



Lake Nillahcootie

LAND AND ON-WATER MANAGEMENT PLAN

March 2011

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1. Introduction & Background

Lake Nillahcootie is an important public asset, which supports a large and diverse range of values and uses. Lake Nillahcootie provides water for irrigation, but also for urban use in towns, stock and domestic use, recreation and tourism. These provide economic, social and cultural benefits to local and downstream communities along the Broken River. The lake and its environment also has important ecological and environmental values. Good water quality is essential to protect these values, and it is critical that these multiple uses are managed in an integrated way to ensure long-term sustainability.

The Lake Nillahcootie Land and On-water Management Plan ('the Plan') provides a strategic approach to management of land and on-water issues at Lake Nillahcootie. The intent of the plan is to better manage the increasing pressures on the important values of the lake and its foreshore, including community awareness and involvement, recreation, public access and safe use, environmental and cultural heritage and public land management.

The Plan aims to identify and protect important values associated with the lake by outlining priority land and on-water management issues, and identifying key actions to be implemented to address these issues. Most importantly, the Plan aims to increase communication, consistency, co-ordination and co-operation between agencies, stakeholder groups and the community to protect the lake's values and attributes. The Plan does not make recommendations on storage operational issues, including storage filling and releases.

This Plan was developed by Goulburn-Murray Water, but is intended to be a community plan rather than a corporate plan. It was developed to assist the management of land and on-water issues by Goulburn-Murray Water, but it is also intended to be a key reference document and guide for lake users, other management agencies and the broader community. It is expected that the Plan will be an adaptive document that will be regularly reviewed and updated, approximately every five years.

2. Context

2.1 What are Land and On-Water Issues?

'Land and On-Water Issues' is an overarching term to describe the wide range of issues and management responsibilities at water storages that do not relate to its primary function of water storage and supply. Historically there has always been a strong focus on

the critical engineering and operations aspects of dams management, but at open and readily accessible storages, like Lake Nillahcootie, there are many other issues that warrant attention. Examples include recreation and public access issues, environmental issues, land management issues, cultural heritage issues and others. This Plan seeks to address a gap in Goulburn-Murray Water's dams management planning by balancing the multiple benefits enjoyed by local communities and recreational users, with the primary water harvesting and delivery function, and providing a more strategic approach to management of land and on-water issues.

2.2 Land Status

In Victoria, Goulburn-Murray Water owns and manages most of the land surrounding the lake. This land is either freehold title in the name of Goulburn-Murray Water, Crown Land vested in Goulburn-Murray Water, or Crown land reserved for water supply purposes under the control and management of Goulburn-Murray Water.

2.3 Area of Plan

The geographic scope of this project is limited to the lake, the foreshore and the surrounding areas (the 'viewscape'). Plans of the storage and surrounding areas are included in Appendix 10.3 and Appendix 10.4 respectively.

More specifically, the Plan focuses on the lake and foreshore areas where Goulburn-Murray Water has direct responsibility as public land manager, but also aims to positively influence activities throughout the surrounding area and broader catchment.

2.4 Storage Operations

Throughout the development of this Plan, many stakeholders and community members commented on water levels and storage operational issues, in particular the desirability of higher water levels in the lake. The primary purpose of the storage is to provide water to downstream communities and consumptive users, storage operations including water levels and release patterns are primarily driven by this imperative.

Accordingly, the Plan cannot make any specific decisions or recommendations regarding the management of water levels in Lake Nillahcootie. Operational issues including lake levels and the management of releases from Nillahcootie are beyond the scope of this Plan.

For reference, a brief overview summary of storage operations is included in Appendix 10.2.

2.5 Legal Status

The Plan has no legal status. It will not impose any new legal or statutory requirements.

3. Process

Land and On-Water Management Plans are being developed for all of the major water storages managed by Goulburn-Murray Water.

The Lake Nillahcootie Land and On-Water Management Plan aims to identify and protect important values associated with the Lake by outlining priority land and on water management issues and identifying key actions to be implemented during the next five years. Importantly, the Plan also aims to increase communication, consistency, coordination and co-operation between agencies, stakeholder groups and the community to protect the lake's values and attributes.

As well as producing the Lake Nillahcootie Land and On-Water Management Plan, the project aims to achieve acceptance of management recommendations and responsibilities. Ongoing consultation, education and increased awareness will be critical to identifying and achieving goals set out in the Plan.

Community engagement activities have included:

- A workshop with a Community and Agency Advisory Group to verify the community and stakeholder engagement approach, identify key issues and possible solutions and provide input to a possible vision for the Lake. In addition this group identified other key groups and individuals for targeted consultation.
- Facilitated focus groups were convened at stakeholder/community group meetings including focus group sessions with:
 - Benalla Environment Group.
 - Swanpool Development Association.
 - Benalla Council Development and Environment Team.
 - Mansfield Council Deputy CEO and Tourism and Economic Development Manager.
- One on one focused interviews with stakeholders, community representatives and landholders, either face to face or via telephone.
- Fifty active users of the Lake were engaged via an on-site 'drop-in' session at the lake during summer to identify key issues and possible solutions.

Information gathered from the consultation program formed the basis for the development of the draft plan. The draft plan was widely distributed amongst the Nillahcootie community and interested stakeholders including the community reference group and those that provided input into the first round of consultation. Key comments received have been used in the development of this final plan.



4. Implementing the Plan

The Plan aims to ensure the long-term sustainable management and use of Lake Nillahcootie. To achieve this, the Plan focuses on a number of key outcomes including:

- Better communication, consistency and a coordinated approach to the management of Lake Nillahcootie.
- Sustainable water quality and ecological health of the lake.
- Safe use and improved access for recreational users, and an improved standard of public infrastructure.
- A community commitment to sustainable use of the lake.

The Plan has a five-year focus for the implementation of the key actions, underpinned by a long term vision for the future of the lake.

An Implementation Plan will be prepared in consultation with the Community and Agency Advisory Group (CAAG) outlining a simple and effective strategy to execute key actions in the Plan, which will be regularly reviewed and retain the flexibility to enable changes in the implementation program if required.

5. Vision for Lake Nillahcootie

Underpinning this plan is a long term vision for the lake, which was developed based upon ideas and suggestions gained from a community engagement process.

A suggested long term vision for Lake Nillahcootie is:

Lake Nillahcootie is a beautiful, well managed public asset that provides a high quality visitor experience and is an ongoing source of pride to the local community, while also fulfilling its role as an important water supply storage.





6. Community Awareness and Involvement

Lake users and the community have an interest in the management of Lake Nillahcootie and the recreational, environmental, social and economic issues associated with the lake and its surrounds. Greater community involvement helps to ensure managers understand stakeholder and community issues and values, and promotes better understanding of the reasons for management policies to protect the lake and foreshore.

Everyone who interacts with the lake including recreational users and downstream water consumers has a role to play in the protection of Lake Nillahcootie.

6.1 Lake Nillahcootie Community Reference Group

It was evident from the community engagement process that many lake users and community members have a strong sense of ownership of Lake Nillahcootie. It is also apparent that some members of the community have differing values and ideas on how the lake should be managed. It is important that the community has the opportunity to be involved in decision-making processes that affect them, and to participate in the development of solutions where competing interests arise.

The establishment of a Lake Nillahcootie Community Reference Group is proposed as an important step in engaging the community in the implementation of the Lake Nillahcootie Land and On-water Management Plan.

The role of the Lake Nillahcootie Plan Community Reference Group will be to:

- Provide direct advice to Goulburn-Murray Water on implementation of the Plan.
- Help prioritise implementation of actions outlined in the Plan.
- Advise on community engagement activities.
- Provide a clear mechanism for the community to clarify and communicate issues of concern to responsible agencies.
- Provide feedback to community interest groups.
- Identify other initiatives in the Lake Nillahcootie area.
- Monitor and evaluate the implementation of the Plan.
- Assist with a review of the Plan, approximately every five years.

Objectives

To better engage with the Lake Nillahcootie community.

Actions

1. Establish a Lake Nillahcootie Land and On-Water Management Plan Community Reference Group to guide the implementation of the plan and provide a two way means of communication between Goulburn-Murray Water, other management agencies and the local community and lake users.

Implementation: Roles and Responsibilities

G-MW is responsible for this action.

6.2 Community Awareness

Locals and visitors play an important role in the sustainable management of Lake Nillahcootie. The choices that people make while boating, visiting or as property owners in the vicinity of the lake can potentially affect the health and long-term sustainability of Lake Nillahcootie.

Opportunities exist for awareness raising programs to show how different activities can impact on the lake, and to better inform people about lake management and the lake's purpose. Lake users should be able to easily obtain information relating to regulations and policies that exist for Lake Nillahcootie. People should know who to talk to about issues relating to the lake and what role different agencies play in its management. It is also desirable that lake users understand that Lake Nillahcootie is a vital part of a much larger system relied upon by many downstream communities.

Through the on-going consultation process of the *Lake Nillahcootie Land and On-water Management Plan*, community members expressed interest in obtaining better information on a variety of issues. Education campaigns and provision of improved information materials will play an important role in raising community awareness. Various mechanisms will be used to increase education and awareness, including signage, websites, media and school programs.

Also identified through the consultation process was an interest expressed by some community members in taking a more 'hands-on' role in actively managing the lake. For example practical opportunities may exist for community involvement in activities such as re-vegetation, reserve beautification and weed control projects.

Objectives

An informed and involved community working co-operatively with agencies to find shared solutions to the land and water management challenges faced at Lake Nillahcootie.

Actions

2. Develop improved public information on recreation, water quality issues and other land and water management issues, dam operations and water levels.
3. Develop an interactive website containing maps, plans, zones, FAQs, management arrangements and by-laws that can be used as a one-stop shop for information about Lake Nillahcootie.
4. Consistent and informative signage at all access points.
5. Encourage and support programs that involve the community in the management of Lake Nillahcootie.

Implementation: Roles and Responsibilities

G-MW is primarily responsible for coordinating these actions.



7. Recreation, Public Access and Safe Use

Further to its primary role as an important water supply storage, Lake Nillahcootie is an asset for North East Victoria due to its recreational and tourism values. The lake attracts tourists from Victoria and interstate and is a popular location for active recreation pursuits, including boating, waterskiing, and swimming. The lake is also very popular year round for passive recreational pursuits including fishing, picnicking and walking.

This plan acknowledges that recreation and public access are an integral part of Lake Nillahcootie, but also recognises the potential for these activities to adversely impact on the lake's environmental attributes if poorly managed.

7.1 Boating

Lake Nillahcootie is a popular water storage for high-speed boating, waterskiing, sailing, canoeing/kayaking and increasingly the use of other personal watercraft such as jet skis.

Boating zones on the lake are gazetted by Marine Safety Victoria under Schedule 97 of the *Marine Act, 1988*. Under Schedule 97, Goulburn-Murray Water is the local boating authority. In practice, Goulburn-Murray Water's resources to monitor and enforce boating rules are currently limited, and the Victorian Water Police takes an active role in the monitoring and enforcement of regulations. With anecdotal evidence of increasing boating traffic in recent years, even during extreme drought, better resourcing of monitoring and enforcement is desirable.

The interaction of water users on the water has the potential to impact on the safety of lake users due to the diverse nature of the activities. For example speed boats that have large wake enhancing devices have the potential to capsize smaller fishing or paddle boats that share the same vicinity. More proactive monitoring of the recreational activities and numbers on the water would be useful to identify any trends in user behaviour and impacts.

While there is no firm evidence that conflict between boating and other water users on the lake is increasing, the lake has been low over the recent years with less area for all water users, and there is some anecdotal evidence of an increase of boating activities which could increase risks to public safety and conflict.

Many users have noted concerns related to high speed activity close to shorelines in public areas frequented by swimmers and other water users. Lake Nillahcootie is almost unique in Victoria in that it does not have the standard Victorian 5 knot speed restriction on boating close to the shoreline. The reasons for this anomaly are not clear, and public safety is a primary consideration for storage managers and the boating community. A review of boating zones is needed to ensure their continued suitability for the evolving activities that are undertaken on the lake.

While storage levels have been down through recent years, Lake Nillahcootie still remains useable for boating down to very low levels, and is increasingly popular relative to many other traditional boating destinations. Increasing boating numbers on Lake Nillahcootie has resulted in greater demand on the boating infrastructure at the lake. To better accommodate this demand and reduce congestion there is the potential to investigate the construction of a new boat launching facility.

Some concerns have been noted about emergent trees in some near shore areas. Goulburn-Murray Water will review and address any significant threats to public safety and accessibility, while recognizing potential environmental and erosion prevention benefits provided by fringing vegetation in some areas.

Objectives

A safe, accessible and well managed lake for boat operators and other water users.

Actions

6. In collaboration with boating groups regularly monitor recreational activities, visitor numbers and uses of the lake to identify any trend in user behaviour and impacts.
7. Review boating zones to ensure suitability, reduce complexity and improve safety.
8. Investigate and facilitate the potential for a new boat launching facility.
9. Establish improved resourcing of monitoring and enforcement of boating activities.

Implementation: Roles and Responsibilities

Goulburn-Murray Water is primarily responsible for coordinating these actions, with the assistance and involvement of Marine Safety Victoria, Victorian Water Police, water users, clubs and other stakeholders.



7. Recreation, Public Access and Safe Use *continued...*

7.2 Fishing

Lake Nillahcootie is a popular destination for recreation fishermen. According to the Department of Primary Industries (Fisheries) the lake is home to populations of native fish species including Golden Perch and Murray Cod (DPI, 2010). Introduced species are also found in the lake including Redfin, European Carp and occasionally trout species.

Some lake users have reported concerns regarding European carp populations in the lake. Carp not only compete with native fish species but can also have adverse impacts on water quality. Concerns with carp are not restricted to Lake Nillahcootie, but opportunities may exist to better understand and monitor carp populations in Lake Nillahcootie as a part of wider studies, research and control programs.

Lake Nillahcootie is currently stocked with Golden Perch and Murray Cod by the Department of Primary Industries (Fisheries). Stocking occurs after an annual consultation process involving the Victorian recreational fishing peak body (VRFish), Catchment Management Authorities, Fisheries Victoria and other relevant stakeholders.

These stocking programs will continue to be supported to ensure that Lake Nillahcootie remains a sustainable, long term fishery. Improved monitoring and understanding of the fishery in Lake Nillahcootie would be useful to better inform fish stocking and management plans in coming years.

At the time of publishing the Department of Primary Industries is in the process of developing the 'Goulburn Broken Fisheries Management Plan'. The primary goal of the draft plan, which includes Lake Nillahcootie, is to "manage recreational fishing in a manner that is consistent with the principles of ecologically sustainable development." (DPI 2010). Other objectives of the Plan include improving and increasing recreational fishing

opportunities at Lake Nillahcootie, sustainably managing the fisheries resource of Lake Nillahcootie, maintaining and improving fish habitat and ensuring governance and compliance with fisheries management arrangements.

Objectives

To maintain and protect native fish populations within Lake Nillahcootie.

Actions

10. Continue to assess and implement fish stocking requirements in consultation with peak fishing organisations.
11. Support improved research into native and exotic fish populations.

Implementation: Roles and Responsibilities

Department of Primary Industries (Fisheries) is primarily responsible for these actions, with support and advice from fishing representative organisations and Goulburn-Murray Water.

7.3 Public Infrastructure, Access and Safe Use

In addition to water based recreational activities, Lake Nillahcootie is a popular stop over location for motorists travelling on the Midland Highway. Most of the public infrastructure at Lake Nillahcootie was built around the time of the lakes construction. It is now somewhat tired and dated, and sometimes struggles to meet the demands put on it by large visitor numbers during peak periods.

Goulburn-Murray Water undertakes regular maintenance of public areas, including regular risk assessments of public facilities and infrastructure. However work is needed to revitalise and improve the general amenity of the areas and determine priorities for investment.

A public infrastructure/landscape master plan should be developed to assist in the prioritisation of capital investment and maintenance funding for public recreation areas and infrastructure.

Opportunities for public access to the lake environs vary. Most foreshore and lake bed areas are either Crown land vested in Goulburn-Murray Water, or Goulburn-Murray Water freehold land. This land is managed as public land, and as a general principle the public has the right to access this land for recreational purposes such as fishing, sightseeing and walking. Public access to Lake Nillahcootie should be improved provided it does not compromise public safety, water quality and the environment or the operations of the lake. The potential for a cycling/walking track development at the lake has been suggested to improve the public access potential of Nillahcootie. This would only be considered where the access could be provided in a safe, controlled and regulated manner. Camping at the lake is currently prohibited under Goulburn-Murray Water by-laws, some camping does occur from time to time, particularly during busy times such as duck season.

Costs of maintaining and upgrading the reserves and associated public infrastructure are significant, and potential for commercial development opportunities to offset costs of recreational management of the lake should be considered. Any such opportunities would only be progressed in consultation with key stakeholders, including local residents and lake users, and must not unacceptably impact on public access, environmental or other values at Lake Nillahcootie.

Access to public land is subject to compliance with various agency by-laws applicable to public land. Specifically Goulburn-Murray Water's by-laws for its Recreational Areas have provisions relating to boating, vehicle access, camping and fires, shooting, management of dogs and other animals. Of particular note are provisions which prohibit unrestricted vehicle access (including motorbikes) to areas other than roads and tracks, and provisions prohibiting camping. Opportunities

to better monitor and enforce the applicable by-laws and regulations through the development of cooperative arrangements between Goulburn-Murray Water, Mansfield Shire and other relevant agencies should be explored. Motor bike use on the lake foreshore in times of low water level is an issue of concern to many local residents and public land managers alike. Issues associated with camping in particular, are currently a subject of debate within the community and could be investigated.

Objectives

Safe and improved access for recreational users, with an improved standard of public infrastructure and amenity.

Actions

12. Seek to establish collaborative agreements between key agencies for the improved management of public reserves.
13. Evaluate potential commercial development opportunities to offset costs of recreational management of the lake.
14. Develop a Master Plan (including public infrastructure and landscaping) for public recreation areas.
15. Establish cooperative agreements for monitoring and by-law enforcement on public areas.
16. Continue regular public safety and liability risk assessments of public reserve infrastructure.
17. Investigate the potential to establish a walking/bicycle path at the lake.
18. Review issues associated with camping at the lake.

Implementation: Roles and Responsibilities

Goulburn-Murray Water is primarily responsible for coordinating these actions, in collaboration with Mansfield Shire and the local community.

8. Environment and Cultural Heritage

The Lake Nillahcootie environment has been significantly modified since the time of early European settlement, particularly with the construction of the dam, however the lake and its surrounds are increasingly appreciated for their environmental and aesthetic values. This plan should be read in conjunction with other relevant regional strategies including the Goulburn Broken Catchment Management Authority's *Regional River Health Strategy 2005-2015* and *Biodiversity Strategy for the Goulburn Broken Catchment, Victoria 2010-2015*.

8.1 Flora and Fauna

Mount Samaria State Park borders the lake on the eastern side. The variation in soils, fire history and altitude has created a wide range of habitats (Parks Victoria, 2002). Near Lake Nillahcootie, drier forests of stringybarks, boxes and peppermints expose an open understorey of hardy shrubs and tussock grasses and wildflowers. Mount Samaria State Park hosts a variety of Australian wildlife including kangaroos, wallabies, wombats, echidnas, possums and gliders and a variety of lizards and snakes. The park is also a haven for many birds including Lyrebirds, Rosellas and the Wedge-tailed Eagle (Parks Victoria, 2002). Detailed information on park flora and fauna is available from the Department of Sustainability website www.dse.vic.gov.au

The northern and southern perimeters of the lake are predominantly surrounded by cleared farm land used for grazing purposes. The western side is bordered by a belt of farm land that is bounded by the Strathbogie Ranges. It has been suggested that there is an opportunity to investigate the enhancement of wildlife corridors linking Mount Samaria to the Strathbogie Ranges via Lake Nillahcootie to aide migration of fauna species.

Whilst there is some awareness of fauna and flora species endemic to the lake and immediate surrounds including aquatic species, there are opportunities to gain a better understanding by working with local environment groups to undertake detailed flora and fauna surveys.

Re-establishment of native vegetation cover around the lake and in the catchments to the lake also has a positive influence on water quality. Re-vegetation works on the lake perimeter lands and in the catchments to the lake should be encouraged and supported, where appropriate. Other options include working collaboratively with the Goulburn

Broken Catchment Management Authority and other relevant agencies investigating the funding of incentive schemes for re-vegetation works.

Objectives

Better protected and enhanced populations of native flora and fauna.

Actions

19. Investigate the potential for the establishment of enhanced wildlife corridors for migration of fauna species.
20. Support works in the surrounding lands that protect biodiversity values and enhance visual amenity.
21. Support the activities of local environmental groups to better understand and improve native flora and fauna populations at Lake Nillahcootie.

Implementation: Roles and Responsibilities

Goulburn-Murray Water is primarily responsible for coordinating these actions at Lake Nillahcootie, in collaboration with the Catchment Management Authority, nearby landholders, environment groups and other stakeholders. Biodiversity improvement programs for the catchment more broadly are primarily coordinated by the Catchment Management Authority.

8.2 Water Quality

Good water quality is critical for the communities that use water from Lake Nillahcootie for irrigation, drinking, commercial, agricultural and recreational activities. While water for human consumption is not supplied directly from the lake, downstream communities do rely upon water sourced from the Broken River via Lake Nillahcootie.

As such, and as a bulk water supplier Goulburn-Murray Water has an obligation to identify and, where possible, mitigate risks to water quality, in accordance with its responsibilities under the *Safe Drinking Water Act (2003)*. The *Safe Drinking Water Act* is aimed at protecting water quality intended for human consumption from the catchment to the tap (customer).

Recreational users of the lake have the ability to impact water quality, but also in turn are impacted by the effects of poor water quality. Good water quality is also important for the preservation and health of aquatic habitat and ecosystems.

Water quality can be measured through chemistry and biology, for its suitability for specific uses such as drinking. The most common indicators used to assess water quality are salinity, turbidity, sediment and nutrient concentrations, and temperature.

Since 1992 water quality monitoring in Lake Nillahcootie has been regularly undertaken as part of the Major Storages Operational Monitoring Program (MSOMP), a component of the Victorian Water Quality Monitoring Network (VWQMN).

The MSOMP documents the composition and abundance of algae and investigates chemical parameters within the storage with the aim of improving management of the beneficial uses of the lake. MSOMP water samples are collected fortnightly during summer-autumn and monthly during winter-spring. Samples are analysed for the following parameters:

- pH, Turbidity and Electrical Conductivity
- Nitrogen
- Phosphorous
- Algae Counts and Chlorophyll-a

Goulburn-Murray Water will continue to implement the MSOMP and review it on a regular basis to ensure that it meets with current best practice for monitoring programs.

In general, water quality in Lake Nillahcootie is considered relatively poor (G-MW, 2004). However the exact cause of apparently poorer quality water in Lake Nillahcootie remains unclear. Catchment processes and internal storage dynamics (water movement and behaviour within the storage), and well as activities on and around the storage can all potentially affect water quality.

Much of the catchment to Lake Nillahcootie has been heavily modified through agricultural practices in the past, improved management of erosion and nutrient runoff from the catchment to Nillahcootie can benefit water quality in the lake. Stream rehabilitation programs and other projects coordinated by the Goulburn-Broken Catchment Management Authority, Landcare and other environmental groups that seek to improve water quality issues are supported by this Plan. Direct support for priority projects in the near vicinity to Lake Nillahcootie will be considered.

One specific water quality issue that was often raised through the public consultation phase of this plan development was that of the turbidity levels in the lake. Anecdotal evidence suggests that turbidity levels have increased since 1993 when the lake and catchment were subjected to substantial flooding.

A comprehensive study into the drivers of water quality in the lake is suggested. Rehabilitation works such as fencing and revegetation programs on the surrounding lands and tributaries to Lake Nillahcootie, as well as the upper catchment of the lake can help to address water quality issues and are supported by this Plan.

Public awareness and attitudes to water quality issues can be enhanced through education programs emphasising the importance of water quality issues, and improved community awareness programs are also supported by this Plan.

Objectives

Better monitoring and understanding of water quality and processes that can affect water quality; and ultimately, improved water quality in Lake Nillahcootie.

Actions

22. Develop a community education/awareness program for water quality issues.
23. Support priority stream rehabilitation projects and other programs in the catchment and surrounding lands that can help to improve water quality.
24. Coordinate an integrated water quality monitoring review for Lake Nillahcootie, including a detailed investigation into lake behaviour and the drivers of water quality issues in Lake Nillahcootie.
25. Identify and implement programs to manage risks to water quality, in accordance with *Safe Drinking Water Act (2003)* obligations.

Implementation: Roles and Responsibilities

Goulburn-Murray Water is primarily responsible for coordinating these actions, in collaboration with Landcare and other agencies. The Goulburn-Broken Catchment Management Authority has lead responsibility for coordinating stream and catchment rehabilitation programs over the broader catchment.

8. Environment and Cultural Heritage *continued...*

8.3 Cultural Heritage

Increased statutory responsibilities and a growing awareness of the Aboriginal and European heritage has led to an obligation and responsibility for government agencies in control of land management activities and private landowners to protect this heritage.

State and Commonwealth legislation provides specific protection for Aboriginal and non-Aboriginal heritage. In particular, the *Aboriginal Heritage Act 2006* and associated *Aboriginal Heritage Regulations 2007* protect Aboriginal heritage and provide a consistent approach to managing Aboriginal cultural heritage land use and development proposals. There are also other guidelines and regulations that set standards for identification, listing and conservation of heritage places. However further to legislative requirements, there is a moral responsibility for government agencies and individuals to strive to preserve Australia's cultural heritage for present and future generations.

The current status of both Aboriginal and European heritage at Lake Nillahcootie has not been specifically investigated and is not well understood or documented. Goulburn-Murray Water will seek to work collaboratively with key stakeholders including Registered Aboriginal Parties and other relevant agencies and stakeholders to improve understanding and protection of heritage items at Lake Nillahcootie.

Objectives

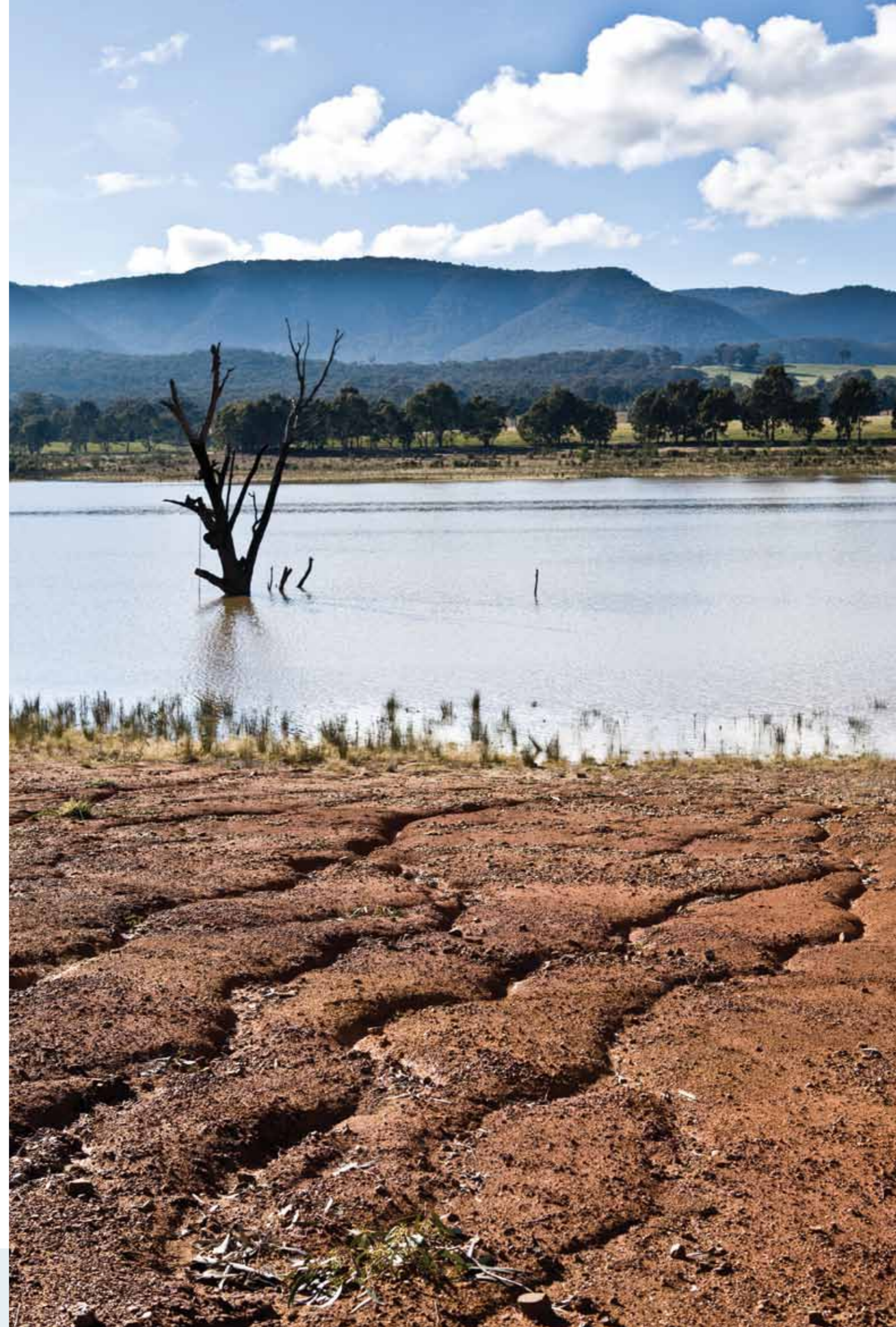
To protect important cultural heritage at Lake Nillahcootie.

Actions

26. Undertake an investigation into Aboriginal heritage on lakebed and foreshore areas.
27. Undertake an investigation/community survey of European heritage on lakebed and foreshore areas.
28. Protect identified heritage items in accordance with statutory responsibilities.

Implementation: Roles and Responsibilities

Goulburn-Murray Water will coordinate these actions, in consultation with key stakeholders.



9. Public Land Management

Land owned and/or managed by Goulburn-Murray Water at Nillahcootie is public land, and along with other nearby public land managed by other authorities is a valuable community asset. As a responsible public land manager Goulburn-Murray Water has an obligation to manage this land for the broader public interest.

Examples of land management issues on and around the lake include management of erosion, grazing management, pest plants and animals and management of fire risk.

9.1 Erosion

A frequently raised issue during public consultation was that of erosion. This includes erosion from upper catchment and surrounding farmland, erosion of the lake foreshore at full lake levels and erosion of the exposed lake bed during times of low water levels.

Management of erosion of the lake bed below full supply level of the lake is largely impracticable and is generally considered to be a low priority. A higher priority is management of foreshore erosion, particularly in areas where continued erosion could threaten public or private assets and property. An Erosion Action Plan will be developed and progressively implemented to address these issues at Lake Nillahcootie, which will include a summary of threats, mapping, recommended technologies and a budgeted prioritised works program.

Objectives

Proactive management of priority erosion threats around Lake Nillahcootie.

Actions

29. Develop and implement an Erosion Action Plan for the lake.

Implementation: Roles and Responsibilities

Goulburn-Murray Water is primarily responsible for this action.



9. Public Land Management *continued...*

9.2 Grazing Management

Stock grazing at Lake Nillahcootie pre-dates construction of the storage, and continues on parts of the lake bed and foreshore, as well as on neighbouring private land. At present there are several grazing licences issued for the perimeter and lakebed areas. Stock types predominantly include sheep and cattle.

Grazing on public lands at Lake Nillahcootie occurs under licence, with conditions applied to ensure stock is managed appropriately and do not cause unacceptable impacts. Well managed stock grazing is a useful tool for weed suppression and management of fire risk and will continue to be supported in appropriate areas.

Possible threats presented by poorly managed grazing include overgrazing and erosion, and possible threats to water quality. Current stock numbers are not excessive, and based upon recent research conducted at other storages (MDFRC, 2006; Feehan Consulting, 2009) the potential threat to water quality is not considered to be significant, provided grazing continues to be carefully managed.

Objectives

Well managed grazing on public land.

Actions

30. Continue well managed grazing of public land to assist in the management of invasive plant species and fire risks.

Implementation: Roles and Responsibilities

G-MW is primarily responsible for this action, with the support of grazing licence holders.

9.3 Pest Plants and Animals

Goulburn-Murray Water has traditionally implemented a weed control program at Lake Nillahcootie predominately focusing on Blackberry infestations and Paterson's Curse. If poorly managed, weeds can impact on neighbouring private and public lands, compromise stock grazing and decrease biodiversity values of lands surrounding the lake. This program will continue, and may be extended to target other priority noxious weeds where appropriate, in consultation with adjoining land holders/managers. Detailed weed infestation mapping will also be progressively developed to assist weed management efforts.

Pest animals are also a major concern for both private and public land managers in Victoria. They represent one of the most significant threats to economic productivity and to environmental values. Pest animals of major concern in the Lake Nillahcootie area are foxes and wild dogs (DPI 2010). Goulburn-Murray Water has been working cooperatively with the Department of Primary Industries, who have responsibility for managing these pests on public land, in trapping programs within the Nillahcootie area.

Objectives

Responsibly managed invasive pest plant and animal species.

Actions

31. Develop detailed weed infestation mapping and continue control programs for lake and foreshore areas, in consultation with surrounding land holders.

Implementation: Roles and Responsibilities

G-MW is primarily responsible for this action for the land it manages at Lake Nillahcootie.

9.4 Fire Risk Management

As a responsible public land manager, Goulburn-Murray Water is obliged to actively manage fire risk on public land it manages at Lake Nillahcootie. Goulburn-Murray Water has developed Fire Management Plans for all of its water storages including Lake Nillahcootie. Fire risk on other public land in the neighbouring areas around Lake Nillahcootie is managed by agencies such as DSE and Parks Victoria.

In the past Goulburn-Murray Water has worked cooperatively with the Country Fire Authority by providing access to water and roads, training days and some resources to fight fires. This cooperative approach with CFA and other relevant agencies will continue into the future.

Objectives

Responsible management of fire risk at Lake Nillahcootie.

Actions

32. Maintain and regularly update the Lake Nillahcootie Fire Management Plan.
33. Cooperatively work with CFA, local government and other responsible agencies to proactively manage fire risks.

Implementation: Roles and Responsibilities

G-MW is primarily responsible for coordinating these actions for the land it manages at Lake Nillahcootie.

9.5 Land Tenure

Goulburn-Murray Water owns and manages most of the land immediately surrounding the lake. This land is either freehold title in the name of Goulburn-Murray Water, Crown Land vested in Goulburn-Murray Water, or Crown land reserved for water supply purposes under the control and management of Goulburn-Murray Water. The interface between public and private land has never been clearly delineated.

While fencing of common property boundaries is not necessary in all areas, clear delineation of property boundaries is an important aspect of responsible land management.

Objectives

Clearly delineated public land.

Actions

34. Progressively implement property boundary re-establishment surveys, incorporating line of sight markers, or in some cases fencing.

Implementation: Roles and Responsibilities

G-MW will implement this action.

10. Appendices

10.1 Appendix A - Summary of Action Items

No.	Section	Action	Responsibility
1.	Community Awareness and Involvement	Establish a Lake Nillahcootie Plan Community Reference Group to guide the implementation of the plan and provide a two way means of communication between Goulburn-Murray Water, other management agencies and the local community and lake users.	Lead agency – Goulburn-Murray Water.
2.	Community Awareness and Involvement	Develop a communication and awareness campaign on recreation, water quality issues and other land and water management issues, dam operations and water levels.	Lead agency – Goulburn-Murray Water.
3.	Community Awareness and Involvement	Develop an interactive website containing maps, plans, zones, FAQs, management arrangements and by-laws that can be used as a one-stop shop for information.	Lead agency – Goulburn-Murray Water.
4.	Community Awareness and Involvement	Consistent and informative signage at all access points.	Lead agency – Goulburn-Murray Water.
5.	Community Awareness and Involvement	Encourage and support programs that involve the community in the management of Lake Nillahcootie.	Goulburn-Murray Water, local government and community groups.
6.	Recreation, Public Access and Safe Use	In collaboration with boating groups regularly monitor recreational activities, visitor numbers and users of the lake to identify any trend in user behaviour and impacts.	Goulburn-Murray Water, boating groups and representatives.
7.	Recreation, Public Access and Safe Use	Review boating zones to ensure suitability, reduce complexity and improve safety.	Lead agencies – Goulburn-Murray Water, Victoria Police and Marine Safety Victoria
8.	Recreation, Public Access and Safe Use	Investigate and facilitate the potential for a new boat launching facility.	Lead agency – Goulburn-Murray Water, with support of local government and boating representatives.
9.	Recreation, Public Access and Safe Use	Establish improved resourcing of monitoring and enforcement of boating activities.	Lead Agency - Goulburn-Murray Water.
10.	Recreation, Public Access and Safe Use	Continue to assess and implement fish stocking requirements in consultation with peak fishing organisations.	Lead Agency - Department of Primary Industries (Fisheries), fishing representatives and Goulburn-Murray Water.
11.	Recreation, Public Access and Safe Use	Support improved research into native and exotic fish populations.	Lead agencies - Department of Primary Industries (Fisheries), fishing representative organisations and Goulburn-Murray Water.
12.	Recreation, Public Access and Safe Use	Seek to establish collaborative agreements between key agencies for the improved management of public reserves.	Lead agencies – Goulburn-Murray Water and Mansfield Shire.
13.	Recreation, Public Access and Safe Use	Evaluate potential commercial development opportunities to offset costs of recreational management of the lake.	Lead agency – Goulburn-Murray Water.
14.	Recreation, Public Access and Safe Use	Develop a Master Plan (including public infrastructure and landscaping) for public recreation areas.	Lead agency – Goulburn-Murray Water.
15.	Recreation, Public Access and Safe Use	Establish cooperative agreements for monitoring and by-law enforcement on public areas.	Lead agencies – Goulburn-Murray Water and Mansfield Shire.
16.	Recreation, Public Access and Safe Use	Continue regular public safety and liability risk assessments of public reserve infrastructure.	Lead agency – Goulburn-Murray Water.

No.	Section	Action	Responsibility
17.	Recreation, Public Access and Safe Use	Investigate potential to establish a walking/bicycle path around lake.	Lead agencies – Goulburn-Murray Water and Mansfield Shire.
18.	Recreation, Public Access and Safe Use	Review issues associated with camping at the lake.	Lead agency – Goulburn-Murray Water.
19.	Environment and Cultural Heritage	Investigate the potential for the establishment of enhanced wildlife corridors for migration of fauna species	Lead agencies – Goulburn-Murray Water, DSE and Parks Victoria
20.	Environment and Cultural Heritage	Support works in the surrounding lands that protect biodiversity values and enhance visual amenity.	Lead agencies – Goulburn-Murray Water, GBCMA, DSE, Parks Victoria
21.	Environment and Cultural Heritage	Support the activities of local environmental groups to better understand and improve native flora and fauna populations at Lake Nillahcootie.	Lead agency – Goulburn-Murray Water with local environment groups.
22.	Environment and Cultural Heritage	Develop a community education and awareness program on water quality issues and management.	Goulburn-Murray Water.
23.	Environment and Cultural Heritage	Support priority stream projects and other programs in the catchment and surrounding lands to improve water quality.	Lead agencies – Goulburn-Murray Water, GBCMA.
24.	Environment and Cultural Heritage	Coordinate an integrated water quality monitoring review for Lake Nillahcootie, including a detailed investigation into lake behaviour and the drivers of water quality issues in Lake Nillahcootie.	Lead agency – Goulburn-Murray Water.
25.	Environment and Cultural Heritage	Identify and implement programs to manage risks to water quality, in accordance with <i>Safe Drinking Water Act (2003)</i> obligations.	Lead agency – Goulburn-Murray Water.
26.	Environment and Cultural Heritage	Undertake a comprehensive investigation of Aboriginal cultural heritage on lake bed and foreshore land.	Lead agency – Goulburn-Murray Water.
27.	Environment and Cultural Heritage	Undertake a comprehensive investigation/community survey of European heritage on lake bed and foreshore.	Lead agency – Goulburn-Murray Water.
28.	Environment and Cultural Heritage	Protect identified heritage items in accordance with statutory responsibilities.	Lead agency – Goulburn-Murray Water.
29.	Environment and Cultural Heritage	Develop and implement an Erosion Action Plan the Lake Nillahcootie.	Lead agency – Goulburn-Murray Water.
30.	Land Management	Continue well managed grazing of public land to assist in the management of invasive plant species and fire risks.	Goulburn-Murray Water and grazing licence holders
31.	Land Management	Develop detailed weed infestation mapping and continue control programs in consultation with surrounding land holders.	Lead agency – Goulburn-Murray Water.
32.	Land Management	Maintain and regularly update the Fire Management Plan for Nillahcootie.	Lead agency – Goulburn-Murray Water with advice from CFA and DSE.
33.	Land Management	Cooperatively work with CFA and other agencies to proactively manage fire risks.	Lead agencies – Goulburn-Murray Water, CFA, DSE, Parks Victoria and local government.
34.	Land Management	Progressively implement property boundary re-establishment surveys, incorporating line of sight markers, or in some cases fencing.	Lead agency – Goulburn-Murray Water.



10. Appendices *continued...*

10.2 Appendix B – Operation of Lake Nillahcootie

The name Nillahcootie is of Indian origin and reputedly means 'blue house'. The storage was built in 1967 by the Rural Water Commission as part of a program to assure water supply in Northern Victoria. Lake Nillahcootie has a capacity of 40,400 ML at the full supply level of 264.5 m (AHD) and a surface area of 530 ha. It is the only storage in the Broken River following the decommissioning of Lake Mokoan. The Broken River originates in the ranges near Tolmie and flows in a north to north easterly direction before discharging to the Goulburn River at Shepparton. The Lake Nillahcootie catchment incorporates an area of approximately 422 km². The average annual flow of the river is about 287,000 ML above the Broken Creek anabranch at Casey's Weir and about 78,000 ML at the Nillahcootie dam site.

Lake Nillahcootie is designed to fill and spill annually, which regulates the flow of the Broken River to meet downstream requirements of water entitlement holders (irrigators and urban water authorities) and the environment. Water is harvested in Lake Nillahcootie during the winter and spring months when tributaries are

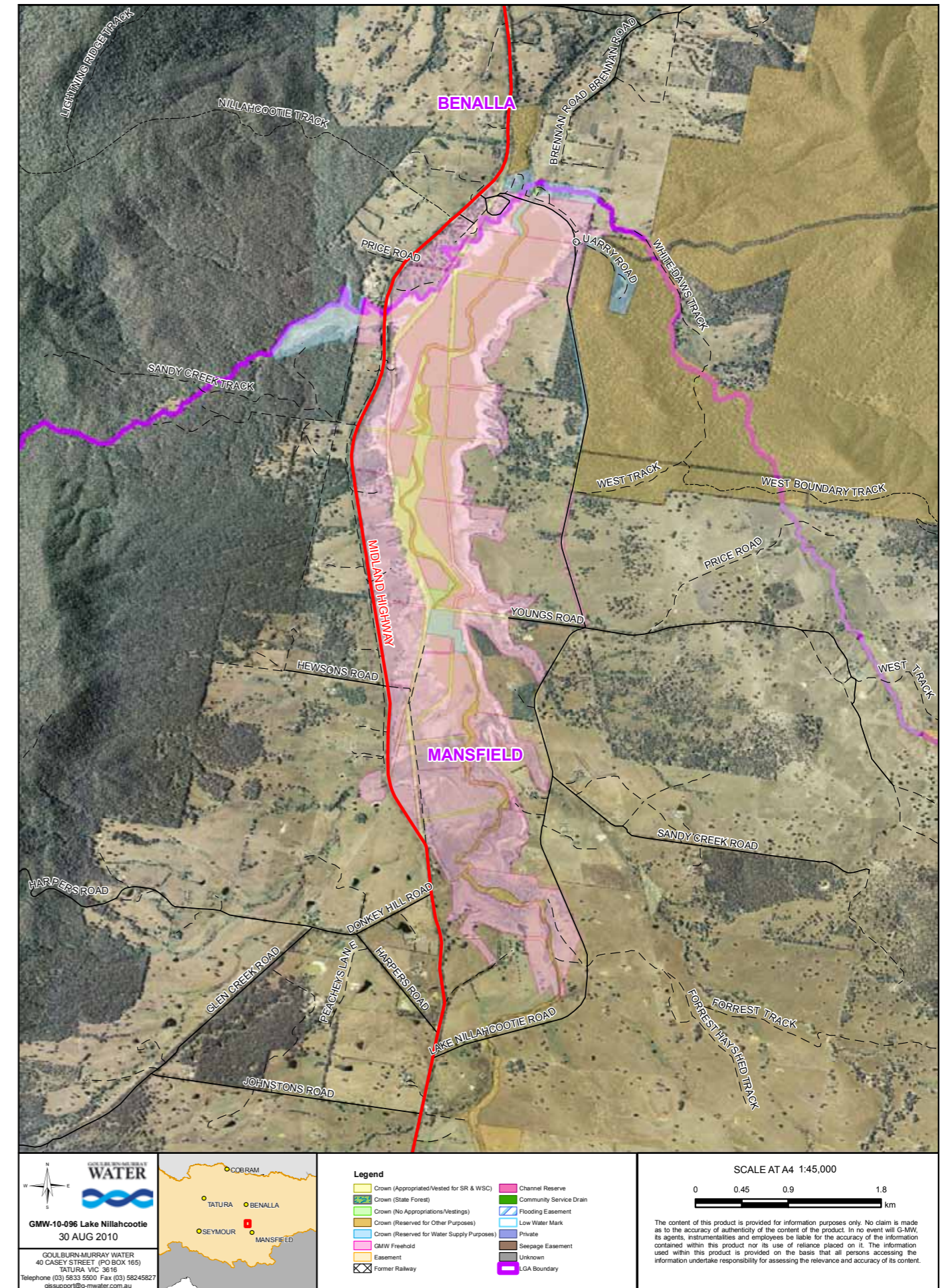
flowing after rain events. Water is released for entitlement holders and the environment once flow in the downstream tributaries recedes, usually commencing in late spring through to late autumn.

The outlet works consist of an outlet tower with trash screens at the inlet structure. This is connected to an 1800 mm diameter conduit with a butterfly valve at the inlet and a venturi at the outlet. There are two regulating valves of 450 mm and 1350 mm diameter. The maximum discharge through these valves at full supply level is 1,468 ML/d.

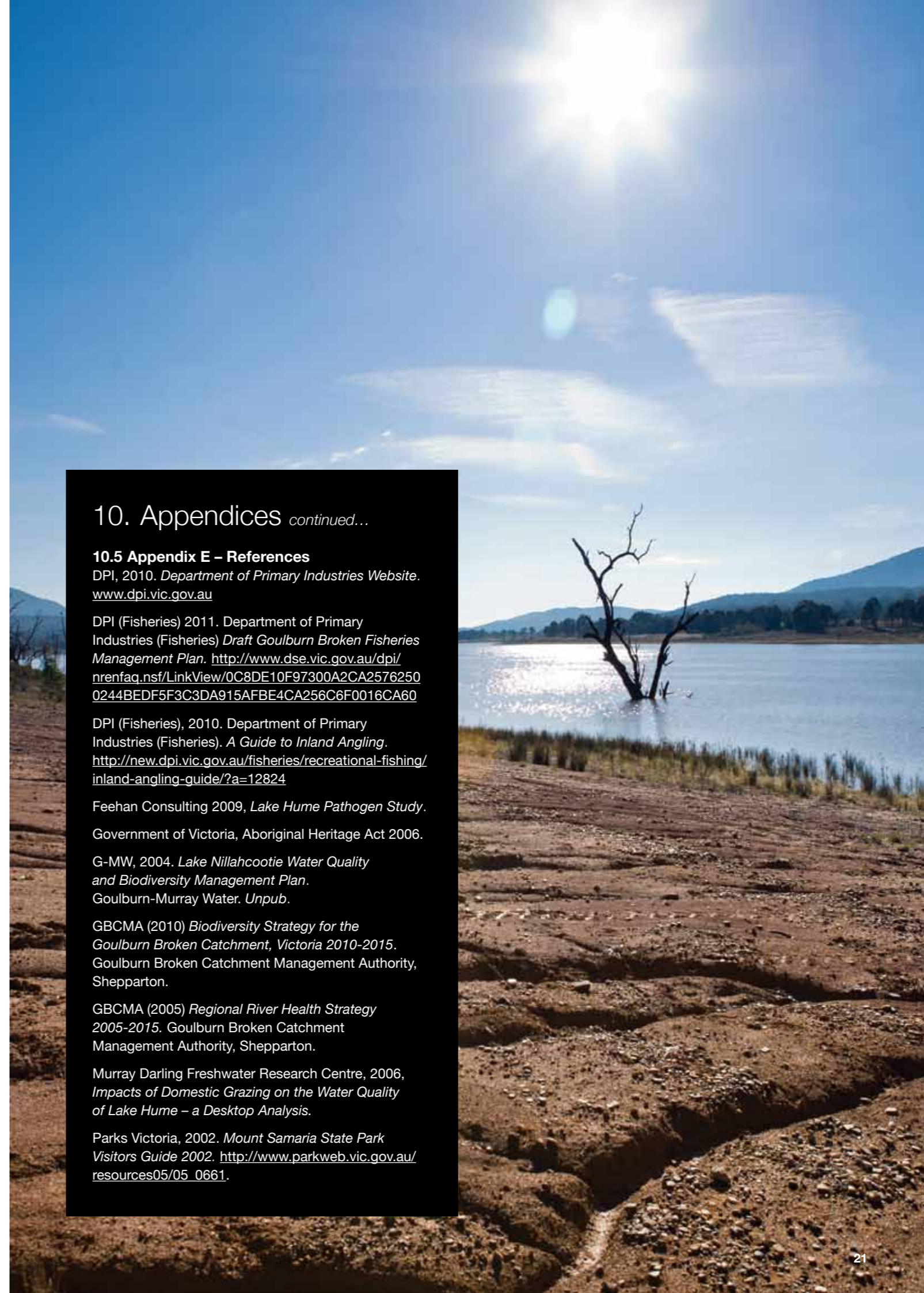
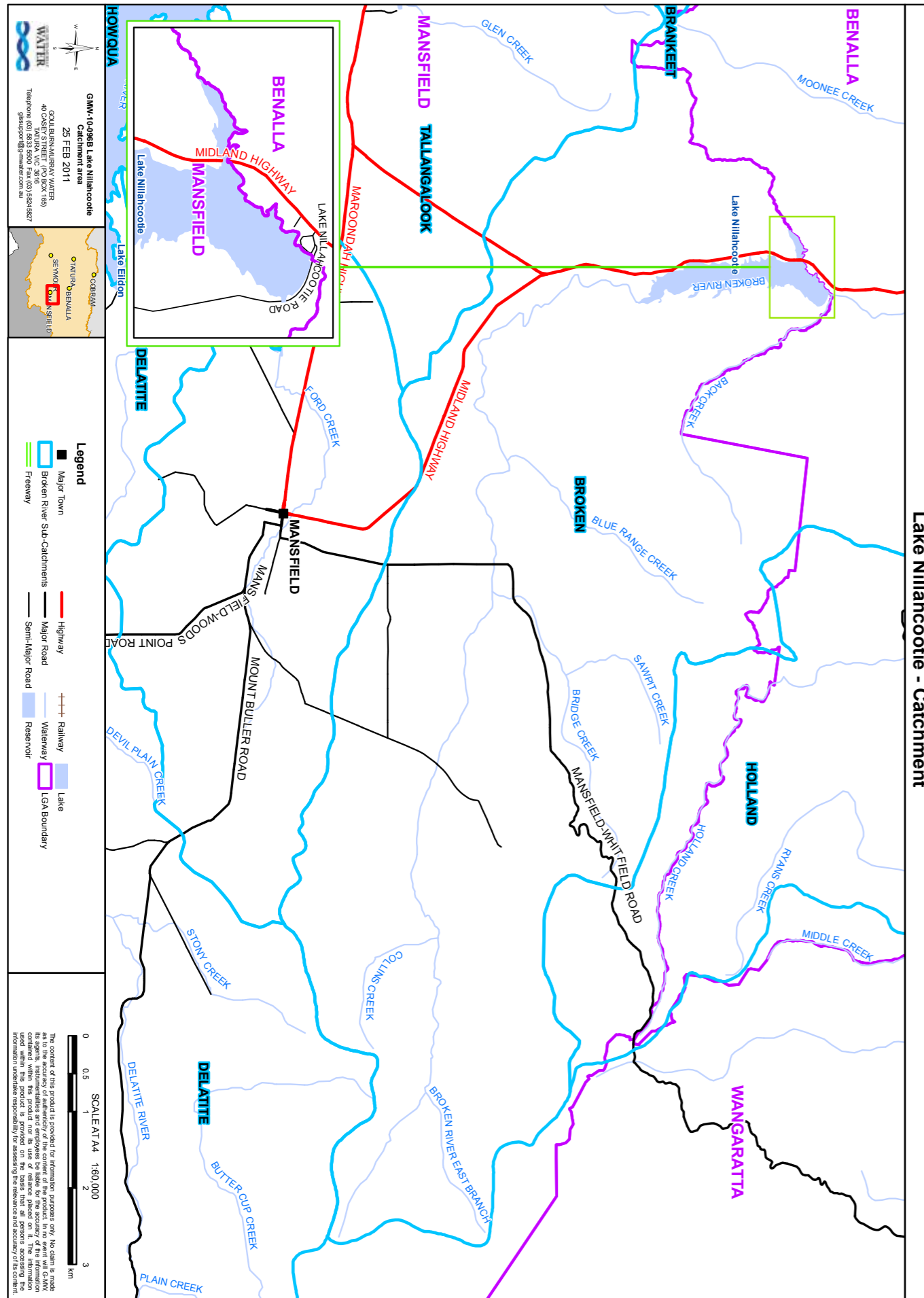
There are two flood spillways incorporated into the dam structure. The main spillway has a capacity of 117,436 ML/d and the second one allows an additional 39,143 ML/d to pass and is located on the eastern side of the dam. The secondary spillway has a fuse plug incorporated into its design, this only comes into action in extreme flood situations.

Lake Nillahcootie is designed to withstand a one in seventy thousand year flood event. The highest historic flood event was recorded in September 1993 with a peak of approximately 30,000 ML/d passing through the dam.

10.3 Appendix C – Map of Lake Nillahcootie



10.4 Appendix D – Map of Nillahcootie in the Broader Catchment



10. Appendices *continued...*

10.5 Appendix E – References

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