3/2/1916
1916	April	Floods	South (Huon); West	Mercury27/4/1916; Mercury28/4/1916; LE28/4/1916
1916	August	Floods	North; NW; West	LE9/8/1916; Mercury28/8/1916; Mercury29/8/1916
1916	December	Floods	NW; North; East; NE; west; South	Mercury5/12/1916; Mercury4/12/1916; Mercury6/12/1916; Mercury7/12/1916; Mercury13/12/1916; Mercury14/12/1916; Mercury22/12/1916; Mercury23/12/1916; Mercury30/12/1916; Mercury1/1/1917; Mercury2/1/1917; Mercury3/1/1917; LE4/12/1916; LE6/12/1916; LE23/12/1916
1917	February	Fire	West	Mercury16/2/1917; Mercury17/2/1917
1917	March-April	Floods	West; South	LE7/3/1917; Mercury9/4/1917; Mercury11/4/1917
1917	June	Floods	South; North; NW; NE	Mercury15/6/1917; Mercury16/6/1917; LE15/6/1917
1918	January-February	Fire	South; West	Mercury25/1/1918; Mercury4/2/1918; Mercury13/2/1918

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1918	July-December	Drought	North	Foley 1957, p. 44
1919	All or most of year	Drought	North; NW; NE	Foley 1957, p. 44; Mercury19/2/1919; Mercury29/11/1919
1919	January-February	Fire	North; NW; NE; West	Foley1947, p. 186; LE21/1/1919; LE3/2/1919; LE7/2/1919; LE21/2/1919; LE27/2/1919
1919	June	Heavy snow	South; North	Mercury30/6/1919; LE21/6/1919
1919	August-December	Drought	South	Foley 1957, p. 44; Mercury9/9/1919; Mercury23/9/1919; Mercury18/11/1919; Mercury3/12/1919; Mercury31/12/1919
1920	All or most of year	Drought	South	Foley 1957, p. 44; Mercury20/2/1920; Mercury3/3/1920; Mercury12/4/1920
1920	January-May	Drought	North; NW; NE	Foley 1957, p. 44; Mercury12/4/1920; LE18/2/1920; LE28/2/1920; LE25/2/1920; LE12/5/1920
1920	January-February	Fire	NW; South; West	Foley 1947, p. 186; Mercury28/1/1920; Mercury29/1/1920; Mercury5/2/1920; Mercury5/2/1920; Mercury12/2/1920; Mercury13/2/1920; Mercury17/2/1920; Mercury18/2/1920; Mercury19/2/1920; Mercury20/2/1920; Mercury24/2/1920; LE7/1/1920; LE28/1/1920; LE30/1/1920; LE31/1/1920; LE2/2/1920; LE9/2/1920; LE17/2/1920; LE18/2/1920; LE19/2/1920; LE24/2/1920
1920	July	Floods	North; NW; NE; West	Mercury5/6/1920; LE5/7/1920; Mercury13/7/1920
1920	November	Floods	South: West	Mercury8/11/1920; Mercury10/11/1920
1921	All or most of year	Drought	South; East	Stat.s of Tas. 1921,p.35; Foley 1957, p. 44; Mercury 11/4/1921; Mercury15/4/1921; Mercury10/6/1921
1921	16-18 July	Gales/ floods	North; South; NW; NE; West	Mercury16/7/1921; Mercury18/7/1921; Mercury19/7/1921
1921	July/August	Heavy snow	South; NW	Mercury1/8/1921; Mercury4/8/1921; Mercury13/8/1921
1922	January	Hail	South (Huon); NW	Stat.s of Tas. 1922, p.39; Mercury13/1/1922; Mercury25/1/1922
1922	February	Fire	NE; South	Foley 1947, p. 186
1922	February	Floods	South	Stat.s of Tas. 1922, p. 39; Mercury23/2/1922
1922	June-July	Floods	South; East	Stat.s of Tas 1922, p. 39; Mercury 8/6/1922; Mercury9/6/1922; Mercury10/6/1922; Mercury12/6/1922; Mercury 8/7/1922; Mercury19/7/1922

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1923	May-June	Floods	North; NW; NE; East; West; South	Stat.s of Tas. 1923, p.39; Mercury18/5/1923; Mercury31/5/1923; Mercury1/6/1923; Mercury6/6/1923; Mercury7/6/1923; LE18/5/1923; LE31/5/1923
1923	September	Gales/ Floods	South; West	Stat.s of Tas. 1923, p. 39; Mercury22/9/1923
1923	December	Floods	South	Stat.s of Tas. 1923, p. 40; Mercury6/12/1923
1924	February	Floods	NE; NW	Mercury20/2/1924; LE18/2/1924; LE20/2/1924
1924	22 June	Gales/ floods	East; South	Mercury25/6/1924; Mercury26/6/1924
1924	November	Floods	NW; North; South (Huon)	Mercury8/11/1924; Mercury10/11/1924; Mercury29/11/1924
1924	December	Drought	North	Foley 1957, p. 44
1925	All or most of year	Drought	North; West	Stat.s of Tas. 1925, pp. 54-55; Foley 1957, p. 44
1925	February	Fire	South	Mercury19/2/1925; Mercury20/2/1925
1925	July-August	Heavy snow	South	Stat.s of Tas. 1925, p. 55; Mercury23/7/1925; Mercury31/7/1925
1925	September-December	Drought	South	Foley 1957, p. 44; Mercury17/12/1925; Mercury23/12/1925; Mercury24/12/1925
1926	January-March	Drought	South	Foley 1957, p. 44
1926	January-April	Drought	North; NW; NE	Foley 1957, p. 44; Stat.s of Tas. 1926, p. 46.
1926	January-February	Fire	NW; South; NE	Stat.s of Tas. 1926, p. 46; Foley 1947, p.186; Mercury15/1/1926; Mercury27/1/1926; Mercury5/2/1926; Mercury6/2/1926; Mercury8/2/1926; Mercury9/2/1926; Mercury11/2/1926
1926	August	Floods	NW	Mercury2/8/1926; LE2/8/1926
1926	October	Floods	South; East; NE; North; NW	Stat.s of Tas. 1926, p. 46; Mercury13/10/1926; Mercury14/10/1926; Mercury15/10/1926; LE13/10/1926; LE15/10/1926; LE16/10/1926; LE18/10/1926
1926	November-December	Drought	South	Foley 1957, p. 44
1927	All or most of year	Drought	South	Stat.s of Tas. 1927, p. 46; Foley 1957, p. 44; Mercury18/10/1927
1927	January-February	Fire	South; NE	Foley 1947, p. 188; Mercury13/1/1927; Mercury14/1/1927; Mercury12/2/1927; Mercury14/2/1927; Mercury15/2/1927; Mercury16/2/1927
1927	18-19 February	Hail/Floods	South	Stat.s of Tas. 1927, p. 46; Mercury19/2/1927
1928	January	Fire	West	Foley 1947, p. 188; Mercury13/1/1928; Mercury14/1/1928; Mercury17/1/1928
1928	July	Floods	North	Stat.s of Tas. 1928, pp.45-47 ; Mercury19/7/1928; LE17/7/1928; LE18/7/1928; LE19/7/1928
1928	September	Floods	South; North	Stat.s of Tas. 1928, pp.45-47; Mercury17/9/1928; Mercury25/9/1928; LE19/9/1928

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1929	4-6 April	Floods	North; NE; NW; South	Stat.s of Tas. 1929, p. 46; Fotheringham 1929; WC10/4/1929; WC17/4/1929; TM17/4/1929; LE5/4/1929; Mercury5/4/1929; Mercury6/4/1929; Mercury8/4/1929; Mercury9/4/1929; Mercury10/4/1929
1929	June	Floods	NW; North; NE	Stat.s of Tas. 1929, p. 46; Mercury5/6/1929; Mercury6/6/1929; Mercury7/6/1929; LE10/6/1929; LE11/6/1929
1930	All or most of year	Drought	West; North; South	Foley 1957, p. 44; Mercury25/4/1930; Mercury6/5/1930; Mercury 3/1/1931
1930	February	Fire	NW; North	Foley 1947, p. 188; Mercury13/2/1930
1931	January-February	Drought	NW; NE	Mercury3/3/1931
1931	March	Floods	North; South; NE; NW	Stat.s of Tas. 1931, p. 52; Mercury4/3/1931; Mercury5/3/1931: Mercury5/1/1932; LE4/3/1931
1931	May-July	Floods	North; East; NW; NE; South	Stat.s of Tas. 1931, p. 52; Mercury13/5/1931; Mercury14/5/1931; Mercury20/6/1931; Mercury22/6/1931; Mercury27/7/1931; LE27/7/1931; LE28/7/1931; Mercury5/1/1932
1931	September	Floods	South	Mercury21/9/1931
1931	December	Drought	North; NW	Mercury5/1/1932; LE19/12/1931; LE2/1/1932
1932	January-February	Drought	North; NW; South; Flinders Is.; NE	Mercury5/1/1932; Mercury7/1/1932; Mercury19/1/1932; Mercury10/2/1932; LE5/1/1932; LE24/1/1932
1932	January-February	Fire	NW; South; Flinders is.; North	Foley 1947, p.188; Mercury4/1/1932; Mercury20/1/1932; Mercury21/1/1932; Mercury22/1/1932; Mercury26/1/1932; Mercury27/1/1932; Mercury3/2/1932; Mercury5/2/1932; Mercury10/2/1932; LE6/1/1932; LE7/1/1932; LE13/1/1932; LE21/1/1932; LE29/1/1932; LE5/2/1932
1932	28-29 March	Gales/Floods	NW	Mercury28/3/1932; Mercury30/3/1932; LE28/3/1932
1933	All or most of year	Drought	South; North	Foley 1957, p. 45; Mercury18/2/1933; Mercury15/8/1933; Mercury29/8/1933; Mercury3/1/1934
1933	February	Fire	North; NW	Mercury18/2/1933; Mercury23/2/1933
1933	16 May	Gales	South	Mercury17/5/1933
1933	August	Heavy snow	West	Mercury26/8/1933
1933	6 October	Floods	South	Mercury6/10/1933
1933	December	Fire	South	Foley 1947, p. 190; Mercury29/12/1933; Mercury30/12/1933; Mercury1/1/1934

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1934	All or most of year	Drought	South; North; NW: West	Stat.s of Tas. 1934, p. 51; Foley 1957, p. 45; Mercury 3/1/1934; Mercury10/1/1934; Mercury18/1/1934; Mercury28/2/1934; Mercury3/4/1934; Mercury5/4/1934; Mercury5/6/1934; Mercury19/6/1934; Mercury11/9/1934; Mercury18/9/1934; Mercury25/10/1934; LE4/4/1934; LE7/7/1934; LE9/7/1934; LE28/7/1934
1934	January-February	Fire	South; West; North; NW; NE	Stat.s of Tas. 1934, p. 52; Foley 1947, p. 190; Mercury 5/1/1934; Mercury6/1/1934; Mercury8/1/1934; Mercury15/1/1934; Mercury16/1/1934; Mercury17/1/1934; Mercury20/1/1934; Advocate17/1/1934; Advocate18/1/1934; Mercury18/1/1934; Mercury19/1/1934; Advocate22/1/1934; Mercury22/1/1934; Mercury23/1/1934; Mercury9/2/1934; Advocate9/2/1934; Advocate10/2/1934; Advocate12/2/1934; Mercury10/2/1934; Mercury12/2/1934; Mercury13/2/1934; Mercury14/2/1934; Mercury15/2/1934
1934	December	Floods	NW; East; North; NE; South	Stat.s of Tas. 1934, p. 53; Mercury31/12/1934; LE31/12/1934
1935	April-May	Floods	South; East; North; West	LE10/4/1935; Mercury17/4/1935; Mercury18/4/1935; LE18/4/1935; LE19/4/1935; Mercury18/5/1935; Mercury20/5/1935
1935	June	Floods	South; West; NW	Mercury16/6/1935; Mercury17/6/1935; LE17/6/1935; LE19/6/1935
1935	July	Floods	NW	Mercury22/7/1935; LE22/7/1935
1935	August	Heavy snow	South	Mercury5/8/1935
1935	August-December	Drought	North; NW	Foley 1957, p. 45
1936	January-July	Drought	North; NW; NE; West	Foley 1957, p. 45; Mercury4/3/1936; Mercury4/3/1936; LE4/7/1936
1936	All or most of year	Drought	South	Foley 1957, p. 45; Mercury4/3/1936; Mercury4/8/1936
1936	January-March	Fire	North; South; NW; West	Foley 1947, p. 192; Mercury20/1/1936; Mercury21/2/1936; Mercury22/1/1936; Mercury24/1/1936; Mercury17/2/1936; Mercury27/2/1936; Mercury28/2/1936; Mercury13/3/1936; Mercury1/4/1936
1936	July-August	Gales/Floods	North; NW; NE; South ; West	Stat.s of Tas. 1936, pp.50-54; Mercury5/8/1936; Mercury6/8/1936; Mercury7/8/1936; Mercury25/8/1936; LE29/7/1936; LE6/8/1936; LE10/8/1936; LE20/8/1936; LE22/8/1936; LE25/8/1936
1936	November	Fire	East; South; NE; NW	Foley 1947, p.192; Mercury6/11/1936; Mercury9/11/1936; LE7/11/1936
1937	All or most of year	Drought	North; South; West	Mercury15/3/1937; Mercury18/3/1937
1937	21 April	Heavy snow	South	Mercury22/4/1937

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1937	November	Fire	West; South	Foley 1947, p. 192; Mercury8/11/1937; Mercury29/11/1937
1937	December	Floods	North; NE	Mercury13/12/1937; LE13/12/1937
1938	January	Floods	South; North	Mercury15/1/1938; LE17/1/1938
1938	February-March	Floods	North; South; NE	Mercury24/2/1938; Mercury17/3/1938; Mercury18/3/1938; Mercury19/3/1938; LE24/2/1938; LE25/2/1938; LE17/3/1938; LE18/3/1938
1938	August-December	Drought	South	Foley 1957, p. 45; Mercury16/10/1938
1939	January-May	Drought	North; South; NE; West	Foley 1957, p. 45; Mercury 26/1/1939; Mercury9/2/1939; Mercury16/2/1939; Mercury17/2/1939; LE24/2/1939
1939	January-February	Fire	NW; South; North; West; King Is.; NE	Foley 1947, p. 192-193; Mercury12/1/1939; Mercury24/1/1939; Mercury25/1/1939; Mercury26/1/1939; Mercury27/1/1939; Advocate25/1/1939; Advocate26/1/1939; Advocate27/1/1939; Mercury31/1/1939; Mercury1/2/1939; Mercury2/2/1939; Mercury8/2/1939; Mercury9/2/1939; Mercury10/2/1939; Mercury13/2/1939; Mercury16/2/1939; LE12/1/1939; LE25/1/1939; LE26/1/1939; LE31/1/1939; LE1/2/1939; LE4/2/1939; LE8/2/1939; LE13/2/1939; LE14/2/1939; LE15/2/1939
1939	June	Floods	North; NE; NW; South	Mercury2/6/1939; Mercury5/6/1939; LE2/6/1939; LE3/6/1939; LE30/6/1939
1939	August	Floods	North; South; NE; NW	Mercury4/8/1939; Mercury5/8/1939; Mercury7/8/1939; Mercury29/8/1939; LE3/8/1939; LE4/8/1939; LE5/8/1939; LE28/8/1939; LE29/8/1939
1939	December	Drought	South	Foley 1957, p. 46;
1940	All or most of year	Drought	South; North; NE; NW; East	Stat.s of Tas. 1940, p. 44; Foley 1957, p. 46; Mercury16/4/1940; Mercury3/6/1940; Mercury29/8/1940; Mercury30/11/1940; Mercury31/12/1940
1940	February-March	Fire	NE; South; East; NW; King Is. North; West	Foley 1947, p. 196; Stat.s of Tas. 1940, p. 44; Mercury16/2/1940; Mercury9/3/1940; Mercury12/3/1940; Mercury14/3/1940; Mercury15/3/1940; Mercury16/3/1940
1940	December	Fire	NW; North	Mercury28/12/1940; LE2/12/1940; LE5/12/1940; LE27/12/1940; LE28/12/1940
1941	All or most of year	Drought	North; NE; NW	Foley 1957, p. 46; Mercury 4/12/1941; Mercury5/12/1941; LE10/5/1941; LE22/9/1941
1941	January	Fire	NW; North	Foley 1947, p. 196; LE15/1/1941; LE23/1/1941
1941	December	Fire	NW; North; South	Stat.s of Tas. 1941, p. 44; Foley 1947, p. 196; Mercury27/12/1941
1941	December	Floods	South	Stat.s of Tas. 1941, p.48; Mercury6/12/1941; Mercury8/12/1941



Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1942	January-April	Drought	North; East	Stat.s of Tas. 1942, pp 38-40; Foley 1957, p. 46
1942	December	Fire	North	Foley 1947, p. 196; Mercury18/12/1942
1943	January-March	Fire	North; NW; South	Foley 1947, p. 196; Mercury29/1/1943
1944	January	Fire	NW; West	Stat.s of Tas. 1944, p. 38; Mercury18/1/1944; Mercury28/1/1944
1944	July	Floods	North; NW; NE	Stat.s of Tas. 1944, p. 40; Mercury6/7/1944
1945	All or most of year	Drought	South	Foley 1957, p. 46; Mercury31/10/1945; Mercury19/11/1945; Mercury12/12/1945; Mercury15/12/1945; Mercury17/12/1945; Mercury19/12/1945; Mercury9/1/1946; Mercury12/2/1946; Mercury26/12/1945
1945	18 November	Hail	South	Mercury19/11/1945
1945	October-December	Drought	North	Mercury26/12/1945
1945	December	Fire	South	Mercury15/12/1945; Mercury24/12/1945; Mercury26/12/1945; Mercury27/12/1945; Mercury29/12/1945; Mercury31/12/1945
1946	January	Fire	South	Mercury11/1/1946
1946	January	Drought	South	Mercury12/1/1946; Mercury16/1/1946; Mercury8/2/1946
1946	March	Floods	NE; South; North	Mercury18/3/1946; Mercury19/3/1946; Mercury26/3/1946
1946	July	Floods	North; NW; NE; South	Mercury17/7/1946; Mercury18/7/1946; Mercury23/7/1946; Mercury25/7/1946
1946	August	Heavy snow	West	Mercury26/8/1946
1947	January-February	Fire	South; West	Mercury29/1/1947; Mercury30/1/1947; Mercury12/2/1947; Mercury24/2/1947
1947	June	Floods	South; NW; West	Mercury5/6/1947; Mercury17/6/1947; LE14/6/1947
1947	June	Gales	NE; East; West	Mercury17/6/1947; Mercury19/6/1947
1947	August	Floods	South	Mercury6/8/1947
1948	January	Fire	South; West	Stat.s of Tas. 1948, p. 44; Mercury20/1/1948; Mercury21/1/1948; Mercury22/1/1948; Mercury23/1/1948; Mercury31/1/1948
1948	28 May	Floods	South; West	Stat.s of Tas. 1948, p. 43, 45; Mercury29/5/1948; Mercury31/5/1948; Mercury3/6/1948
1948	7 November	Hail	South	Stat.s of Tas. 1948, p. 47
1949	All or most of year	Drought	South; North	Foley 1957, p. 47; Mercury2/11/1949; Mercury18/10/1951
1949	January	Fire	NW	Mercury1/2/1949

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1950	All or most of year	Drought	South; West	Foley 1957, p. 47; Mercury18/2/1950; Mercury6/3/1950; Mercury8/3/1950; Mercury11/3/1950; Mercury2/5/1950; Mercury3/11/1950; Mercury18/10/1951
1950	January-February	Fire	North; NE; South	Mercury9/1/1950; Mercury27/2/1950; Mercury2/3/1950
1950	November-December	Fire	West; South	Mercury28/11/1950; Mercury5/12/1950; Mercury6/12/1950; Mercury20/12/1950
1951	All or most of year	Drought	South	Foley 1957, p.47; Mercury18/1/1951; Mercury9/2/1951; Mercury19/2/1951; Mercury4/7/1951; Mercury18/10/1951
1951	January-February	Fire	South; West; NW; NE; Flinders Is.; North	Mercury29/1/1951; Mercury30/1/1951; Mercury2/2/1951; Mercury3/2/1951; Mercury6/2/1951; Mercury7/2/1951; Mercury8/2/1951; Mercury9/2/1951; Mercury10/2/1951; Mercury15/2/1951; LE20/1/1951; LE27/1/1951; LE2/2/1951; LE7/2/1951; LE19/2/1951
1951	February	Gales	North; South; NW	Mercury14/2/1951; Mercury19/2/1951
1951	April	Floods	South	Mercury14/4/1951
1951	August	Heavy snow	South; West	Mercury9/8/1951; Mercury10/8/1951
1952	January	Fire	East; NE	Mercury21/1/1952; Mercury31/1/1952; LE31/1/1952
1952	May-June	Gales/Floods	South; West; NE; NW; North; East	Mercury16/5/1952; Mercury20/5/1952; Mercury3/6/1952; Mercury4/6/1952; Mercury6/6/1952; LE19/6/1952; Mercury25/6/1952; Mercury26/6/1952; Mercury28/6/1952; LE16/5/1952; LE17/5/1952; LE4/6/1952; 25/6/1952; LE26/6/1952; LE27/6/1952; LE28/6/1952
1952	July	Floods	North; NE; South	LE14/7/1952; LE15/7/1952; LE16/7/1952; Mercury15/7/1952
1952	October	Floods	North; NE	LE13/10/1952; LE14/10/1952; LE29/10/1952; LE30/10/1952; Mercury29/10/1952; Mercury30/10/1952;
1952	December	Drought	North	Foley 1957, p. 47
1953	January-May	Drought	North	Foley 1957, p. 47
1953	February	Fire	South; North	Mercury25/2/1953
1953	June	Floods	South; NW; West	Mercury12/6/1953; Mercury15/6/1953; Mercury17/6/1953
1954	May	Floods	West; NW	Mercury1/5/1954; Mercury19/5/1954
1954	6 June	Floods	South; East; NE; North	Mercury7/6/1954; Mercury8/6/1954; Mercury9/6/1954
1954	May-December	Drought	North	Foley 1957, p.47-48
1954	July-December	Drought	South	Foley1957, p. 48

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1954	August	Floods	North; NW	Mercury23/8/1954
1955	January-March	Drought	South; East	Foley 1957, p. 48; Mercury3/1/1955; Mercury18/1/1955; Mercury2/3/1955; Mercury23/3/1955; Mercury1/4/1955
1955	January	Fire	NE; South; NW; North	Mercury1/1/1955; Mercury17/1/1955; Mercury18/1/1955; Mercury19/1/1955; Mercury22/1/1955; Mercury25/1/1955; Mercury27/1/1955; LE1/1/1955; LE17/1/1955; LE18/1/1955; LE19/1/1955; LE21/1/1955
1955	27 December	Floods	North; NE; East	Mercury28/12/1955; LE28/12/1955; LE29/12/1955
1956	February	Floods	North; NE; NW	Mercury23/2/1956; LE22/2/1956; LE23/2/1956
1956	May-June	Floods	South; East; NE; North; NW	Mercury4/5/1956; Mercury5/5/1956; Mercury8/5/1956; Mercury24/5/1956; Mercury25/5/1956; Mercury6/6/1956; Mercury7/6/1956; Mercury8/6/1956; Mercury18/6/1956; LE3/5/1956; LE4/5/1956; LE24/5/1956; LE25/5/1956; LE26/5/1956
1956	September	Floods	NW; North	LE3/9/1956
1957	January	Fire	NE; South; Flinders Is.	Mercury8/1/1957; Mercury14/1/1957; Mercury15/1/1957; Mercury16/1/1957; Mercury17/1/1957; Mercury31/1/1957; Mercury1/2/1957; LE14/1/1957; LE16/1/1957; LE17/1/1957; LE31/1/1957
1958	May	Floods	South; North; NW	Mercury26/5/1958; Mercury27/5/1958
1958	August	Floods	South; NE	Mercury18/8/1956
1959	January	Fire	North; NW; South; West; King Is.	Mercury17/1/1959; Mercury20/1/1959; Mercury21/1/1959; Mercury22/1/1959; Mercury23/1/1959; Mercury24/1/1959; Mercury3/2/1959; LE22/1/1959; LE23/1/1959
1959	10 December	Hail	South	Mercury12/12/1959
1960	January	Fire	West; South	Mercury8/1/1960; Mercury9/1/1960; Mercury11/1/1960; Mercury16/1/1960; Mercury18/1/1960
1960	January-March	Drought	South; North	Mercury1/4/1960; Mercury4/4/1960; Mercury7/4/1960
1960	20-23 April	Floods	South; North; NE; NW	Mercury23/4/1960; Mercury25/4/1960; Mercury26/4/1960; Mercury27/4/1960; Mercury28/4/1960; LE23/4/1960; LE25/4/1960
1960	May; July	Floods	South; North; NE	Mercury3/5/1960; Mercury14/5/1960; Mercury19/7/1960

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1961	January-February	Drought	South; West; East; NW	Gibbs and Maher 1966, p. 24; Mercury 31/1/1961; Mercury7/2/1961; Mercury23/2/1961; LE22/2/1961; LE25/2/1961
1961	January-February	Fire	South; North; NW; NE; West	Mercury 3/1/1961; Mercury4/1/1961; Mercury5/1/1961; Mercury7/1/1961; Mercury9/1/1961; Mercury10/1/1961; Mercury23/1/1961; Mercury24/1/1961; Mercury25/1/1961; Mercury26/1/1961; Mercury27/1/1961; Mercury30/1/1961; Mercury1/2/1961; Mercury2/2/1961; Mercury 6/2/1961; Mercury10/2/1961; Mercury14/2/1961; Mercury17/2/1961; Mercury20/2/1961; Mercury24/2/1961; LE4/1/1961; LE5/1/1961; LE7/1/1961; LE11/1/1961; LE24/1/1961; LE25/1/1961; LE26/1/1961; LE27/1/1961; LE28/1/1961; LE30/1/1961; LE2/2/1961; LE6/2/1961; LE13/2/1961; LE24/2/1961
1962	January-February	Fire	South; NW; North	Mercury16/1/1962; Mercury17/1/1962; Mercury14/2/1962; LE6/2/1962; LE7/2/1962
1962	June	Floods	South	Mercury18/6/1962
1962	August	Floods	NE; South	Mercury16/8/1962; Mercury31/8/1962
1963	January-March	Fire	NW; South	Mercury12/1/1963; Mercury15/1/1963; Mercury1/2/1963; Mercury18/3/1963
1963	November-December	Fire	West	Mercury29/11/1963; Mercury13/12/1963; Mercury14/12/1963
1963	November-December	Drought	South	Mercury14/12/1963; Mercury17/12/1963
1964	January-February	Fire	South; NE; King Is.; North	Mercury8/1/1964; Mercury9/1/1964; Mercury3/2/1964; LE8/1/1964; LE9/1/1964; LE30/1/1964; LE31/1/1964; LE3/2/1964
1964	11-13 July	Gales/ floods	North; NW	Advocate13/7/1964
1964	January	Drought	South	Mercury16/1/1964; Mercury29/1/1964
1964	August	Floods	South	Mercury6/8/1964; Mercury7/8/1964
1966	March	Fire	South	Mercury8/3/1966
1966	October	Floods	South	Mercury21/10/1966
1967	All or most of year	Drought	South; North	Mercury10/3/1967; Mercury3/4/1967; Mercury2/5/1967; Mercury4/8/1967

Appendix 3: Table of Severe Weather Events (from available evidence) for the period 1803-1969.

1967	January-February	Fire	North; South; NE; East	Stat.s of Tas 1967, p. 70; Mercury9/1/1967; Mercury27/1/1967; Mercury2/2/1967; Mercury6/2/1967; Mercury7/2/1967; Mercury8/2/1967; Mercury9/2/1967; Mercury10/2/1967; Mercury13/2/1967; Mercury14/2/1967; Mercury21/2/1967; Mercury22/2/1967;
1967	August	Floods	North; NW; NE	Stat.s of Tas. 1967, p. 70
1967	October	Fire	West; South	Mercury26/10/1967
1968	January-February	Fire	North; NW; NE; South	Mercury15/1/1968; Mercury19/2/1968; Mercury20/2/1968; LE10/1/1968
1968	All or most of year	Drought	NE; East; South	Mercury19/1/1968; Mercury23/1/1968; Mercury26/2/1968
1968	August	Floods	North; NW; South	Mercury5/8/1968
1968	December	Fire	South	Mercury10/12/1968
1969	January	Fire	South	Mercury9/1/1969
1969	January	Drought	East	Mercury16/1/1969
1969	January	Gales	South	Mercury9/1/1969
1969	February	Floods	South; North; NW	Mercury24/2/1969
1969	May	Floods	North; NE	Mercury31/5/1969; Mercury2/6/1969
1969	August	Floods	North	LE4/8/1969