Futurepast
HERITAGE CONSULTING PTY LTD

Prepared for Hobart City Council

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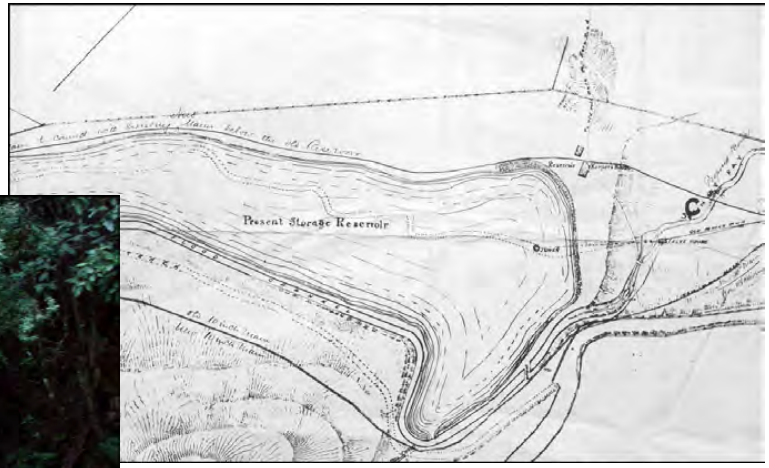


Hobart Mountain Water Supply System Conservation Management Plan

Conservation and management policies designed to assist in the conservation of the historically important Hobart Mountain Water Supply System, from Mount Wellington to Hobart City. This document reviews and builds upon the 1994 Pipeline Track Conservation and Management Plan.

Summary of Recommendations

The Mountain Water Supply System ('the System') is a place with many shared and overlapping values. Historically, the System is a mostly intact piece of technological heritage dating from the 1860s to the 1920s. The System is also a critical part of the water supply infrastructure of the City of Hobart, supplying approximately 15% of the water to the city. Aesthetically, the System runs through the breathtaking natural areas around Mount Wellington, affording spectacular views of the Mountain and the surrounding area. The area the System runs through contains significant remnant and regrowth vegetation and serves as important habitat, right on the doorstep of urban Hobart. Due to its proximity to Hobart, the place is also a significant recreational asset to the community, containing a number of parks (Waterworks Reserve, Ridgeway Park and Wellington Park) as well as tracks used by walkers, cyclists and local residents. These many layers of value highlight the significance of the place, but also form the basis for potential conflicts within its management. This document sets out a framework for managing the heritage values of the place within the context of its other natural, operational and recreational values.

Key amongst the recommendations of this document is the need for a coordinated approach to management between the major land and asset managers and regulatory authorities: Hobart City Council, the Wellington Park Management Trust and the local water authority[1]. Cooperation and coordination between these entities is critical to ensure consistent management of the place, a coordinated approach to its interpretation and use that does not unreasonably conflict with the needs of each agency. To achieve this, other groups will need to be brought into the discussion, including Telstra, which has operational assets within the place, the Tasmanian Heritage Council which administers the *Historic Cultural Heritage Act* 1995, community groups which have a strong association and ownership of the place (particularly at Fern Tree and Ridgeway) and recreational user groups, including walkers and cyclists. Other stakeholder groups may need to be drawn in to address particular issues. But the key element of ensuring this approach works for the best management of the place is to have a common understanding of what is significant and how that significance can best be managed.

The major recommendations of the Conservation Management Plan are:

- The endorsement of this document by the responsible agencies as the co-operative framework for the management of the Mountain Water Supply System;
- Empowering the Mountain Water Supply Heritage Working Group with a specific brief to implement this document;
- Recognition that the historic values of the place are as important as the natural, operational and recreational values and must be managed accordingly;
- Preparation of a revised and expanded listing for the place for the Tasmanian Heritage Register;

[1] Until recently this was Hobart Water, but is now the Tasmanian Water and Sewerage Corporation (Southern Region). This entity trades as, and is known as, 'Southern Water'.

- Implementation of a program of visitor and site condition monitoring, to ensure efforts are directed to the places most in use and/or most subject to threat;
- Development of Design Guidelines and an Interpretation Plan to be used by all management agencies in a coordinated fashion;
- Implement a range of short, medium and long-term conservation works and goals designed to conserve and enhance the key historic features of the System.

Introduction

Background to the project

This Conservation Management Plan (CMP) was commissioned in 2007 to update and expand upon the 1994 *Pipeline Track Conservation and Management Plan* by Murray and Nieberler. That document provided an initial foundation for management of part of the historic Mountain Water Supply System.

Since the development of the 1994 CMP, there have been significant changes in the management structure for the Mountain Water Supply System. Some works recommended in the 1994 CMP have been undertaken while other expectations and ambitions have developed for the place in the intervening years. This CMP reviews and updates the management recommendations for an expanded area of significance. This CMP seeks to situate the conservation of the significant elements of the place within the present management structure and the differing goals and expectations of the involved stakeholder groups. This CMP was commissioned by Hobart City Council and overseen by the Mountain Water Supply Heritage Working Group which includes representatives from Hobart City Council, Hobart Water (now Southern Water), the Wellington Park Management Trust and the Tasmanian Heritage Council.

Fieldwork and community consultation were undertaken by MacLaren North during April 2007. Maps were prepared by Fiona Leslie of Archaeological and Heritage Management Solutions using data supplied by Hobart Water (now Southern Water) and the Tasmanian Department of Primary Industries, Water and Energy.

Project brief

The key tasks for this project were set out in the project brief from Hobart City Council, dated July 2006, and include:

- Review the existing CMP against current best practice heritage standards (Burra Charter & Kerr *The Conservation Plan*) & relevant Heritage Tasmania standards and guidelines, including the elements that constitute the site.
- Develop a summary history, based on the existing CMP and other documents supplied by the Working Group. Undertake minimal additional research, however include some comparative analysis with other Australian city water supply systems.
- Consult with the Mountain Water Supply Working Group and relevant agency staff (Hobart City Council, Hobart Water (now Southern Water) & Heritage Tasmania).
- Carry out targeted community consultation to assess social values.
- Undertake a one day field inspection of significant features and sites identified in the 1994 CMP, including photographing and recording condition information for each feature.
- Formulate a conservation policy for the place.
- Review the Management Recommendations for identified features and sites.
- Review Maintenance Rankings for sites and features and the Capital Works Schedule.

- Development of a Draft CMP for client review.

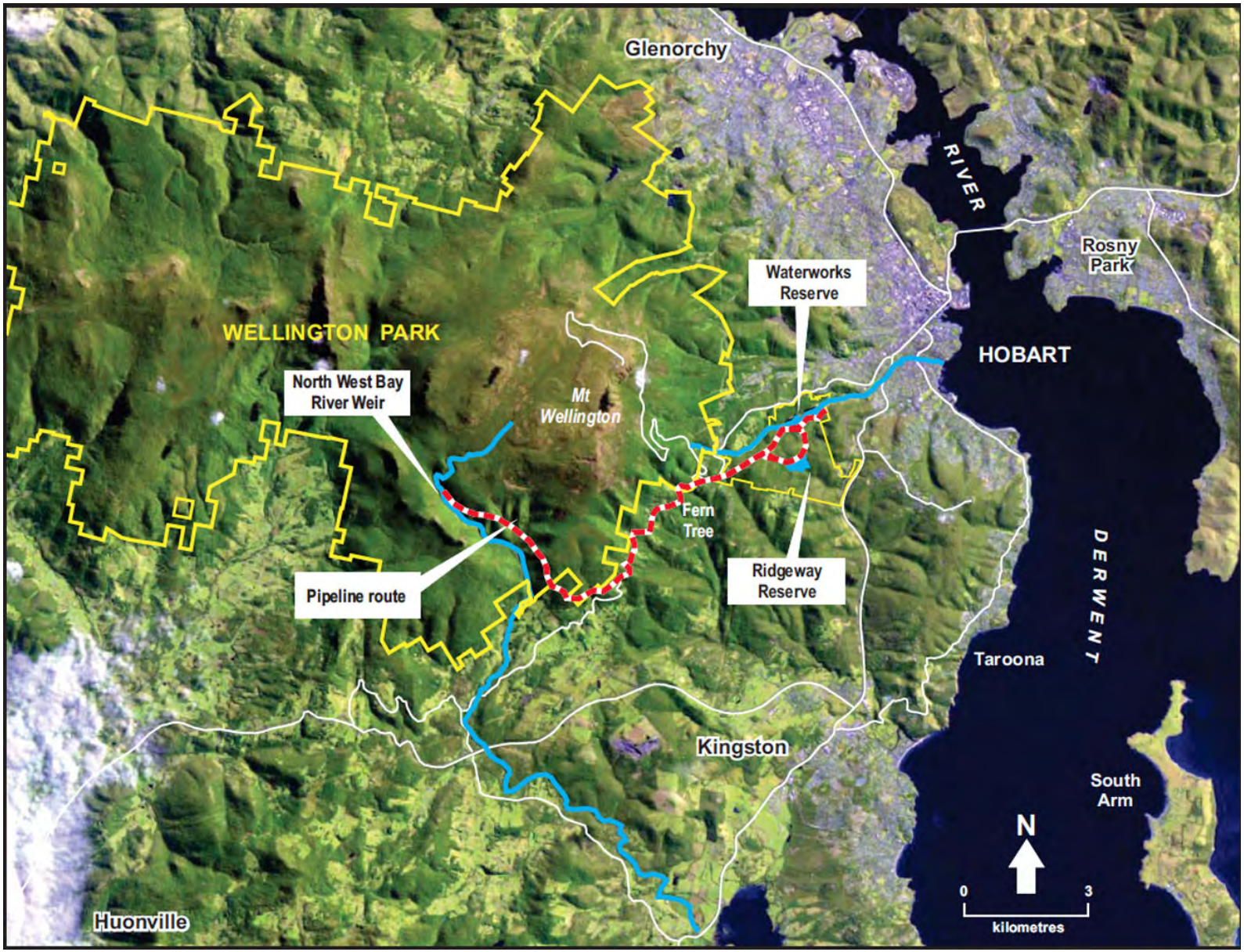
- Incorporation of relevant public and stakeholder comments into the Final Draft CMP

- Presentation of the Final Draft CMP to the Working Group

Figure 1 - The Mountains Water Supply System and the greater Hobart area

This map shows the approximate extent of the Mountain Water Supply System, in relation to Hobart City , Wellington Park and the surrounding area. The Mountain Water Supply System is located within both Hobart City Council and Kingborough Council areas.

Map courtesy Development & Environmental Services Division, Hobart City Council. Based on 1997 aerial photography.



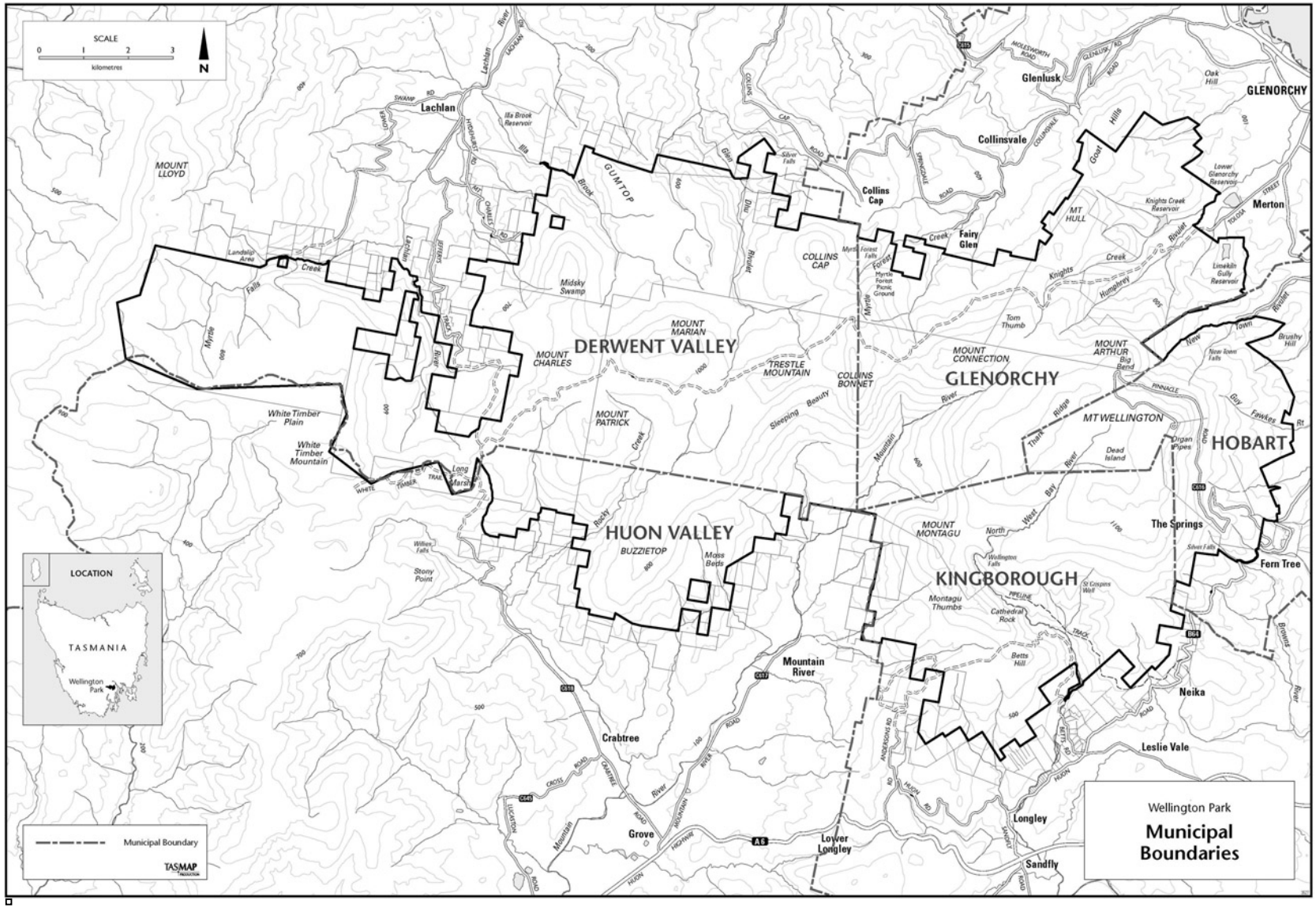


Figure 2 - Boundary of Wellington Park showing local government areas within the Park. Map courtesy Wellington Park Management Trust.

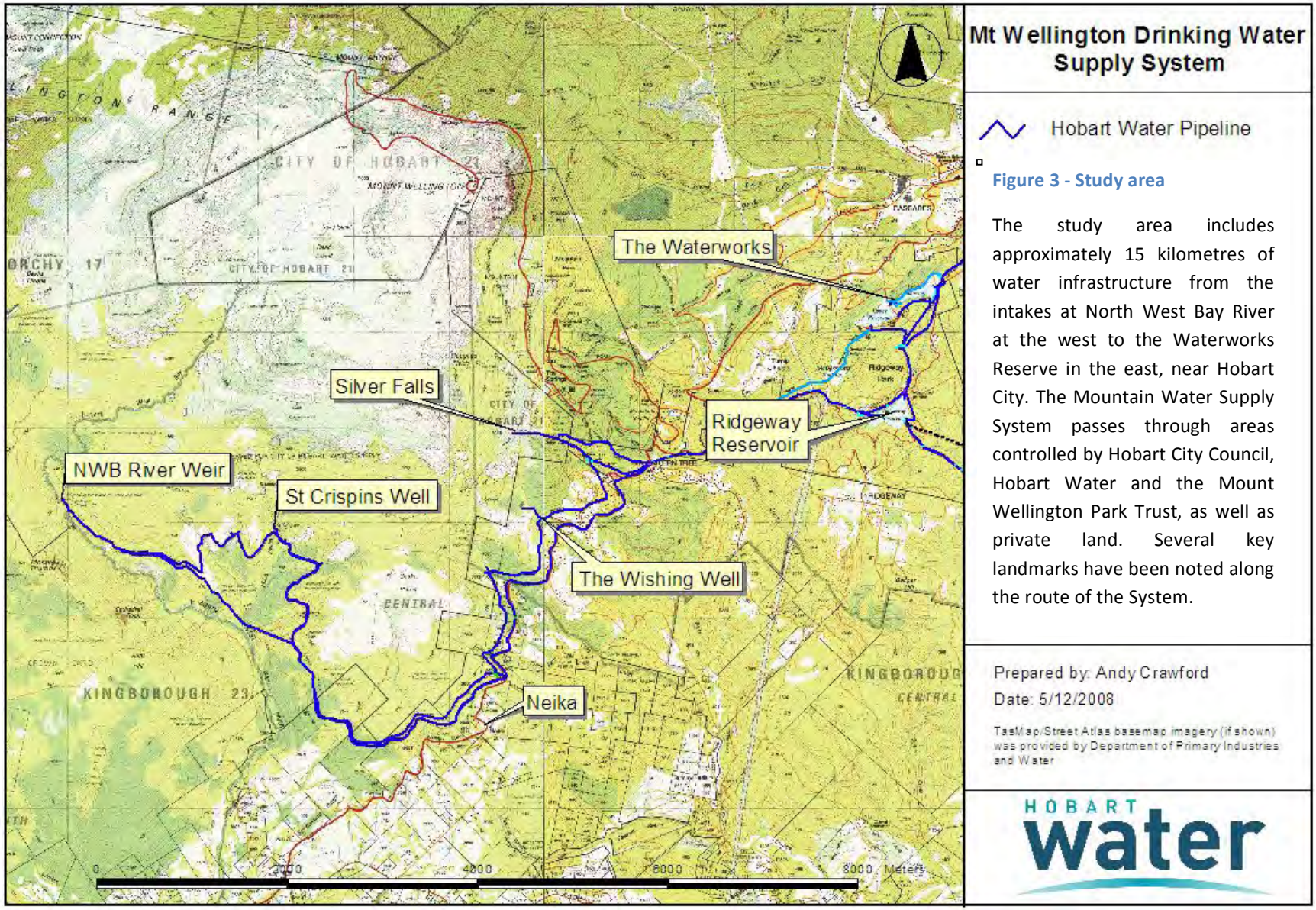


Figure 3 - Study area

The study area includes approximately 15 kilometres of water infrastructure from the intakes at North West Bay River at the west to the Waterworks Reserve in the east, near Hobart City. The Mountain Water Supply System passes through areas controlled by Hobart City Council, Hobart Water and the Mount Wellington Park Trust, as well as private land. Several key landmarks have been noted along the route of the System.

Approach of the CMP

The approach of the CMP follows the general methodology laid down in *The Conservation Plan* by J S Kerr and in the Australia ICOMOS *Charter for Places of Cultural Significance* (Burra Charter). The key steps of preparing a CMP are to:

- Investigate and identify the elements and extent of a place;
- Assess the significance of the place;
- Identify the constraints and opportunities which arise for the significance of the place;
- Develop a framework for the management of the place and its significant values; and
- Develop a strategy for implementing the conservation recommendations for the place.

This CMP is a strategic heritage management document, designed to provide a high-level policy framework for managing the heritage significance of a large area. A historic place such as the Mountain Water Supply System, which is also a key part of the infrastructure of the city, has multiple values in terms of heritage significance, recreational and scenic value, natural values and operational importance. Some of these values may be in conflict with each other, and the role of this CMP is to examine how those conflicting values may be managed to best conserve the *heritage* significance of the place. The focus of the CMP and its recommendations is therefore on how the heritage values of the place can best be conserved and presented, within the context of the other demands and constraints upon it.

Work undertaken in the preparation of the CMP included a site inspection of the main route of the System between the Waterworks Reserve and the North West Bay River Weir and the key historic places along the route. This did not include detailed fabric[2] analysis of each site or of the Pipeline itself. Reliance was placed upon past historic site surveys of the area and comments regarding the condition of heritage items are general in nature only.

Discussions were also held with the managers of different sections of the place, including Hobart City Council, Southern Water and the Wellington Park Management Trust. Discussions were also held with Heritage Tasmania as the heritage regulator. One of the major issues for the management of the System is this diverse management responsibility and the need for a coordinated approach to the conservation of the System.

In terms of the description of the System and its key elements, the CMP starts with the first phase of the System, which commenced in 1859 and works forward in time and upstream in geographical terms from that point. As this document focuses on the elements of the Mountain Water Supply System, some ancillary features not associated with water supply, but which lie along its route are not dealt with by this document.[3] Similarly, individual statements of significance are not provided for every element, as the elements all contribute to the understanding and significance of the System as a whole. Relative conservation priorities are however set out, which focus on conserving that fabric which is both very important and highly fragile or otherwise under threat.

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[2] "Fabric" in this context refers to the built and human-modified components of the System which reflect is construction, change and operation.

[3] E.g. McDermott's Farm, Regan's Farm and the quarries that were associated with the construction but not the operation of the System.

Public consultation process

In addition to consultation with the management and peak bodies represented on the Mountain Water Supply Heritage Working Group, an advertised public meeting was held at the Fern Tree Community Centre in April 2007. Approximately 30 people attended that meeting and the issues raised were considered in the development of the draft report. A number of written submissions were also received before and during that meeting from community members. The Draft CMP was advertised for public comment for 4 weeks and made available on the Hobart City Council website. A Submissions Report has been prepared based on public submissions and the Final CMP has been developed based on comments from the Working Group and issues raised in the Submissions Report. The Final CMP will be made available to the public through the Hobart City Council website.

Heritage status and listing

The Mountain Water Supply System is presently listed on the Tasmanian Heritage Register as Item R1597. A copy of the present listing is included in the Appendix.

The three stone aqueducts which form part of the System (including Regans Gully Aqueduct and the two Fern Tree aqueducts) are included as a Registered Place on the Register of the National Estate under Listing 15996. A copy of this listing is included in the Appendix.

The CMP recommends that an amended listing for the System be prepared for the Tasmanian Heritage Register.

Previous work

A significant amount of historical research and survey work has been undertaken for the heritage places along the System. This report relies on those previous works for this detailed assessment information. Key documents regarding the history of the Mountain Water Supply include:

- Crawford, P. G. and K. A. Ryan (1988). The history of the early water supply of Hobart. Hobart, Institution of Engineers Australia.
- Scripps, L. (1989). The Pipeline Track, Mt Wellington. Hobart, Hobart City Council.
- Hartzell, L. (1993). Final Report for the Mt Wellington Pipeline Track Project: Historical and Archaeological Documentation of Features and Sites. Hobart, Hobart City Council.
- Murray, T. and K. Nieberler (1994). Conservation and Management Plan for the Pipeline Track. Hobart, The City of Hobart.
- McConnell, A., S. Stanton & L Scripps (1998). Ridgeway Park, Hobart - Cultural Heritage Survey and Assessment (2 vols). Hobart, Hobart City Council.
- McConnell, A. and L. Scripps (2005). Focus on the fringe: layered use and meanings in a natural context (2 vols). Hobart, Wellington Park Management Trust.

As this document concentrates solely on the historic water supply aspects of the study area, a new classification system has been established for this document. Cross-references are supplied, where relevant, to earlier documents.

Limitations

As the history and fabric of the Mountain Water Supply System have been subject to reasonably comprehensive investigation over the last 20 years,

this document relies heavily on that previous analysis but places it within a comprehensive management framework in a contemporary context. No substantial additional historical research was undertaken for this project, however a great deal of material exists, particularly in the Tasmanian Archives, which will prove a valuable source for future research and interpretation.

This report also focuses primarily on the water supply history of the study area and the associated management and conservation issues. While it is acknowledged that there were other uses of sections of the study area, including farming, timber-getting, recreation and residential uses, these have left only limited traces and are peripheral to the management and conservation of the Mountain Water Supply System. Modern recreational uses are however discussed, due to their potential to impact on historic fabric.

Fieldwork was restricted to visiting known historical features identified in previous studies and did not include an investigation of previously-unvisited bushland areas. It remains possible that undocumented features, particularly of an archaeological nature, may exist within the study area.

No examination was made of the indigenous significance of the study area nor have any indigenous places or archaeological sites been identified.

It is clear there is also an ongoing tension between the management of the different values of the System and the areas through which it passes. Part of this tension relates to the management of the area as a natural as opposed to cultural area. Further tension is present between the uses of the System and the surrounding areas, including the recreational and operational uses. A document of this nature cannot resolve all of these tensions, but is rather designed to highlight the best ways to manage the *heritage* values of the System within these areas and acknowledging these competing uses and ambitions.

For the purposes of the CMP, the Mountain Water Supply System is viewed as a cultural construct with a high degree of historic value, for its role in the supply of water to Hobart and the surrounding areas. It is located within an area with important natural and recreational values and the policy framework outlined in this document seeks to strike a balance between these multiple, and sometimes competing, values for the area.

The resolution of some of these issues can only come through the ongoing work and cooperation between the management agencies, particularly Hobart City Council, Southern Water and the Wellington Park Management Trust. They, along with the other members of the Mountain Water Supply Heritage Working Group, will need to implement this document in a manner which acknowledges these multiple values for the place and responds to the ongoing needs of the community.

Acknowledgements

This report could not have been prepared without the assistance of a great number of individuals. The author wishes to thank and acknowledge the contributions of:

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Apologies in advance to anyone who may have been inadvertently omitted.

Final amendments to the document were made with the assistance of Prudence Macleod of Futurepast.

Chapter 1 – The History and Development of Hobart's Water Supply

Now more than ever, water is recognised as a precious resource and is the subject of much debate and interest at local, state and national levels. It is the resource that has shaped life in Australia more than any other, from the distant past to the modern day. In the history of Australian colonisation and settlement, water has been crucial to the development and expansion of Australian cities and towns. The location of Sydney, as the first Australian colonial settlement was largely to do with the location of the Tank Stream, which provided pure, fresh water to the new settlers.[4] Green noted the availability of fresh water was perhaps the primary factor in the location of most early Australian settlements.[5]

Hobart was no less affected by the need for a reliable supply of fresh water. From the earliest period of its settlement, access to and provision of fresh water were constant challenges. Even fifty years after initial settlement, availability of water was a major public concern, with perhaps only one third of Hobart's inhabitants having access to good quality drinking water.[6] The Hobart Mountain Water Supply System was the response to this crisis. Much of the System survives into the 21st century and continues to supply approximately 15% of Hobart's demand for potable water.

1.1 Early water supply in Hobart

Water was a key factor in the relocation in 1804 of the initial English settlement from Risdon Cove to Sullivan's Cove,[7] the centre of present-day Hobart. The Hobart Rivulet, leading into Sullivan's Cove had a secure, reliable supply of fresh water for the early colony, something that had been lacking at Risdon Cove.[8] But like many natural watercourses, the supply was intermittent, a problem also faced by the early settlers in Sydney Cove.[9] And as the settlement grew up around the Hobart Rivulet, it became polluted with the city's domestic and industrial wastes. By the late 1820s, there was serious concern about the quality of the town's water supply and the potential for an outbreak of disease. It became clear that work was required to augment the natural water supply. Despite the pressures this placed on the early town, it was more than three decades before a comprehensive solution to the problem was developed.

In 1831, an aqueduct was built at the springs halfway up Mount Wellington to boost local supply, diverting water into the upper reaches of the Hobart Rivulet. Water was captured in a dam at the base of the Mountain and directed into the town via a brick channel known as the

4 North, M (2011) *Water*. An entry for the Dictionary of Sydney. http://dictionaryofsydney.org/entry/water

5 Green, K. D. (1988). Water and Irrigation. Technology in Australia 1788 - 1988. Australian Academy of Technological Sciences and Engineering. Melbourne, Australian Academy of Technological Sciences and Engineering Ltd.

6 Scripps, L. (1989). The Pipeline Track, Mt Wellington. Hobart, Hobart City Council.

7 Alexander, A., Ed. (2006). The Companion to Tasmanian History (CD ROM Edition). Hobart, The Centre for Historical Studies, University of Tasmania. Entry for 'Water'
Walker, J. B. (1889). The founding of Hobart by Lieut.-Governor Collins. Early Tasmania: Papers. Hobart, John Vale, Government Printer: 59-83.

8 Crawford, P. G. and K. A. Ryan (1988). The history of the early water supply of Hobart. Hobart, Institution of Engineers Australia. Pp 3-4.

9 Aird, W. V. (1961). The water supply, sewerage, and drainage of Sydney. Sydney, Metropolitan Water Sewerage and Drainage Board. Pp 1-4.

Town Tunnel, which also received water from New Town Creek.[10] This fed into an extensive reticulation system in the centre of the early town. But while the 1831 system solved some of the immediate water supply problems, it provoked a long-running dispute with colonial entrepreneur Peter Degraves, as the aqueduct intercepted and diverted water above Degraves' property. Degraves operated sawmills and established the Cascade Brewery, both of which relied heavily upon water, and Degraves asserted that the water belonged to him rather than to the colonial

Degraves responded to the construction of the aqueduct by building a new dam on the Hobart Rivulet in 1834, diverting water to his enterprises to the detriment of the town water supply. Despite protestations from the residents of Hobart, this situation persisted. The *Water Act* was passed in 1835 to give the colonial government additional powers to address the problem, however Degraves was able to use this situation to his advantage, proposing to the government in 1840 that he construct a new reservoir to supply the town. He established the Tasmanian Water Company in 1841 for this purpose and his proposal was ultimately accepted by the government in 1844.[11]

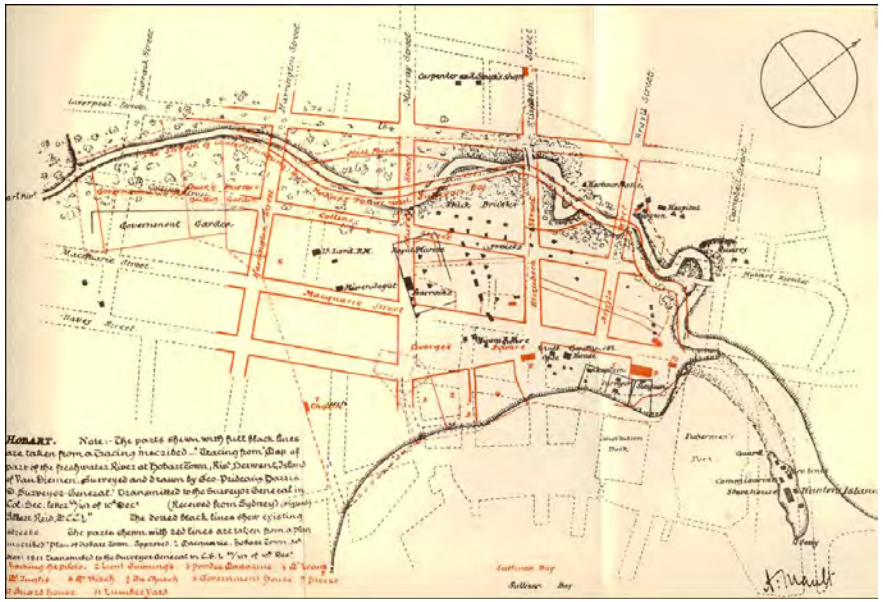

Figure 4 – Map showing Hobart Rivulet in relation to the early town plan. (Walker 1902: 64-65)

[10] Crawford, P. G. and K. A. Ryan (1988). The history of the early water supply of Hobart. Hobart, Institution of Engineers Australia. Pg 5.

[11] Crawford, P. G. and K. A. Ryan (1988). The history of the early water supply of Hobart. Hobart, Institution of Engineers Australia. Pp 15-17.

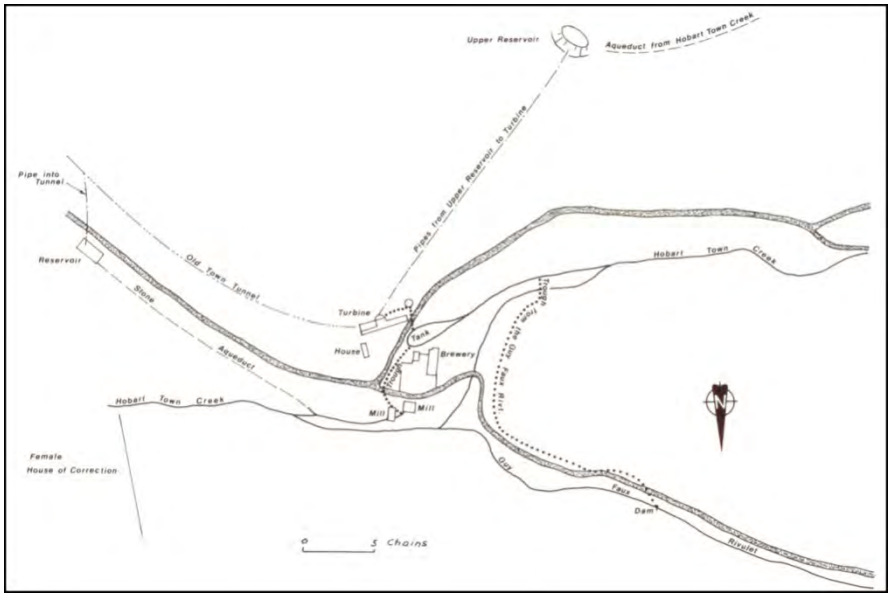

Figure 5 – Map showing the first water supply and Degraves' alterations (Crawford and Ryan 1988:16)

While Degraves constructed a reservoir, it was not in accordance with the agreed design and his contract was terminated in 1846. The water supply issue was so in the public mind that the polemical pamphlet *The Right of the Inhabitants of Hobart Town to an Independent Supply of Pure Water* was published in 1847 to spur action on the issue.[12] The Hobart Municipal Council was established in 1852, with responsibility for water supply, amongst other responsibilities. One of its first acts was the construction of a new reservoir in 1853, known as the Cascade Reservoir, which operated until the 1890s.[13] This was only a temporary solution, however, and the continued shortcomings of the water supply led the Municipal Council to undertake an extensive investigation of the problem in 1858.[14] As an interim measure during the 1850s, several small streams on Mount Wellington were diverted into the 1831 system, keeping the Hobart Rivulet flowing as the main supply for the town.

By the late 1850s, the reservoirs constructed by Degraves and the Municipal Council could not adequately supply the town. In 1858, fewer than half the houses in Hobart Town had piped water and a report was commissioned which examined a range of solutions, ultimately recommending the construction of a major new reservoir able to service 30,000 inhabitants. This report led to the establishment of the Mountain Water Supply System. Flanagan also attributes some of the impetus to a desire by Hobart to be perceived as a modern city.[15]

1.2 Building the Mountain Water Supply System

An engineer from Victoria, J N Gale, was appointed in 1859 to design and oversee the construction of the new water supply system for the town. Gale's plan was to divert water from the streams flowing off Mount Wellington and collect it in a reservoir situated along the route of the Sandy Bay Rivulet, and then direct the water into a piped reticulation system around the city. A second engineer, J J Bateman, was engaged to review the proposal and made a number of recommendations,

[12] Anonymous (1847). The right of the inhabitants of Hobart Town to an independent supply of pure water. Hobart Town, William Pratt.

[13] Crawford, P. G. and K. A. Ryan (1988). The history of the early water supply of Hobart. Hobart, Institution of Engineers Australia. Pp 20-22.

[14] Ibid. Pg 23.

[15] Flanagan, R (1996) "On the Mountain" in Dombrovskis et al. (1996) *On the Mountain*. Hobart: West Wind Press. Pp 13-14.

particularly to do with the placement and size of the outlet pipes from the reservoir, which appear to have been ignored or rejected.[16]

1.2.1 The First Phase

The *Water Act* was passed in late 1860, granting the Council control over the local sources of water, the authority to construct the System and the power to borrow money to fund the construction. Construction commenced in 1861, with its major element being Reservoir No 1 on the Sandy Bay Rivulet. The System commenced operation in late 1862.[17] While the reservoir was the most visible part of the new waterworks, the System started much further away, with the collection and diversion of water from mountain streams on the upper reaches of Mount Wellington.

Fork Creek and Browns River were both intercepted to provide water to the reservoir. Fork Creek was intercepted by a structure known as the Wishing Well and water was originally diverted into wooden troughs and directed to Fern Tree Bower. Browns River was intercepted via a weir placed at Fern Tree Bower and from there water was directed downhill in wooden troughing towards Halls Saddle. Fern Tree Bower was a popular recreational spot due to its picturesque nature and many small shacks were built in the area as holiday retreats for the residents of Hobart. Only archaeological traces of this residential use remain[18] and much of the Bower itself was destroyed in a flood in 1960.

Water leaving the Bower was originally diverted into wooden troughing, later replaced with sandstone, and proceeded steeply down slope through what is now Ferntree Village before reaching an aqueduct over Longhill Creek. The water crossed the creek in a timber aqueduct, supported by stone piers, but this was bypassed in 1881 during the second phase of augmentation of the System. The timber aqueduct is now gone, however the piers remain.[19]

Figure 6 - Fern Tree Bower in the late 19th century

[16] Crawford (1988), Pp 25-26.
[17] Scripps (1989), Pp 5-6
[18] McConnell et al. (1998) Vol 2, sites RP/H 8 to RP/H 13

[19] Crawford (1988) Pg 31

Figure 7 - Shacks in the Fern Tree area, late 19th century

From the aqueduct, the slope levelled off and the timber troughing continued through an area known as Halls Saddle, which containing some small farms. This was a relatively level area and in some sections along Halls Saddle the ground level was raised to accommodate the troughing and ensure a sufficient fall to keep the water flowing. The wooden troughing eventually entered a rock-cut channel just above Gentle Annie Falls. At Gentle Annie Falls the ground level dropped sharply and the water flowed over the cliff edge and dropped into a stone channel below the falls.

From the base of the falls the water proceeded down slope until it entered pipes at a sandstone screening chamber known as the Pipe-Head Well for the final section of the route leading to the Receiving House. The Receiving House was a modest single storey sandstone building where water from different inlets was mixed together and screened, before entering Reservoir No 1.

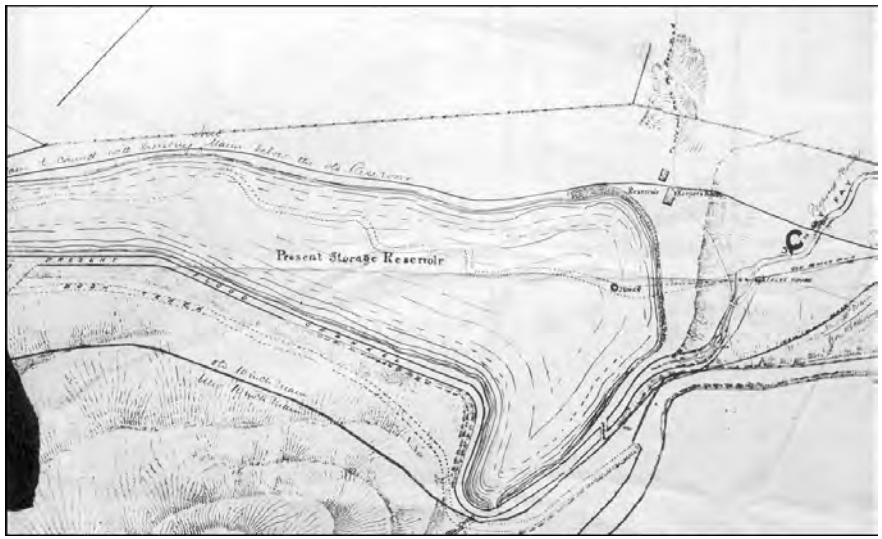

Figure 8– Plan of Reservoir No 1 circa 1875 (Crawford and Ryan 1988: 24)

Reservoir No 1 is an earthen dam with a puddled clay core, with an operational capacity of 213 megalitres (ML).[20] It is the second oldest operating dam in Australia and the third oldest operating reservoir.[21]

[20] http://www.hobartwater.com.au/HobartWater/Your+Water/The+infrastructure/Reservoirs+

[21] The oldest dam and reservoir is Yan Yean Dam in Victoria (built 1857) and Crown Street Reservoir in Sydney is the second oldest reservoir (built 1859).

Water was drawn from the dam via a decorative sandstone valve tower, which was truncated in the 20th century. Water drawn from the dam entered a reticulation system running into Hobart Town and in 1862 a service reservoir was constructed within the town at Hill Street. Much of this system survives in service albeit in a modified form. The intake of the System was extended to Long Creek between 1867 and 1869 to augment supply. This extension was undertaken using cast iron pipes rather than wooden troughing.

Figure 9–The Hill St service reservoir, modified but still in use. (North 2007)

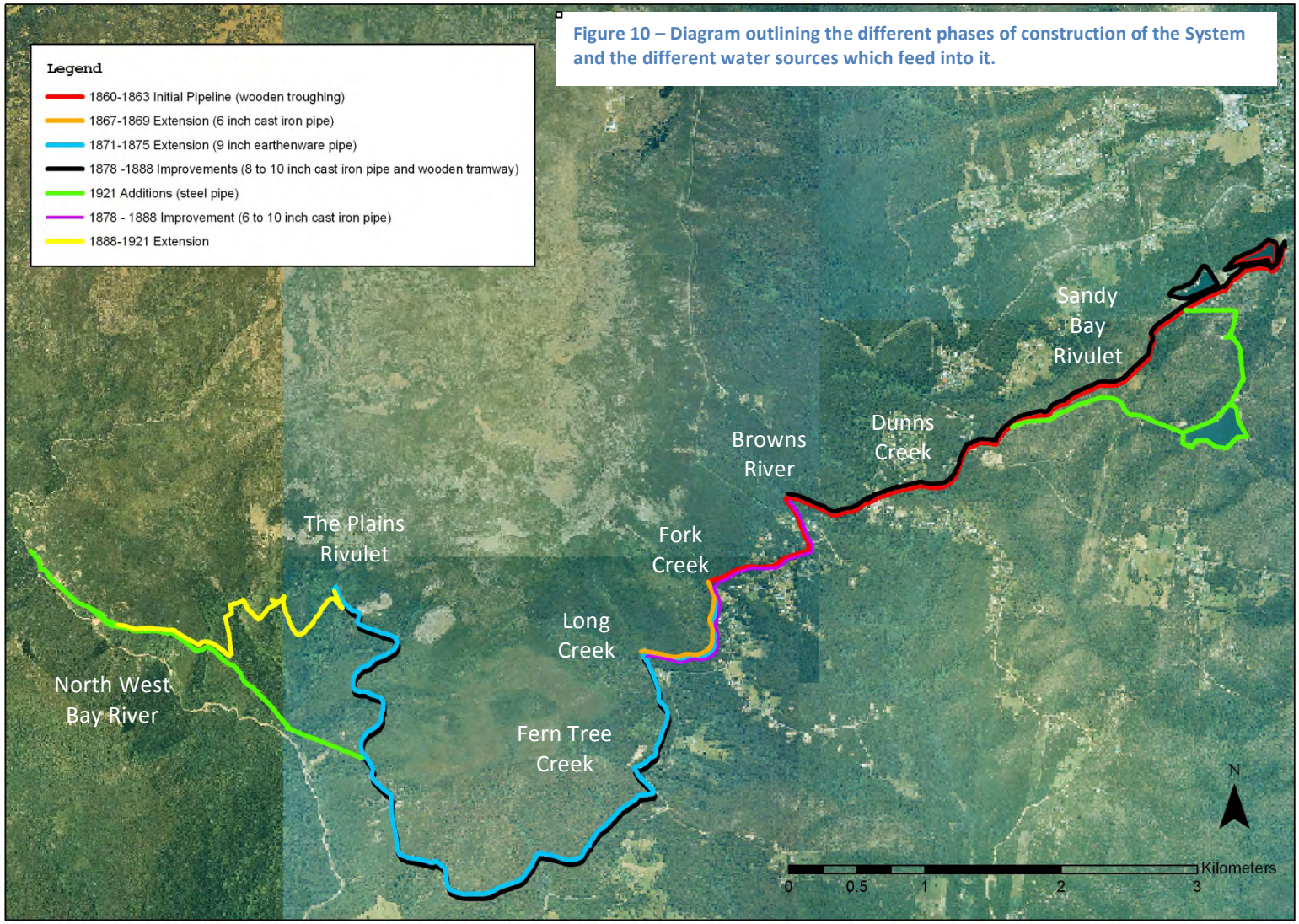

Figure 10 – Diagram outlining the different phases of construction of the System and the different water sources which feed into it.

1.2.2 The Second Phase - Augmentation

By the 1870s, the Mountain Water Supply System required augmentation due both to increased demand and problems with leakage. The initial augmentation of the System was the construction of an intake on the Plains Rivulet, known as St Crispins Well.[22] In 1881, a horse-drawn tramway on wooden rails was built from Watchorns Hill near Neika to St Crispins Well to transport men and materials.[23] Water from the St Crispins intake was initially piped in earthenware pipes to Fork Creek however by the 1880s the pipes had been upgraded to cast iron. Much of this cast iron piping remains in service today. This augmentation supplied additional water to Reservoir No 1. In 1881, the timber troughing from Fork Creek downstream was progressively upgraded to covered sandstone troughing to improve water quality.[24] Two aqueducts, one of which is still in service, were built at Longhill Creek to improve operation of the System. The construction of these new aqueducts bypassed the earlier timber aqueduct over Longhill Creek. Of that original aqueduct, only the sandstone piers remain. During these works substantial diversions were also put in place around some of the rougher sections of the original system.

The main driver for the second phase of waterworks construction was the failure of Reservoir No 1 in several places. Poor construction and geological faults mean that the reservoir was the subject of leakage right from the outset. Numerous slippages occurred in the dam wall during the 1870s and 1880s, exacerbating the leakage problem and threatening the dam. This led the Council to take the drastic step of constructing a second reservoir due to fears the first would fail.

Construction of Reservoir No 2 commenced in 1885 under the direction of CWS James with an operational capacity of 292ML.[25] Built upslope of Reservoir No 1, Reservoir No 2 was also a puddled clay dam but with a considerably greater level of compaction. Work was completed on the second reservoir in 1888 and all of the original supply works continued in service, with water directed from the Receiving House into Reservoir No 2 and then into Reservoir No 1.

The commissioning of Reservoir No 2 provided the opportunity to correct the faults with Reservoir No 1. Between 1891 and 1895, Reservoir No 1 was substantially rebuilt to a similar shape as the original however most of the essential components were replaced, including the outlet pipe, which was the site of one of the major dam failures. This outlet was again replaced in 1975 to increase its capacity. Both Reservoirs continue to service the city with little change from their 1890s configuration; however increased demand saw the System augmented again in the early 20th century.

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[22] The origins of this name are disputed. St Crispin was the patron saint of cobblers and leatherworkers, so has no obvious connection with water. His saint day is October 25 which may have held some significance for the construction of the intake.

[23] Crawford, P. G. and K. A. Ryan (1988). The history of the early water supply of Hobart. Hobart, Institution of Engineers Australia. Pg 49.
Scripps Pp 49-50

[24] Scripps Pg 59

[25] ML = 1 megalitre or 1 million litres. By comparison, an Olympic-sized swimming pool is 2.5ML.

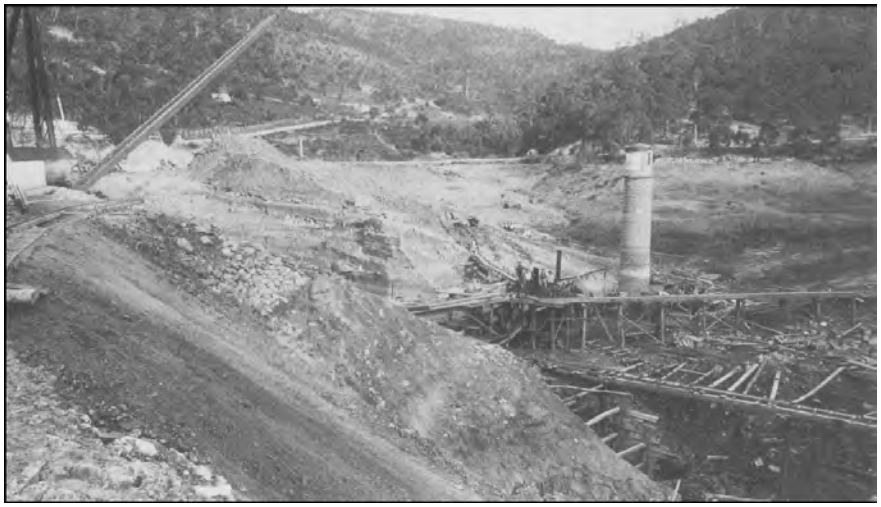

Figure 11– Reservoir No 1 under construction (Crawford and Ryan 1988: 44). Note the valve tower, which gives some impression of the depth of the reservoir.

1.2.3 The Third Phase – the Final Expansion

By 1900, barely a decade after Reservoir No 2 came into service, demand from Hobart had increased to the point where additional supply was being sought further afield. A new diversion was established from North West Bay River to St Crispins Well in 1900, initially as a temporary measure. By 1905, the diversion was established as a permanent augmentation, with four additional small intakes built on mountain streams between St Crispins and North West Bay River.

Figure 12–North West Bay River Weir shortly after construction

Over the next 12 years, a new pipeline, known as the Siphon, was constructed between the weir at North West Bay River and the existing pipelines somewhat down slope of St Crispins Well. Due to the difficulty of bringing in materials, the horse-drawn tramway to St Crispins Well was improved in the early 20th century, using metal rails.[26] While the tram infrastructure was removed by the 1950s, small pieces of rail have been reused at various points along the track for different purposes.

[26] Scripps (1989) Pp 49-50

Figure 13– An undated photo of local dignitaries being transported up the mountain on the tramway. (Davies 1985: 40).

The diversion from North West Bay River created sufficient additional capacity to warrant the construction of a new reservoir, known as Ridgeway Reservoir, built between 1914 and 1917 near Neika. The Ridgeway area had been used for tenant farming from the mid-19th century, with 540 acres owned and let out by John Regan, a Hobart businessman, and 1000 acres owned by a Mrs Maynard. The Pipeline Track ran along Regan's land in the area of Halls Saddle and McDermott's Farm.[27] Regan's land was acquired by Hobart City Council in 1906 and this land was ultimately used as the site of Ridgeway Reservoir. A tramway for materials was built from a quarry at Chimney Pot Hill and a construction village grew up around the dam site.

Ridgeway Reservoir was constructed as a concrete arch dam with an operational capacity of 943ML. Arch dam technology had become popular in Australian dam building in the late 19th and early 20th century,[28] as it relied on the weight of the water within the dam to help hold the structure in place and was seen as more inherently stable. A concrete pipeline brought water into Ridgeway Reservoir as intermediate storage and then on to the original Receiving House and a new No 2 Receiving House at Waterworks Reserve, mostly bypassing Gentle Annie Falls. Some limited flow is believed to have continued over the Falls into the middle of the 20th century. The No 3 Receiving House was added at Waterworks Reserve c1921-23 to take an additional pipeline from Ridgeway Reservoir when additional water was sourced from Lake Fenton.

There is anecdotal evidence of some residential use of the area following the construction of the reservoir, between the 1920s and 1940s.[29] Caretakers lived on the dam site until their residences were destroyed by bushfires in 1967. While the System has been the subject of some minor

[27] McConnell, A, S Stanton & L Scripps (1998) Ridgeway Park, Hobart – Cultural Heritage Survey and Assessment (2 vols). For Hobart City Council.

[28] Chanson, Hubert and James, D. Patrick (2002) Historical Development of Arch Dams : from Cut-Stone Arches to Modern Concrete Designs. *Australian Civil/Structural Engineering Transactions*, *CE43* : 39-56

[29] Ibid Pg 10.

modification since that time, such as the diversion from the Pipe-Head Well and Receiving House, the System as it is in service today is largely unchanged from its circa 1918 configuration. The supply of water to customers remains unmetered, though the original engineer of the System, J N Gale, had called for metering to deter waste as early as 1862.[30] Water is also essentially untreated, save for occasional chlorine dosing, which is a testament to the continued high quality of the water which comes off of Mount Wellington.

1.2.4 Present Use and Management

Presently, the Mountain Water Supply System supplies approximately 15% of Hobart's total water needs. The water is of such a high quality that filtration is not required although disinfection with chlorine and fluoride dosing does occur via a new building at Fern Tree. The management of the System is split between Hobart Water (now Southern Water) and Hobart City Council. Southern Water manages the bulk supply system from the weir at North West Bay River to the reservoirs at Waterworks Reserve. The Reserve surrounds are managed by Hobart City Council, which is also responsible for managing the reticulated supply to the residents of Hobart.

Heritage management of the System is overseen by the Mountain Water Supply Heritage Working Group, currently an informal cross-agency committee comprised of representatives from Hobart City Council, the Wellington Park Management Trust, Hobart Water (now Southern Water), Heritage Tasmania and an independent heritage practitioner. The management of the heritage values of the System is dealt with more fully in later chapters of this document.

1.3 Recreational Uses of the System

Due to its picturesque scenery and proximity to urban Hobart, the System and its components became popular recreational destinations in the late 19th century. The natural beauty of the Mount Wellington area had been remarked upon by Charles Darwin in 1836. Flanagan notes a changing in the attitudes of Hobart residents towards the mountain from one of utilitarian exploitation to romantic admiration, from the 1820s onwards.[31] Areas such as Fern Tree Bower were particularly noted as scenic spots and small huts grew up in various locations along the Pipeline Track, particularly around Fern Tree and Ridgeway. These huts have now gone and only archaeological traces remain.

The route of the Pipeline and Mount Wellington have been popular recreational destinations from the early 20th century to the present, with the Pipeline route being recognised as a walking track generally known as the 'Pipeline Track'. The Waterworks Reserve and Ridgeway Park have also been popular recreation destinations although now the recreational use of Ridgeway Park away from the roads and main tracks is limited. But as early as 1901 there was recognition of some the conflicts between catchment and recreation.[32]

[30] Ibid. Pg 26.

[31] Flanagan, R (1996) "On the Mountain" in Dombrovskis et al. (1996) *On the Mountain*. Hobart: West Wind Press. Pp 10-11.

[32] Ibid Pp 15-16.

Virtually the entirety of the System has been subject to a degree of recreational use in the past, though certain areas are now difficult to access, such as North West Bay River Weir, which is now inaccessible due to landslip. In addition, some areas of operational infrastructure are closed from public access. Areas such as Wellington Park and the Waterworks Reserve are large and important destinations for passive recreation on the fringe of Hobart. These areas are provided with picnic shelters and open areas for recreational use, with some heritage interpretation present in Waterworks Reserve. No recreational contact is allowed with the water in either location, however.

The Pipeline Track, which runs through the System from Waterworks Reserve to North West Bay River is a popular track for walkers, particularly between Fern Tree and Waterworks Reserve. Cyclists are able to use the section of the Pipeline Track from Fern Tree to North West Bay River Weir, up to the area now closed due to landslip. From Waterworks Reserve it is a relatively short walk into the centre of Hobart. Sections of the Track are rough or steep in places, which has created management difficulties in some locations. From Neika, the former tramway alignment up to North West Bay River is another popular route, which is also used by Southern Water for pipeline maintenance access. The final section of the Pipeline Track up to North West Bay River Weir was the subject of a severe landslip in the 1990s, which destroyed a section of the Pipeline. This area is still considered sensitive and is closed to recreational access.

1.4 Comparison to other Australian Cities

As water supply systems tend to rely on gravity as much as possible to transport the water, to reduce the need for expensive infrastructure and pumping equipment, the development of each city's water supply is strongly influenced by its topography and its catchments. It will also be influenced by the city's size and the speed of its development and expansion. Because of this, the systems of different cities are not directly comparable, however an analysis of other water supply systems is useful in understanding the history of the development of water supply technology in Australia as well as understanding the heritage significance of the systems. Below are brief examinations of several other urban water supply systems around Australia.

1.4.1 Sydney

The location of Sydney's first settlement, at Sydney Cove, was dictated by the presence of a source of fresh water. While the First Fleet initially sailed into Botany Bay, the lack of a permanent water source had the fleet looking for another spot for settlement. The stream at Sydney Cove seemed to provide what the settlers were seeking, however the stream proved more intermittent than anticipated. The stream also served an important social function, acting as the dividing line between the government and military settlement to the east and the convict settlement to the west, in the area which quickly came to be known as 'The Rocks'.

The intermittent nature of the steam led to tanks or cisterns being cut into the rock on either side of the stream to serve as additional water storage. After this, the stream was referred to as the 'Tank Stream', a name with much significance in early Australian history. Water was also collected in small cisterns and wells dotted throughout the settlement but the Tank Stream served as the main water source.

As with Hobart, the quality of Sydney's water supply began to suffer due to the encroachment of settlement around it and its pollution by people

and livestock. This was such a problem that Governor King established what was essentially the first environmental regulation in Australia in 1803, requiring the Tank Stream to be fenced off to control livestock and forbidding buildings to be built within 10 metres of its banks.[33] These efforts largely failed however, particularly during the period of the rebellion against Governor Bligh and the rule of the Rum Corps. By the 1820s, the Tank Stream was little more than an open sewer and a new water source was required.

Colonial Engineer John Busby proposed an ambitious plan to bring water from the Lachlan Swamps in what is now the suburb of Paddington, into Sydney's Hyde Park through a series of underground tunnels. This scheme, later known as Busby's Bore, involved the cutting of nearly 3 kilometres of underground tunnels through the sandstone to direct the water. Vertical shafts were put down along the route and the tunnelling crews struck out with horizontal tunnels in several locations at once. Errors in surveying, allegedly because John Busby was too afraid of the convicts to inspect the tunnel workings himself, led to a number of tunnels heading off in the wrong direction. The work was eventually completed in 1837 when the outlet pipe began operating in Hyde Park. Water was collected in carts and trucked throughout the growing city.

By the 1850s, Sydney had grown to the point where Busby's Bore could no longer supply sufficient water to meet the city's needs. The City Council, which was established in 1842, commenced investigation into a number of schemes to augment the city's water supply. A major underground reservoir was established in Surry Hills in 1859, storing water pumped from the Botany Swamps. This reservoir is still in service today and is the oldest operating piece of the Sydney system.[34] A temporary augmentation was established in the 1870s, known as the Hudson Brothers Temporary Scheme after the constructing firm, which brought water to Sydney from the Nepean River via a series of steel pipes.

After many years of investigation and debate, the City Council commissioned the Upper Nepean Scheme, which from 1888 brought water from the Nepean River to a large reservoir at Prospect in western Sydney. Water was transported via a series of canals before entering pipes at the Pipehead at Guildford. Much of this system remains in service today albeit in a modified form. In the 20th century the Upper Nepean Scheme was augmented via a series of large dams, commencing with Cordeaux Dam in 1904. The largest dam, Warragamba, was completed in 1965 and Tallowa Dam was the last major dam constructed in 1976. Continued stress on Sydney's water supply led to a decision in 2007 to construct a desalination plant, the first on the east coast of Australia.

Much of the early water supply system in listed on the NSW State Heritage Register including the surviving section of the Tank Stream, Busby's Bore, the Botany Wetlands and many elements of the Upper Nepean Scheme, including Prospect Reservoir and the Upper and Lower Canals.

[33] Henry, F. (1939). The Water Supply and Sewerage of Sydney. Sydney, Metropolitan Water Sewerage and Drainage Board. Pp 42-3.

[34] Parts of the Tank Stream, while extant, are post-1860s construction and operate as a part of the stormwater, not potable water, system.

1.4.2 Brisbane

Brisbane was founded in 1824, as a small settlement in what was, at that point, the northern portion of the colony of New South Wales. Located on the Brisbane River, the colony relied on a small creek for its water supply. Water was dammed at a site in Tank Street in 1829[35], known as the Horseponds, near the present Brisbane Town Hall, and transported via a system of hollow logs.[36] Migration was encouraged to Brisbane in the 1850s and Queensland was established as a separate colony in 1859. By this time, it was clear the existing arrangements for the provision of drinking water were inadequate for the growing population of the town, at that time approximately 6000 people.

By 1862, the newly established local government had begun to call for investigations for the provision of a new gravity-fed water supply, with the aim of supplying a future population of 125,000.[37] The initial work was undertaken by Thomas Oldham, a British engineer who had migrated to the colonies and who was one of the unsuccessful tenderers for the construction of Melbourne's water supply at Yan Yean. While Oldham advocated damming the Brisbane River, the council ultimately settled on the establishment of a dam at Enoggera Creek, 10 kilometres out of the city centre. Legislation was passed to support the venture in 1863 and the Brisbane Waterworks Commission was established in 1864. The final designs for the Brisbane Waterworks were prepared by Joseph Brady, an acquaintance of Oldham's, who had designed waterworks for Bendigo and Castlemaine in Victoria.

Construction of the Enoggera Dam, under Brady's supervision, commenced in late 1864. The dam was a puddled clay structure, with granite pitching to protect the surface. Owing to the known problems with placing the outlet pipe beneath the base of a puddled clay dam (the same problem which caused a failure to Reservoir No 1 in Hobart), Brady designed the dam with a series of three outlet pipes at the northern end of the structure, which were better protected from future settlement of the dam wall and provided additional capacity for future demands.[38] The dam itself was completed by March 1866.

Water was piped into Brisbane itself through an 11 kilometre series of pipes and tunnels. Cast-iron pipes, imported from England, were used but were reduced from 300mm to 200mm to save cost, which led to capacity problems in the longer term. The pipes were supported in masonry walls at the four creek crossings between the dam and the city. Three tunnels were also constructed and the pipeline was proposed to be connected to a service reservoir at Wickham Terrace. Meanwhile, political scandal had claimed the Brisbane Waterworks Commission, which was replaced with the Brisbane Board of Waterworks, which delayed the construction of the Wickham Terrace Reservoir in favour of expanding the reticulation system.[39] The system began providing water to Brisbane in September 1866.

[35] Whitmore, R. L. (1997). Queensland's Early Waterworks. Brisbane, Department of Natural Resources. Pg 5.
[36] http://www.ourindooroopilly.com/brisbane-history.html
[37] Whitmore, R. L. (1997). Queensland's Early Waterworks. Brisbane, Department of Natural Resources. Pp5-6
[38] Ibid. Pp 25-27.
[39] Ibid. Pp 29-31.

By 1870 there were severe capacity problems, brought on by the use of a smaller diameter pipeline from the Enoggera Dam and the fact that the Wickham Terrace Reservoir had not been constructed. A smaller reservoir than initially planned was constructed in 1871. The pipeline was upgraded to a 300mm line in 1875, which remained in service until 1910, but continued capacity problems saw a second reservoir constructed at Wickham Terrace in 1881. Filtration of the water was introduced in 1912. Direct feed from the Enoggera Dam ceased in 1962, and the dam wall was substantially raised in 1977. In modified form the dam continues to serve as a part of the water supply for contemporary Brisbane. None of the surviving elements of the early water supply appear to be listed by the Queensland Heritage Council.

1.4.3 Melbourne

The early settlement of Melbourne was founded on the banks of the Yarra River in 1835 and quickly became the administrative centre for the surrounding area. The early settlement initially drew its water from the Yarra, just above the point where the tidal salt water washed up the channel near Queen's Bridge.[40] This was a problematic arrangement however and there were early proposals to place a dam on the Yarra to keep the upper reaches salt-free. An initial attempt at this was washed away by flooding in 1838 but a subsequent attempt in the 1840s was successful. However, by that time the river had become polluted due to the growth of the city and encroachment of the settlement.

Melbourne Town Council was formed in 1842 with responsibilities which included water supply, but had been given no legal powers to raise revenue through taxation, rates or loans to actually fund the construction of infrastructure.[41] The private Melbourne Water Company pumped water from the Yarra and charcoal filtered it before onselling it to water carters, providing an interim supply. The city grew rapidly during the Gold Rush in the 1850s and in 1851 Victoria was proclaimed as a separate colony from New South Wales. The massive growth in Melbourne's population demanded that something be done to secure a reliable water supply.

The Commission of Sewers and Water Supply was formed in the early 1850s to examine this issue. This was a colonial government body, and reflected the ongoing political battles between the Melbourne Council and Victorian Parliament as to which body would have responsibility for and control of major infrastructure. In 1851, the Commission hired James Blackburn as an engineer, to investigate the options. Previously Blackburn had been one of the proprietors of the Melbourne Water Company.[42] While his initial investigations focused on the upper reaches of the Yarra, it quickly became clear that the river had insufficient height to support a gravity-fed system. Blackburn was keen to avoid the use of expensive and complicated pumping machinery in favour of gravitation to provide supply.[43] Blackburn finally settled on the Plenty River, some 30 kilometres

[40] Seeger, R. C. (1942). "The history of Melbourne's water supply part 1." Victorian Historical Magazine 19 (3): 107-119.

[41] Ibid.

[42] Ibid. Pg 112.

[43] Dingle, T. and H. Doyle (2003). Yan Yean: A history of Melbourne's early water supply. Melbourne, Public Record Office Victoria. Pg 15.

away from the city, as the source and the swamps at Yan Yean as the location for the system's major reservoir.

In 1853, a new Commission was established to actually construct the system. Matthew Jackson won the job as engineer in charge and set out to implement Blackburn's scheme with some amendments, including increasing the scale of the system to accommodate a future population of 200,000, rather than the 70,000 Blackburn had catered for. However, by this stage the water crisis had become so severe that expensive temporary measures had to be established, including the construction of an iron reservoir supplied by steam pumps on Eastern Hill.[44]

As with most Australian engineering projects at this time, the equipment for the project, including pipes and machinery, all had to be imported from England, which increased the construction time, particularly as many shipping companies preferred to transport paying customers to the goldfields.[45] The first sod was turned on the site in December 1853 and a construction township was set up at Yan Yean in 1854, due to the remoteness of the site from the town. The Commission had difficulty attracting labourers to the project due to the lure of the gold fields, so was forced to pay quite high wages to attract and keep staff. This ultimately led to the cost of the project quadrupling during the course of construction.[46]

The construction of the Yan Yean Reservoir was typical of construction for the period, with a puddled clay core dam, a stone outlet tower and cast iron outlet pipes beneath the dam wall. The outlet tower was designed with three 33" pipes at different heights, allowing water to be drawn from different levels of the dam. The outlet pipes proved problematic here, as they had in so many other puddled clay dams, as they had cracked before the reservoir came into service and had to be relined. Despite this initial problem, the pipes remained in service until the 1960s.

From the Yan Yean Reservoir, the water was fed into a 30" pipeline to Morang. It crossed the lower reaches of the Plenty River on a stone bridge and from that point was directed into 27" pipes. It continued on crossing Merri Creek on a series of stone piers before entering the city at Preston for reticulation. From Preston, reticulation was in 24" pipes to Fitzroy.[47] A wooden tramway was constructed along the length of the pipeline to facilitate the pipelaying.[48]

The system finally came into operation in late 1857, with approximately 32 miles of reticulation throughout the city streets.[49] By the 1860s, investigation was already underway into the augmentation of the system and a service reservoir was built at Preston in 1864 and a second main laid in 1868. By 1874, mains had extended from Preston to Coburg and Brunswick. In 1875 the original 30" pipeline from the Reservoir to Morang

[44] Ibid. Pg 23. This reservoir was relocated to the Werribee Sewerage Farm in 1892. The tank remains in existence and is listed on the Victorian Heritage Register (Item H1416).

[45] Ibid. Pg 28.

[46] Seeger, R. C. (1942). "The history of Melbourne's water supply part 1." Victorian Historical Magazine 19 (3): 107-119. Pg 116.

[47] Seeger, R. C. (1947). "The history of Melbourne's Water supply Part 2." Victorian Historical Magazine 22 (1): 23-47. Pg 25.

[48] Ibid. Pg 27.

[49] Ibid.

was replaced with an open channel lined with bluestone and brick. The old pipes were retained and re-laid adjacent to the main to Preston.[50]

The system suffered a major failure in 1878 when the aqueduct across the Plenty River was washed out in flooding, requiring a temporary timber flume across the river. From 1879, construction started on a new reservoir at Toorourrong, completed in 1886 again as a puddled clay core dam, with new weirs added on the upper reaches of the Plenty, to bolster supply. Two circular bluestone distribution reservoirs were built in Essendon in 1881-2 and a further distribution reservoir was built in 1883 at Caulfield and in 1886 at Kew. A new channel was added from Wallaby Creek to feed into Yan Yean in 1883 and from 1886, a major series of works commenced to bring water from the Watts River, 41 miles away, to the Preston Reservoir. This scheme, which involved the construction of large sections of aqueduct, several major tunnels and the use of inverted siphons, was named the Maroondah system and opened in 1891.

The system was not substantially expanded after the 1890s and while some of it is still in service, Yan Yean itself supplies only 3% of Melbourne's current water needs. None of the early components of the system appear to be listed as heritage items in Victoria, except for the relocated 1854 tank from the temporary supply scheme on Eastern Hill.

[50] Dingle, T. and H. Doyle (2003). Yan Yean: A history of Melbourne's early water supply. Melbourne, Public Record Office Victoria. Pg 70

1.5 Comparison of the Mountain Water Supply System to other systems in major Australian cities

While the water supply system of each of the cities discussed above is in itself unique, due to the strong influence of local topography on system design, each system has shared elements and, in their own way, each had a fraught early history. Water supply was as controversial and politically sensitive an issue in the 19th century as it is today.

Historically, all of the early water supply systems described above suffered from the problems of pollution and encroaching population affecting the local water supply, forcing the politicians and engineers to seek purer sources of water, farther away. But the technical challenges associated with each system were primarily due to the local topography and are not directly comparable. Elements of the Hobart system, particularly the reservoirs, share technological similarities with the Melbourne and Brisbane systems, through the use of the puddled clay dam, with its consequent problems. Sydney did add a puddled clay dam to its system in 1888, in the form of Prospect Reservoir. Prospect Reservoir was built by a family of Victorian dam builders, the Pincotts, and the massive stone roller which was used to compact the dam wall, remains on the dam site.

The Hobart system is unique amongst the examples discussed for its relative intactness, something largely born of the fact that suburban development has not made a significant encroachment on the system or its key elements. Whereas other systems have had sections of the early system swallowed up by urban growth, the process of development of the Hobart system has largely been linear additions, which further extended the system into more and more rugged country. This has given

the Hobart system an intactness that is lacking in the other examples of urban water supply systems discussed here. The fact that the water from the system still does not require filtration, and still supplies a significant portion of the city's water needs, is again largely due to the limited encroachment on the system by the city.

The Hobart Mountain Water Supply System represents perhaps the most intact of the early urban water supply systems in Australia, with each phase of its construction and expansion clearly visible and understandable. These factors, coupled with the continued function of the System, strongly contribute to the heritage significance of the place.

Chapter 2 – Function and Fabric

2.1 The Study Area

The Mountain Water Supply System is located on the southern flank of Mount Wellington, on the outskirts of Hobart City. In its present form it is comprised of fabric dating from the 1860s through to the 1910s, with remnants of the earlier water supply schemes located nearby. The study area for this project is the System in its current operational configuration plus historic features, which stretches from the weir at North West Bay River, down via Neika, Fern Tree and Ridgeway into the Waterworks Reserve.

This complex is termed the *Mountain Water Supply System* ('the System'). The track formation associated with the Pipeline route between North West Bay River weir and the Waterworks Reserve is known as the *Pipeline Track*.

The operational infrastructure is managed by Southern Water between North West Bay River and Fern Tree. Below Fern Tree, the operational parts of the System are managed by Southern Water but Ridgeway Park and the Waterworks Reserve are managed by Hobart City Council. From Fern Tree upwards, the System is located within Wellington Park, managed by the Wellington Park Management Trust.

2.2 Operation of the System

The System in its current form is largely unchanged from its configuration in 1917, when the last major expansion came into operation at Ridgeway. Water is collected from a variety of intake points, the furthest flung being the weir at North West Bay River. Water is also collected from a number of smaller intakes such as St Crispins Well located along the mountainside. The water is gravity fed into pipes, which carry it down the mountain to Neika. Much of this pipe work consists of the cast iron pipes installed in the 1880s. To minimise leakage, the System is run at a fairly low pressure.[51] Southern Water has a regular water quality monitoring program at each of these intakes and the intakes are signposted to prohibit public access.

From Neika, the water is transferred into pipes as it is gravity fed to Fern Tree. Other intakes feed into the System above Fern Tree at various locations. At Fern Tree, a small chlorine and fluoride dosing facility has been installed which is used to treat the System's water. At Fern Tree, the water enters new pipes, which run parallel to the historic sandstone troughing to Gentle Annie Falls, some four kilometres away. From Gentle Annie Falls the water continues to flow directly downhill in pipes via the Pipehead Well into the Receiving House, from where it is piped into the Upper and Lower Reservoirs. The Receiving House and Upper and Lower Reservoirs are situated within the Waterworks Reserve A diversion was later installed at Halls Saddle, and the water now bypasses Gentle Annie Falls. The bypass is via the Ridgeway Reservoir, which is a higher level storage, and then water is conducted into the Upper Reservoir.

The Upper and Lower Reservoirs are both in service and water is drawn from them, with rechlorination but no filtration, into the reticulation system operated by Hobart City Council. Of the two early storage reservoirs within the urban confines of Hobart, only the Hill Street Reservoir is still in service.

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[51] Pers comm Andy Crawford, Hobart Water (now Southern Water), April 2007.

2.3 Historic fabric and sites

A number of key historic features exist along the route of the Mountain Water Supply System. These date from a range of periods but all serve to tell the story of the history and development of the System. These key features are described in rough chronological order. The System is described from Waterworks Reserve outwards, as historically the System grew through the addition of new capacity onto its upstream end.

This report breaks the System into five logical sections, for ease of description, and then numbers sites within each section.[52] Sections are given letters and sites within sections are numbered starting from 1 within each section. Individual sites will be labelled, for example, A/5, as the fifth site within Section A. Sites are generally numbered from east to west, again following the historic progression of the development of the System, from Hobart out to North West Bay River.

The major sections within the System are:

- Waterworks Reserve (Section A)
- Pipeline route from Waterworks Reserve to Fern Tree (Section B)
- Pipeline route from Fern Tree to Neika (Section C)
- Upper pipeline from Neika to North West Bay River Weir (Section D)
- Ridgeway Section (Section E)

[52] This report adopts a new numbering system from previous reports, such as Murray and Neibeler, which had used the system set up by Davis in 1985. See Davis, R. (1985). "The Mount Wellington Waterworks." The Tasmanian Tramp 1984-85 (25).

The report focuses on the water-related heritage items along the route of the study area, as this is the primary focus of the Conservation Management Plan. Other sites which have been identified in previous studies but which are not specifically related to the water supply use, such as McDermott's Farm, are mentioned but not dwelt upon. The report also does not examine the natural or indigenous heritage values of the place, but concentrates on the identification and management of the historic and modern water supply infrastructure.

2.4 Management of the System

Management of the land, historic places and active infrastructure along the route of the System is complex and can fall to the Hobart City Council, Southern Water or the Wellington Park Management Trust, depending on the issue and location. The general state of the management arrangements for the System are as follows:

- Waterworks Reserve (Section A): Hobart City Council (inactive infrastructure, grounds and recreation facilities), Southern Water (active infrastructure);
- From the Waterworks Reserve to Fern Tree (Section B – primarily within Ridgeway Park): Hobart City Council (land, pipeline & associated track & inactive infrastructure), Southern Water (active infrastructure);
- From Fern Tree to Neika (Section C – primarily within Wellington Park): Wellington Park Management Trust (strategic management), Hobart City Council (land, pipeline & associated track & inactive infrastructure), Southern Water (active infrastructure);

- From Neika to North West Bay River (Section D – within Wellington Park[53]): Wellington Park Management Trust (strategic management), Hobart City Council (land, pipeline & associated track & inactive infrastructure), Southern Water (active infrastructure);
- Ridgeway Section (Section E – primarily within Ridgeway Park): Hobart City Council (land, pipeline & associated track & inactive infrastructure), Southern Water (active infrastructure).

[53] This section is within the Kingborough Municipality.

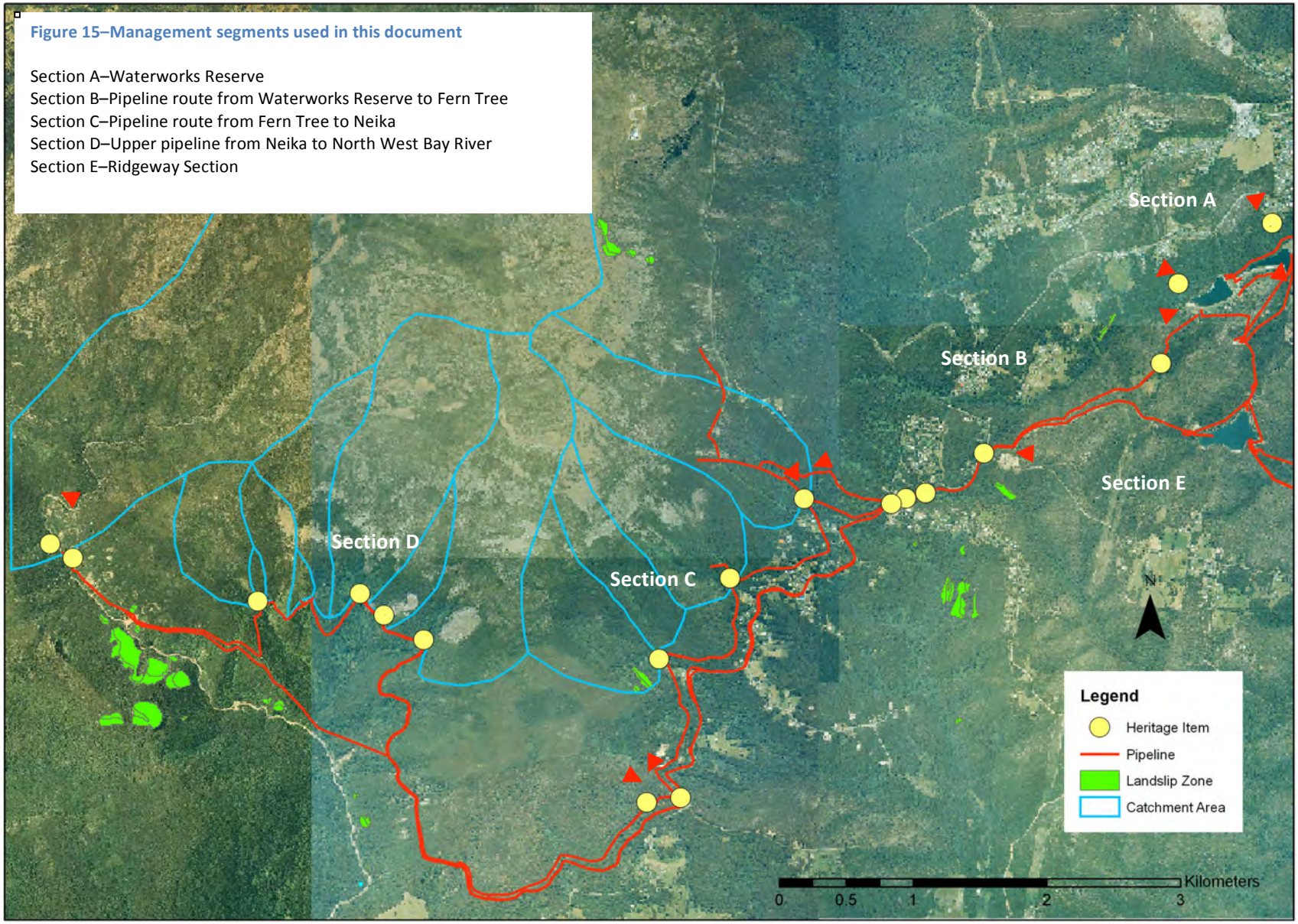

Figure 15–Management segments used in this document

Section A–Waterworks Reserve
Section B–Pipeline route from Waterworks Reserve to Fern Tree
Section C–Pipeline route from Fern Tree to Neika
Section D–Upper pipeline from Neika to North West Bay River
Section E–Ridgeway Section

2.5 Section A–Waterworks Reserve

Waterworks Reserve contains material from all phases of development of the Mountain Water Supply System. The two major items are Reservoirs No 1 and No 2, dating from 1861 and 1888 respectively. These reservoirs, while modified, continue to serve the population of Hobart and are largely recognisable as 19th century engineering works due to the prominent use of sandstone. The Waterworks Reserve also serves as a major recreational site within the Hobart vicinity, with numerous pavilions set up to cater to picnicking and other passive recreational uses. The Reserve also contains the Receiving House, which while no longer in service, acts as a key point for the historical interpretation of the water supply system and Regans Gully Bridge, which fed water into Reservoir No 1.

The major historic features of Waterworks Reserve are as follows:

A/1. Reservoir No 1 (Lower Reservoir)
A/2. Reservoir No 1 Valve House
A/3. Reservoir No 1 Date Stone
A/4. Reservoir Keeper's Cottage Site (potential archaeological site)
A/5. Reservoir No 2 (Upper Reservoir)
A/6. Reservoir No 2 Valve House
A/7. Receiving House
A/8. Regans Gully Bridge
A/9. Concrete pipe stands
A/10. Pump house
A/11. Sandstone walls (not shown on map)

2.5.1 Feature A/1–Reservoir No 1 (Lower Reservoir)

Figure 16– View of Reservoir No 1, looking down slope from Reservoir No 2 (North 2007)

Reservoir No 1 is highly significant as the first major reservoir built in Tasmania in 1861 to service the City of Hobart. The reservoir is an earthen dam with a puddled clay core and a cast iron outlet leading to the town reticulation system. A drainage channel runs along the southern side of the reservoir, with the side of the reservoir faced in cut sandstone and the other side of the channel in natural stone. This channel was widened in recent years, leading to some loss of the original rough quarried stone

face of the channel. While the reservoir was reconstructed in the 1890s due to the partial failure of the dam wall, it remains largely unmodified since that time and is recognisable as a 19th century engineering work. It is one of the earliest reservoirs in Australia, preceded by Yan Yean Reservoir in Victoria (1857) and Crown Street Reservoir in New South Wales (1859), both of which are still in service.

2.5.2 Feature A/2–Reservoir No 1 Valve House

Figure 17– Reservoir No 1 Valve House.

The Valve House dates from 1861 and controls the release of water from the Lower Reservoir via the outlet pipes running beneath the dam wall. It consists of circular sandstone tower located within the deepest portion of the Reservoir and is generally all-but-concealed by the water. A modern steel bridge has been added to the structure, allowing a person to walk from the top of the dam wall out to the Valve House. The top of the Valve House has been removed, possibly to accommodate the installation of the bridge. The inset image shows the 19th century configuration of the Valve House. While the exact date of removal is unknown, it had occurred by 1961.[54] The original plans of the Valve House still exist and the top could be reconstructed. The condition of the Valve House below the level of the waterline is unknown.

2.5.3 Feature A/3–Reservoir No 1 date stone

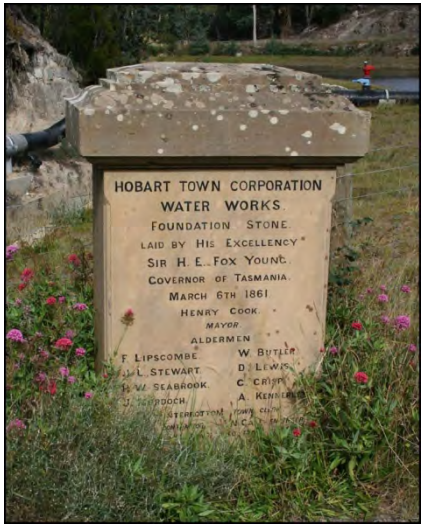

Figure 18–Date stone associated with the opening of Reservoir No 1 in 1861. (North 2007)

[54] Crawford and Ryan 1988: 47

The sandstone date stone for Reservoir No 1 is located at the bridge over the stormwater channel which runs along the southern side of the Reservoir and is generally in good condition.

The bridge over the channel has been replaced with a modern concrete deck and the stormwater channel has been widened, which required removal of some remnant sandstone.

2.5.4 Feature A/4–Reservoir Keeper's Cottage (potential archaeological site)

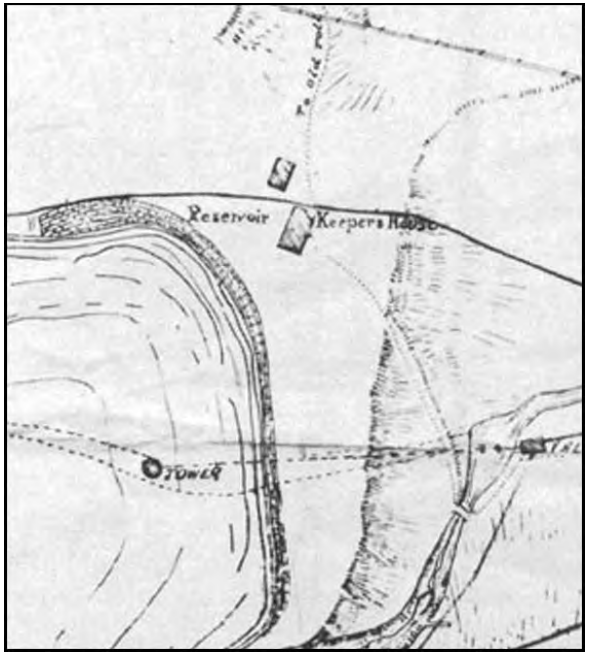

Figure 19–Detail from the circa 1875 plan of Reservoir 1, showing the location of the Keeper's Cottage just north of the valve tower.

Early waterworks required staff to be on site around the clock to open and close manual systems of valves, as required to control the release of water. The date of demolition of the Reservoir Keeper's House is uncertain and while this site is likely to have been at least partially disturbed by later works to the site, it represents evidence of a now-vanished social element of the site's history which should be interpreted. The site may have limited archaeological potential to reveal undocumented aspects of the life of 19th century reservoir staff.

2.5.5 Feature A/5–Reservoir No 2

Figure 20– Reservoir No 2, with the Hard Water Channel visible alongside (North 2007)

Reservoir No 2 dates from the third phase of expansion of the System and was built in 1888. It reflects the need to deal with the continued growth of Hobart in the late 19th century, as well as the need to address the limitations of the earlier reservoir. A substantial sandstone-lined drainage channel runs along the southern side of the reservoir. The main structure is relatively unmodified and clearly identifiable as a 19th century

structure. The major obvious changes to the structure include the installation of safety barriers such as chain wire fencing and anticlimb measures where pipes cross the stormwater channel.

Running alongside both Reservoirs 1 and 2 is the Hard Water Channel, which serves to divert stormwater and runoff around, rather than into, the reservoirs. This Channel is a mix of stone blockwork and rock-cut sections. A portion of the Channel, near the Lower Reservoir, has been widened in recent years to increase capacity.

Figure 21 - The top end of the Hard Water Channel, running alongside the Upper Reservoir

2.5.6 Feature A/6–Reservoir No 2 Valve House

Figure 22– The Valve House for Reservoir No 2, containing the commemorative plaque for its opening in 1888. (North 2007)

The Valve House for Reservoir No 2 is a decorative sandstone structure with commemorative information in an inset plaque, built adjacent to the dam wall at the eastern end of the reservoir. Like the Lower Valve House, it is used to control the flow of water from Reservoir No 2, into Reservoir No 1 below. It is in good condition and serves as a logical interpretive node for the Waterworks Reserve, due to its central location between Reservoirs 1 and 2.

2.5.7 Feature A/7–Receiving House

Figure 23–The Receiving House (North 2007)

The Receiving House dates from 1861 and was the location where water from the pipelines was originally screened for debris and mixed from different outlets before entering Reservoir No 1. It became redundant in 1908.[55] The structure has been heavily modified on a number of occasions, including for use as a picnic shelter with internal barbeque in the mid- to late-20th century. A concrete slab floor was installed at that time, concealing the screening chambers originally located in the base of the building. In the 1990s interpretive material regarding the Mountain Water Supply System was installed in the building and some limited conservation works were undertaken. The present roof and guttering system is unsympathetic to the building and the sandstone blockwork and pointing are in poor condition in many spots.

The Receiving House is a main surviving element in the Waterworks Reserve from the first water supply system and, despite subsequent modification, has the potential to be conserved and understood in its functional context to the reservoirs. The building requires considerable conservation works and should be used as an interpretive focal point for presenting the history of the System.

2.5.8 Feature A/8–Regans Gully Bridge

Regans Gully Bridge was constructed initially in the 1860s to carry water from the Receiving House to Reservoir No 1. It now serves a dual purpose as both a footbridge and aqueduct for pipes. The bridge was subject to a structural assessment in the early 1990s, when several areas of failure were identified. Small portions of the aqueduct appear to have been rebuilt and the structure appears generally sound. Large trees growing near the abutment at one end still present a potential risk to the structure and should be investigated to determine if they are impacting upon the fabric of the Bridge.

[55] Scripps, L. (1989). The Pipeline Track, Mt Wellington. Hobart, Hobart City Council. Pp 28-9

Figure 24–Regans Gully Bridge (North 2007)

2.5.9 Feature A/9–Concrete pipe stands

Figure 25–Concrete pipe stands

The concrete pipe stands date from the early 20th century and represent a short-lived augmentation to the System. The stands remain as remnant structures within the Reserve and have some limited interpretive potential. They appear to be generally in good condition.

2.5.10 Feature A/10–Pump house

The Pump House is a late addition to the Reserve, having been constructed in the 1950s to augment the transfer of water into reservoir

No 1. While not particularly rare or notable in its own right, it is a highly visible structure on the way into the reserve and assists in understanding the System as a continuously modified and functioning entity across three centuries.

Figure 26–Pump House

2.5.11 Feature A/11–Stone walls

Dry stone walling is used in various locations throughout the park and contributes to the character of the Reserve. The stonework, while well executed, is rustic and functional rather than ornamental or gardenesque in character. The stone walling should be used as an example to guide future wall construction in the Reserve or along the System.

Figure 27–Dry stone walls located at the back of Regans Gully. Similar walls can be found in other locations in the Reserve.

2.5.12 Summary–Waterworks Reserve

The Waterworks Reserve is a significant local recreational spot and is the portion of the System most easily accessible to visitors of all types and abilities. The items of historic and active infrastructure within the Reserve are generally in good condition, with the notable exception of the Receiving House. The Waterworks Reserve should continue to be a focal point for the interpretation of the System due to its accessibility and high level of visitation by recreational users. A good use of low-key interpretive media in this location should be used to guide visitors around the Reserve to provide an understanding of the key historic features and their development, as well as directing visitors to the upper reaches of the System along the Pipeline Track.

The Receiving House should be conserved and continue to be used for interpretive purposes, though this use does not necessarily preclude it serving multiple functions, such as a kiosk (subject to necessity) or a function space that could be hired out. More recent infrastructure, such as the Pump House, could be adaptively reused for an alternative purpose, such as a picnic shelter, when and if it comes out of service.

Future landscaping works within the Reserve should maintain its manicured gardenesque setting and ensure that new and existing plantings do not encroach upon or obscure the significant historic features within the Reserve. New landscaping and functional elements within the Reserve should take their cue from historic features, including the prominent use of sandstone blockwork and dry stone walls, or where there are no existing examples, new work should reflect relevant historic practice. Future landscaping works should be robust and functional and not overly ornamental, to retain consistency with historic features.

The Reserve should also serve as a focal point to educate visitors about the entire System and to direct visitors to the different portions of the System which can be visited. This should include directing foot and cycle traffic along the Pipeline Track as well as identifying other areas of visitation, such as Ridgeway Reservoir and Fern Tree which are both important to the history of the System but are also more easily accessible for those with limited time or mobility.

As a key operational part of the System, it is recognised that this section of the System will be required to face future operational upgrades in order to remain in service. The continued function of the System is a very important element of its heritage significance and it is appropriate that a degree of flexibility is available to accommodate operational upgrades to the System. Future upgrades should not however significantly impact on the key historic features of the Reserve and all efforts should be made to avoid or minimise impacts to historic fabric within Waterworks Reserve. Similarly, upgrades of the Reserve to accommodate additional or different types of recreational uses should be equally mindful to minimise heritage impacts.

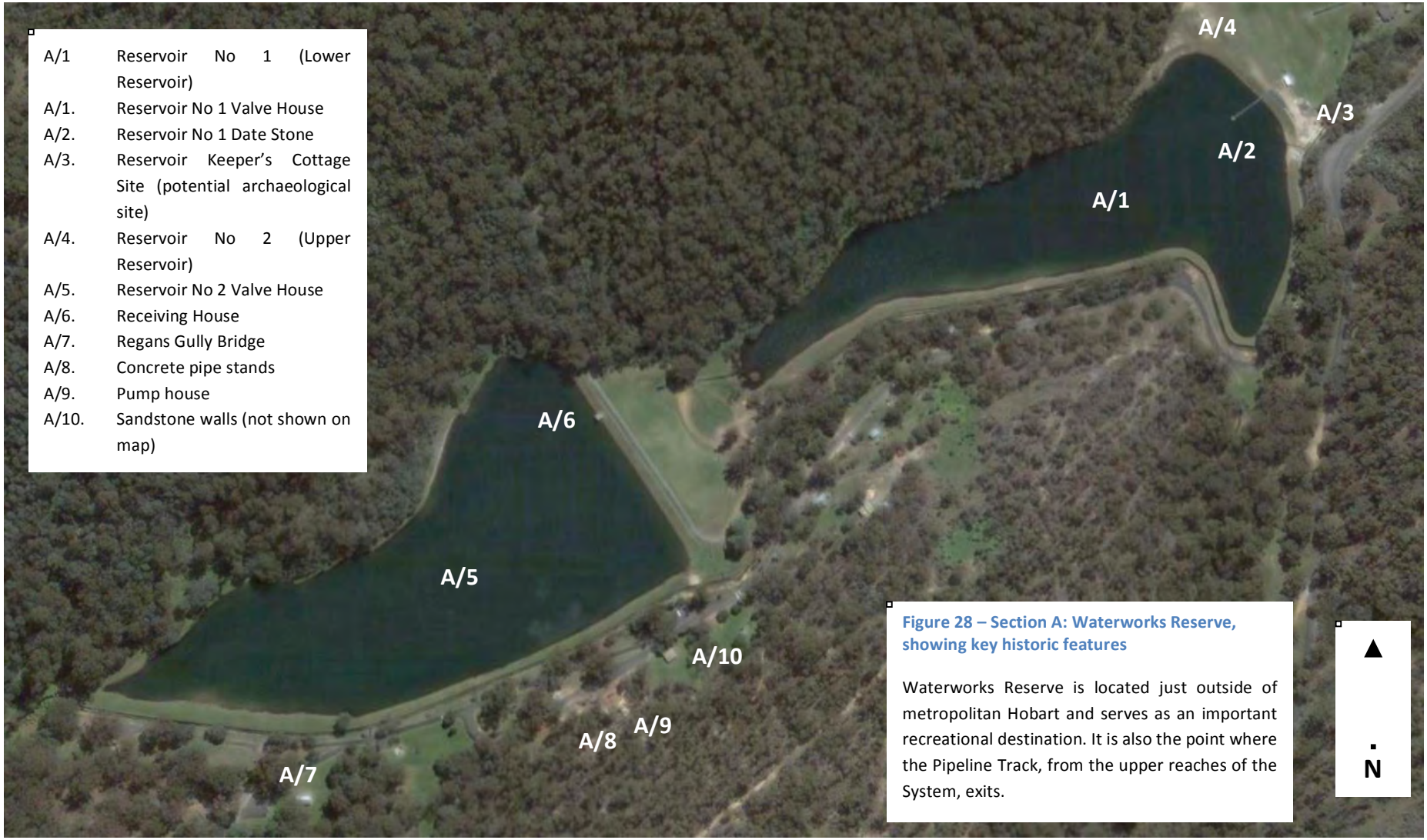

Figure 28 – Section A: Waterworks Reserve, showing key historic features

Waterworks Reserve is located just outside of metropolitan Hobart and serves as an important recreational destination. It is also the point where the Pipeline Track, from the upper reaches of the System, exits.

2.6 Section B–Waterworks Reserve to Fern Tree

Running west from Waterworks Reserve is roughly 3 kilometres of pipeline leading from the upper part of the Reserve near the Receiving House to the Fern Tree village. This length of pipeline is largely constructed of sandstone troughing, although some sections are cast iron pipe. Water is now diverted at Halls Saddle to Ridgeway Reservoir. A track has been built on top of the pipeline over most of its length, however the lower portion of the track has been deviated at Gentle Annie Falls to follow a gentler grade, which takes the path several hundred metres away from the original pipeline. The deviation of the track means that one of the key historic features of the System has been bypassed: the Pipe-Head Well. The Pipe-Head Well was the location where the sandstone troughing passed into a sandstone chamber and then into pipes down to the Receiving House. Uphill of the Pipe-Head Well is Gentle Annie Falls, where water flowed in a rock-cut trough over the Falls and dropped freely into a chamber below before proceeding downhill to the Pipe-Head Well. While this flow was originally in troughing, the flow out of Gentle Annie Falls was put into pipes in the late 19th century. Steps cut into the cliff at the side of the Falls provide access to the next section of the Pipeline Track. Gentle Annie Falls was largely bypassed with the construction of Ridgeway Reservoir however it is believed to have operated at reduced capacity into the middle of the 20th century.

Uphill from Gentle Annie Falls, the pipeline (& Pipeline Track) follows a gentle slope uphill through an area of bushland. Along the pathway, the line of the sandstone troughing guides the way. In general the troughing is in good condition however there are areas where capstones have been replaced in concrete. The troughing provides a recognisable linkage which helps the visitor understand that they are walking along a larger system of interconnected elements. In several areas there have been localised failures of the trail due to stormwater problems and pipe leakage. Some of these problems have been repaired in a less than sympathetic manner. Other features along this section of pipeline include the Sluice House and Halls Saddle.

Just below Fern Tree are some of the most striking and recognisable features of the System. Two well-constructed sandstone aqueducts carry the Pipeline across Longhill Creek. While these have been modified through the addition of cast iron pipes and telecommunications cables they represent some of the most picturesque and best known features of the System. From the aqueducts, the sandstone troughing proceeds steeply uphill to Fern Tree village. A modern handrail has been installed along this steep section and there is evidence of damage to some of the sandstone troughing. Along another, rather overgrown path, are the sandstone pillars which supported the early wooden aqueduct over the creek.

Key features along this section of the System include:

B/1. The Pipe-Head Well
B/2. Gentle Annie Falls
B/3. The sandstone troughing
B/4. The Sluice House
B/5. Halls Saddle
B/6. The aqueducts
B/7. The sandstone pillars

2.6.1 Feature B/1–The Pipe Head Well

Figure 29–The Pipe-Head Well

The Pipe-Head Well was a key part of the first water supply system. It was originally fed by an open channel from Gentle Annie Falls, which was enclosed following a drowning in 1880[56] and later replaced with cast iron pipes. Sections of this piping are visible in the track leading down from the Falls. The Pipe-Head Well was the location where the water was screened and mixed before entering pipes and fed by gravity downhill to the Receiving House. The structure is now located off the main Pipeline Track, which has been diverted along the nearby fire trail, which had a gentler grade. The Pipe-Head Well has suffered some damage due to a tree fall circa 2006 which has cracked several sandstone panels covering one of the mixing chambers. The place also has several unsympathetic accretions, including a steel viewing platform installed in the 1980s and a domestic picket fence installed for safety reasons around the structure.

In addition to requiring conservation works, the Pipe-Head Well is a key element of the early system which needs to be reintegrated into the Pipeline Track and interpreted. The viewing platform and picket fence should be removed and a track and interpretive node reinstated which direct visitors to the location.

Figure 30–The Pipe-Head Well, looking down slope. Note the intrusive viewing platform at the right.

[56] Scripps 1988 Pp 59-60.

2.6.2 Feature B/2–Gentle Annie Falls

Gentle Annie Falls occurs in relatively rugged terrain. The Falls were man-made and comprise a cut channel in the sandstone bedrock, where water was directed from the sandstone troughing over a cliff and into a small receiving basin. From the basin, water was conducted downhill in pipes to the Pipe-Head Well. Gentle Annie Falls provides a scenic overlook of parts of the Waterworks Reserve below and allows an appreciation of the ruggedness of the terrain in which the Pipeline was originally constructed. The rock cut channel and associated stairs cut into the sandstone cliff, attest to the amount of sheer physical effort which was put into the construction of the water supply system. Sandstone quarries, where stone was cut for use along the Pipeline, are located in the bush nearby.

Figure 31–The top of Gentle Annie Falls. Note the sandstone water channel which leads to the edge of the cliff.

The Falls are an important scenic and interpretive location. Current safety fencing, while robust, now looks dated and is somewhat intrusive. A different style of fencing or alternate method of providing safety barriers which is less visually intrusive to the rock platform of the upper Falls is desirable. The areas above and below the cliff should also serve as interpretive nodes for the System.

Figure 32–View up slope to Gentle Annie Falls. The stone walling is recent (c 2006) and overly formal for what is otherwise a very rough section of track.

The view down from Gentle Annie Falls toward the Pipe-Head Well. At the bottom of this slope the walking track veers away from the original Pipeline alignment, bypassing the Pipe-Head Well below. Recent trail works in this area have constructed an overly formal garden-style stone retaining wall arrangement in some areas, whereas historically such features were rough and informal, reflecting the fact that access to this

area was originally designed to be functional, rather than decorative, in nature.

2.6.3 Feature B/3–The sandstone troughing

The sandstone troughing is the key element of the 1861 water supply system, serving as the pipeline which brought water to the reservoirs. The troughing also defines the route of the Pipeline Track and provides a linking element along its length. The presence of small quarries and associated tracks along the pipeline attests to the use of local stone which was quarried and dressed on site.[57] The stone troughing is largely intact, though no longer functional. The troughing was originally constructed of timber but was quickly replaced with troughing constructed of stone blocks.

In many locations, the troughing is in good condition and does not appear to have suffered from an accretion of soil or other material internally. Minor root penetration has been noted and in some limited locations roots have the potential to slowly pull the troughing apart.

Where the troughing is damaged, this is mainly on the top blocks, some of which have cracked and have been replaced with a variety of types of concrete capping materials. In some areas the troughing was covered up in the 1990s as a conservation measure due to concerns over damage to the sandstone capping. This seems to have had its own negative consequences in some areas, due to the stone becoming saturated with retained water and subsequently weakening and cracking.

Careful monitoring of the condition of the troughing in different locations will be a key element in determining the appropriate conservation treatment for a particular section. Due to the variable conditions along the route, there is not necessarily any one technique which will be universally applicable along the entire route.

Figure 33 - The side wall of the troughing, visible in an area where the ground has been built up to form the track on top of the sandstone troughing.

[57] McConnell et al. (1998)

Figure 34–Inappropriate replacement covers on sandstone troughing

Pre-cast concrete capping slabs have been used to repair damaged sections of capping over the last 30 years, which detract from the appearance of the troughing. These should be progressively replaced with new sandstone capping. There are a range of potential conservation strategies which can be used in areas where sandstone troughing has been damaged. Ideally heavy traffic should be kept off the troughing and in areas where the troughing is concealed, it may be necessary to mark the route of the troughing to both guide visitors and to provide a warning to vehicles operating in the area.

Figure 35–Sandstone troughing, schematic cross-sectional view

Above is a schematic representation of a typical cross-section of sandstone troughing – note the capstone is generally raised slightly above the side walls rather than flush as suggested by the diagram. The trough is constructed of a stone bottom and two stone side slabs with a soft mortar between the sides and the base. The capstone sits loosely on top of the sides and much of the capstone material shows signs of wear from foot traffic and other use over 150 years. Damage has also been caused to capstones through vehicle traffic along pipeline, mainly for routine and emergency maintenance works.

Figure 36 – The sandstone troughing near McDermott's Saddle, facing east. In this location, the troughing is contained within a built-up earth embankment, which also serves as the pedestrian Pipeline Track route.

2.6.4 Feature B/4–The Sluice House

The Sluice House dates from 1862. It received water from the Fern Tree Bower and controlled the flow along the next section of the Pipeline leading to Gentle Annie Falls.[58] Essentially a small sandstone building enclosing a valve mechanism, the Sluice House is in mostly sound condition however it has had an unsympathetic door replacement and some of the decorative sandstone elements are damaged. The building was essentially derelict until circa 1990 when a range of conservation works were undertaken. [59]

Figure 37–The Sluice House

2.6.5 Feature B/5–Halls Saddle

Hall's Saddle is a narrow ridge of land between two adjacent hills, a natural feature of the landscape along which the System passes. The pipeline follows along the Saddle above the Sluice House, however there are little in the way of visible components of the System in this location.

[58] Hartzell, L. (1993). Final Report for the Mt Wellington Pipeline Track Project: Historical and Archaeological Documentation of Features and Sites. Hobart, Hobart City Council. Pp 12-13

[59] Crawford Cripps Wegman Architects (1990) Architectural Analysis of the Sites of the Mount Wellington Pipeline Track. For the Corporation of the City of Hobart.

Following the construction of Ridgeway Reservoir in 1917, much of the water from the pipeline was diverted from Halls Saddle into a new pipeline down Chimney Pot Hill for storage at Ridgeway. By about 1940, all water was diverted along this new route to Ridgeway, rendering the section of Pipeline east of Halls Saddle redundant.

2.6.6 Feature B/6–The aqueducts

Two sandstone aqueducts span branches of Longhill Creek and Sassafras Creek and were built in 1881 to replace the earlier timber bridge which carried the water in troughs across the Creek. These aqueducts date from the second phase of the water supply and are still in service. While generally in good condition, the structures have a range of accretions including cast iron pipes added to the sides which now carry the water, as well as telecommunications cables and evidence of old metal bracing and strapping. The aqueducts are largely enclosed by the forest canopy and are prone to vegetation and moss growth, which obscures them and, in the longer term, may damage the stonework. In early 2007, the aqueducts where cleaned by hand to remove vegetation and other debris. While successful, the works did however highlight the difficulties of maintaining the aqueducts in light of modern safety standards, due to height issues.

The aqueducts are some of the most evocative structures within the System and are relatively accessible to visitors. Ideally the accretions to the aqueducts should be removed and no new items should be attached to the structures.

Figure 38–Aqueduct over Longhill Creek

Figure 39–Aqueduct over Sassafras Creek

2.6.7 Feature B/7–The sandstone pillars

Four sandstone pillars remain near Longhill Creek, constructed in 1861 to support the timber troughing over the Creek for the first phase of water supply. The timber aqueduct is long since gone, having come out of service in 1881, but the stone pillars remain. To the east in the slope below the Huon Road the depression where the troughing ran is still visible for some distance until filled by 20th century upgrading of the Huon Road. The trail to the pillars is off of the main Pipeline Track (which is on the 1880s pipeline route) and is rather degraded, but is still accessible by determined walkers. The pillars have been the subject of some limited conservation works but a structural assessment would be prudent.

As this is an important remnant feature of the early water supply system, it is desirable to re-establish a good walking trail past the pillars with appropriate interpretive media.

Figure 40–Remnant pillar, from 1861

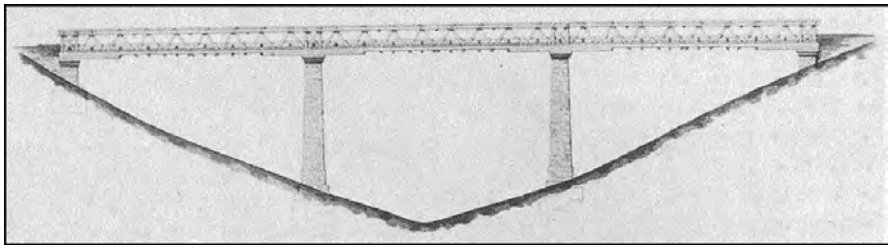

Figure 41–Original drawing of the 1861 Longhill Creek timber aqueduct

From the aqueducts, the pipeline, still as sandstone troughing, proceeds uphill to Fern Tree. This is an exposed section that is in good condition, which runs adjacent to a recent pathway made of shallow stone steps built to keep walkers off the sandstone capping. A timber and steel pipe handrail, installed as part of the path, is intrusive to the wooded, rural surroundings due to the use of dressed timber and exposed shiny steel.

2.6.8 Waterworks Reserve to Fern Tree Summary

This section of the pipeline is primarily 1860s and 1880s infrastructure. The Pipeline Track mainly follows the Mountain Water Supply System route and takes in many of the key features of the 1860s water supply infrastructure. The general character of the Track in this section is of a rural track passing through a mix of modified and natural landscapes. It is also easily walked by residents and visitors, with cycling not permitted between Fern Tree and the Waterworks Reserve. The Pipeline Track has an easy grade, with the exception of Gentle Annie Falls and the section immediately below the Falls. At present, below the Falls the Track diverts away from the historic route of the pipeline and onto a fire trail.

Figure 42–The hill up from the aqueducts to Fern Tree

While this provides an easier grade for walking, it diverts visitors away from the Pipe-Head Well and the final route of the Pipeline down to the Receiving House.

The major conservation challenges along this section of the System are the maintenance of the sandstone troughing, which is visible on the surface or is concealed just below the surface of the Track. This has been damaged through vehicle traffic (mainly maintenance vehicles) and to a lesser extent through visitor foot and cycle traffic. In some sections, unsympathetic repairs have been undertaken to the troughing. The other sandstone structures long the route require a degree of conservation works, with some requiring repair to stonework and all requiring a more active program of vegetation management. The installation of

telecommunications cables along this section of the pipeline also presents management challenges.

As one of the (anecdotally) higher recreational use sections of the Pipeline Track, it is desirable to undertake some degree of systematic monitoring of usage, to determine the rough numbers of walkers, cyclists, maintenance vehicles and any other uses of the Track. This will help provide a more informed view of the specific nature of visitor impacts on the pipeline and the most appropriate location and types of interpretation which should be placed along the pipeline.

The approach to the general presentation of the System in this section also requires further consideration. At present, there are a wide range of types of fencing, barriers and access control devices that range in materials from modern dressed timber to old unpainted metal to contemporary colourbonded steel. Better consistency in the selection of materials and the use of materials which reflect the character of the System will enhance the experience of visitors. Efforts should also be made to provide visitors opportunities to access "lost" aspects of this section of the System such as the Pipe-Head Well and the pillars from the original timber Longhill Creek aqueduct, which are presently bypassed.

Figure 43–An example of inappropriate fencing along the pipeline. This fencing uses modern dressed timber, which is a jarring contrast to the natural and rural character of this section of the pipeline.

Figure 44–A tree fall across the pipeline and associated track.

Here the sandstone troughing has been concealed beneath the Pipeline Track but tree falls have the potential to damage the stonework. The earthen embankments constructed to support the troughing in this location are also not suited to support large trees. Tree growth will need to be managed on an ongoing basis to ensure trees do not threaten the historic pipeline (ie, sandstone troughing) and associated infrastructure or the stability of the embankments and the Pipeline Track.

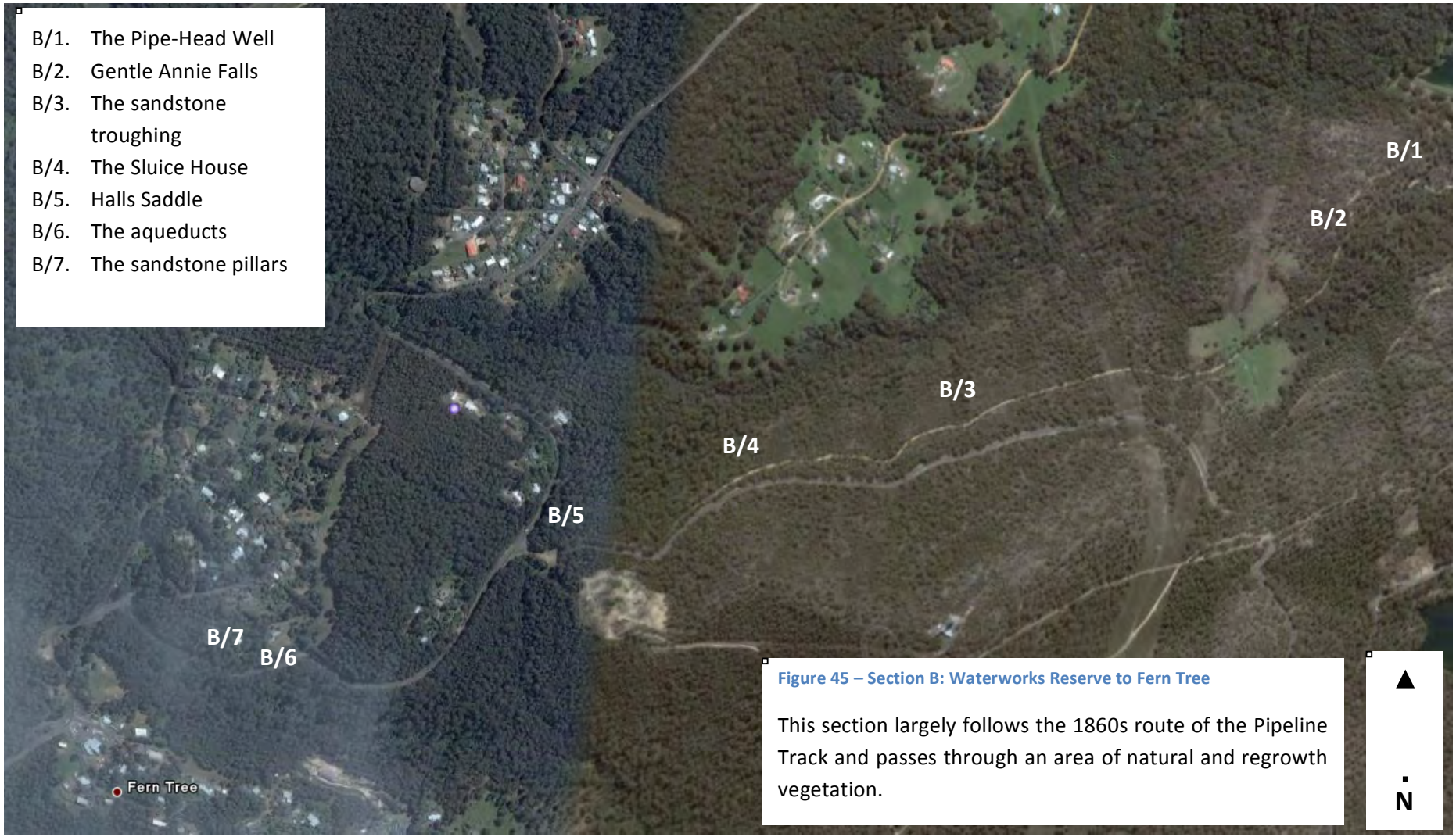

Figure 45 – Section B: Waterworks Reserve to Fern Tree

This section largely follows the 1860s route of the Pipeline Track and passes through an area of natural and regrowth vegetation.

2.7 Section C–Fern Tree to Neika

At Fern Tree village there is a small modern building which contains the fluoride and chlorine dosing plant for the System. Water is diverted into the plant and then back into the sandstone troughing. Uphill from Fern Tree the pipeline, still overlaid by the Pipeline Track, proceeds through a heavily wooded area to the Fern Tree Bower. This is the site of a weir on Browns River. The weir and its surroundings have been heavily modified with the addition of a sluice gate and a considerable area of ground has been concreted. Fern Tree Bower is perhaps the place with the highest social significance along the pipeline route as for many years it was a popular recreation spot and a place that people from Hobart would go throughout the late 19th and early 20th century to picnic among the large fern trees. The area was however heavily damaged by a flood in 1960 and much of the original fabric and vegetation was lost at that time. The flood is commemorated via a monument on the site. The area was later revegetated by Hobart City Council.

From the Bower, the pipeline and associated Pipeline Track proceeds west through the bush again led by the route of the sandstone troughing. Water to this area was supplied from intakes at Upper and Lower Silver Falls, and from intakes along Milles Track which was part of the 1831 diversion, the water being diverted back into the Browns River headwaters once the MWSS was established. The next major feature along this section is the Wishing Well at Fork Creek. The original water supply system terminated at Fork Creek, however by 1868 the System had been extended to Long Creek about a kilometre away. The Wishing Well served as the mixing point of the two intakes and gained a place in local folklore as a place where wishes were granted. The Wishing Well is a well-made sandstone structure that is largely unmodified save for the addition of a metal cage above the well.

Uphill from the Wishing Well, the water is conveyed in pipes rather than troughing. At Long Creek, there are a series of bridges, known as the Twin Bridges[60], used for both pedestrian/bike traffic and to carry the pipes across the creek. Historically these were timber bridges but were replaced by metal bridges in the late 20th century. From the bridges the pipeline follows the slope up to Neika.

Key features along this section of the System include:

C/1 The Fern Tree Bower

C/2 Silver Falls Weir

C/3 The Wishing Well

C/4 The Twin Bridges

2.7.1 Feature C/1–The Fern Tree Bower

The Fern Tree Bower was an important local recreational destination until the major damage of the 1960 floods. The Bower as it currently stands bears little resemblance to its pre-1960 configuration. At present, the Bower feels overgrown and enclosed, providing little in the way of areas for recreation or picnicking use. All that survives of the original Bower construction is the date stone which was relocated following the floods.

[60] Also referred to as the 'Black Bridges'. See Scripps (1989) Pp 45-46.

The Bower remains a destination for walkers and has the potential to become a significant recreational destination again but would require a substantial effort to re-establish appropriate landscaping. At the rear of the Bower is the weir on Browns River, which was one of the major sources of water for the first system, which also received water from an intake at Silver Falls, further upstream.

Figure 46–Fern Tree Bower in the late 19th century

The original Bower was both part of the water supply and a destination for recreational visitors, with a mix of formal plantings and bush surrounding the site. Since the damage caused in the 1960 flood, the area is now dominated by regrowth vegetation and bears no resemblance to its earlier, park-like configuration. Reinstatement of the Bower to its earlier configuration would be possible but would require considerable effort and conjectural reconstruction. The impact on the regrowth bush may also be considered undesirable. As Hobart and Fern Tree are well furnished with recreational destinations, the reinstatement of the Bower as a major recreational spot may not be considered a priority, although it may be warranted if Silver Falls continues as an important recreational destination .

Figure 47–Fern Tree Bower in 2007

2.7.2 Feature C/2–Silver Falls Weir

Figure 48–Silver Falls Weir

In 1831, water was diverted from the springs at the head of Browns River Creek to the Hobart Rivulet, via a cut channel. This augmentation was largely unsuccessful and, with the construction of the first stage of the System, the water was rediverted to Browns River Creek in the early 1860s. At that time, there was a small stone weir and sluice house at Silver Falls, however the Silver Falls Weir had to be rebuilt after the 1960 floods.

Presently, the Weir consists of a small concrete structure which channels water into an open trough before the water enters the sandstone (originally timber) troughing at the Bower proper, a few hundred metres away. The weir and its surrounds have been substantially altered since their original construction. Much of the ground surface at the weir has been concreted and unsympathetic safety fencing has been installed. The weir has been modified in recent years with the installation of safety and access equipment by Southern Water, which is visually intrusive. Ideally this equipment should be modified to be concealed or otherwise better integrated into the weir and its surrounds.

Figure 49–Intrusive equipment at Silver Falls Weir

2.7.3 Feature C/3–The Wishing Well

The Wishing Well represents the original upper extent of the first water supply system, marking the location where water was collected from Fork

Creek. By the late 1860s, with the extension of the scheme to Long Creek, two additional sandstone intakes had been added on Long Creek. The Wishing Well essentially acts as a mixing chamber for these four intakes and directs the water downhill towards the Bower.

There is a small clearing at the Wishing Well which serves as a logical stopping point for people using the Pipeline Track recreationally. The Wishing Well itself is in good condition with the only significant modification being the installation of a mesh cage above in the mid 20th century. Modern chain mesh fencing has been installed in some areas to prevent access to the Fork Creek intake. The Wishing Well is an important interpretive node for the System and has some interpretive signage at the moment.

Figure 50–The Wishing Well

2.7.4 Feature C/4–The Twin Bridges

The Twin Bridges are two narrow bridges over Long Creek. Neither of these bridges is original but bridges are known to have been in this location from the late 1860s, as the Pipeline was extended to include new intakes. Hartzell noted that there have been at least three different bridges in this location at different times.[61] One bridge is of recent timber construction while the other is modern steel decking and wire mesh. The steel deck bridge carries water pipelines beneath it. The bridges act as a bit of a bottleneck for foot and cycle traffic on the Pipeline Track in this location due to their narrowness. This could be overcome through widening or duplication of the bridges if visitor use figures warranted such action.

The different construction materials of the two bridges is jarring in the forest setting and when the bridges are replaced in future it is desirable if they could be constructed in similar materials which are more sympathetic to the surroundings. As the Bridges also serve as significant crossings for operational water pipes, any reconfiguration of the Bridges should take into account the need for easy access for both routine inspection and emergency access to the pipes. This could be achieved through the use of decking panels which are easily removable.

[61] Ibid. Pp 20-21

Figure 51–Twin Bridge 1

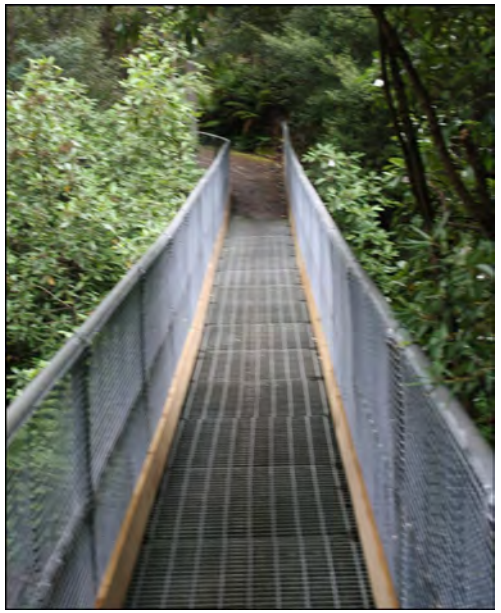

Figure 52–Twin Bridge 2

2.7.5 Fern Tree to Neika Summary

The route of the System between Fern Tree and Neika becomes progressively more densely forested, with less encroachment from nearby residential properties. This section of the Pipeline Track is still well-used and its narrowness in places presents a potential conflict for walkers and cyclists. The Wishing Well represents perhaps the most important individual feature of the System along this section (although Silver Falls has relatively high visitation as a natural feature). It is largely unchanged from its 1860s configuration and serves as a logical stopping point for visitors along this route, as well as having easy access from Browns Road. Some interpretation exists at the Wishing Well but there

are opportunities for additional interpretation, particularly at Fern Tree Bower.

Ideally, existing modern additions along this section of the pipeline should be progressively replaced with more appropriate structures, particularly the safety equipment at Silver Falls Weir, and the Twin Bridges. As these structures themselves have minimal heritage significance, there is considerable flexibility to design sensitive replacement. At a minimum, this should be considered when the present structures reach the end of their operational life, if not before, if not before. There is also an opportunity to improve the appearance of the safety structures at the Wishing Well.

Upstream of the Wishing Well, the pipeline itself is largely unseen as it is piped through both historic and modern sections of piping, covered by the Pipeline Track. The route and nature of the pipeline itself requires additional interpretation along this section of the Track to provide a linkage to the whole System and help visitors orient themselves within the context of the overall System. The section particularly provides the opportunity to interpret the transition from the 1860s phase of the System to the second, 1880s phase of operation.

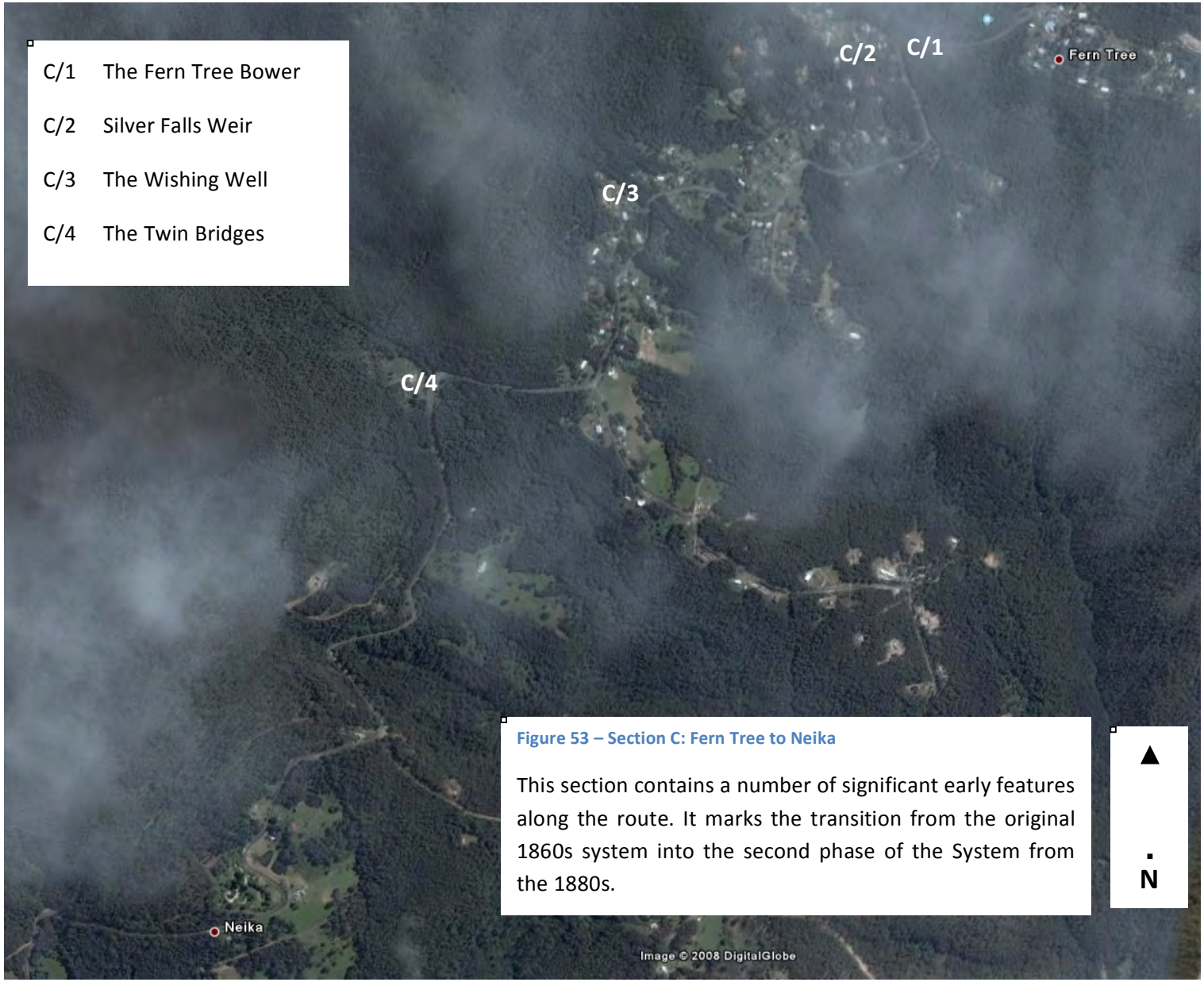

Figure 53 – Section C: Fern Tree to Neika

This section contains a number of significant early features along the route. It marks the transition from the original 1860s system into the second phase of the System from the 1880s.

2.8 Section D–Neika to North West Bay River Weir

From Neika, the System proceeds uphill following the route of the timber tramway which was used to construct the upper reaches of the System. The Pipeline Track follows this route and is used by both walkers and cyclists for recreation. In this section of pipeline the water is carried within 1881 cast iron pipes from St Crispins Well, and the Track is built over the pipeline, but is exposed in places . Midway between Neika and St Crispins Well, a second pipeline, the 1910s pipeline from North West Bay River weir, joins the older pipeline. This newer pipeline takes a major diversion away from the earlier pipeline and is also much more direct. The topography necessitated the construction of a section of siphon, (referred to as "The Siphon") to carry the water across the valley formed by the Plains Rivulet.

There are a number of small intakes along the 1881 section of pipeline, most dating from the late 19th century, although some were rebuilt or replaced in the early 1900s.[62] The best known of these is St Crispins Well, which was the upper reach of the 1881 system and is roughly halfway along this section of the Pipeline Track. At the base of the path leading to St Crispins Well is a small timber and corrugated metal hut close to the former tramway route which is used as a temporary shelter by walkers. This hut was constructed in the 1970s however a range of different huts are believed to have been in this location from circa 1881.[63] Each of the intakes consists of a small weir formed from a mix of local stone and brick which creates a small chamber from which water is diverted into a cast iron pipe. Along the pipeline there are a number of examples of modern sleeve and clamp mechanisms being placed around sections of pipe to deal with failure and leakage.

The pipeline re-joins the Pipeline Track (which continues around the mountain-side from St Crispins Well) perhaps 3 kilometres from the weir at North West Bay River in a mix of 1910s and modern pipes. Pipe leakage and poor road drainage have contributed to a significant landslide along this section of the Pipeline in 1992. The large scar from the landslide is still visible and the risk of further landslide has led to this section of the Pipeline Track to remain closed from public access.[64] A further kilometre along is the North West Bay River Weir which is a concrete structure dating from 1918. This weir represents the upper extent of the Mountain Water Supply System and the end of the study area.

Key features along this section of the System include:

D/1 The 1881 cast iron pipes

D/2 The Siphon

D/3 St Crispins Well and the upper intakes

D/4 The North West Bay River Weir

[62] McConnell (2009) op cit.

[63] McConnell & Scripps (2005) Wellington Park Historic Heritage Inventory & Audit Project Report - Vol 2 Pg 67.

[64] Coffey Geotechnical (2003) Northwest Bay River Pipeline Track: Geotechnical Risk Assessment, Mt Wellington Tasmania.

2.8.1 Feature D/1–The 1881 cast iron pipes

Figure 54–Cast iron pipes

The pipeline throughout this section is of cast iron pipes, in most cases buried or concealed below the Pipeline Track or in the dual pipeline section running a short distance below the Track. Except for the Siphon, the pipes are run at low pressure to limit leakage due to the fact that pipe sections are not rigidly jointed. The pipes tell part of the story of the upgrade to the System to cope with increasing demand. In a technical sense, the pipes themselves are not rare or unique but it is desirable to retain them in service wherever possible. Southern Water uses clamping and sleeving mechanisms to deal with localised failures which is an appropriate repair technique. Where a pipe has suffered a total failure, localised replacement is acceptable. Other techniques, such as slip lining, which leaves the original pipe in site and inserts a new modern pipe, would be acceptable.

Where sections of pipe come out of service there is an opportunity to retain portions on site for interpretive purposes.

2.8.2 Feature D/2–The Siphon

The Siphon was installed in 1916 and carries water across the valley from North West Bay River to a point along the Track downhill from St Crispins Well using steel pipes. The actual Siphon is invisible from the Track due to it falling away into rugged valley terrain quite quickly. There are no opportunities for visitors to the Track to view the Siphon however it should be interpreted at either end to indicate its path and function. Just east of the Siphon, the later Pipeline runs just downslope of the Pipeline Track in concrete pipes installed in the 1930s, and is partially visible from the Track.

2.8.3 Feature D/3–St Crispins Well and the upper intakes

In addition to the North West Bay River Weir, there are 9 intakes to the System on the mountain streams along this section of the Track. St Crispins Well (No. 7) is one of these and was the first of the major intakes established in the 1881 expansion of the System. All the intakes are spring fed. The intakes feed directly into the gently graded 1881 pipeline on which the Pipeline Track has been formed[65].

The intakes are located 20 to 30 meters above the Track, along rough paths which are marked as “No public access” for water quality reasons.

[65] McConnell (2009) op cit

All of the intakes are relatively simple structures consisting of a small weir constructed of local rock, sometimes with a small basin cut into the bedrock. In some instances, offcuts from iron tram rails have been reused as support structures for the weirs. The weirs direct water into a cast iron pipe and there is generally a small scour valve allowing the basin to be fully drained. Southern Water monitors the water quality of these intakes regularly using taps installed along the track below and regularly scrubs the intakes.

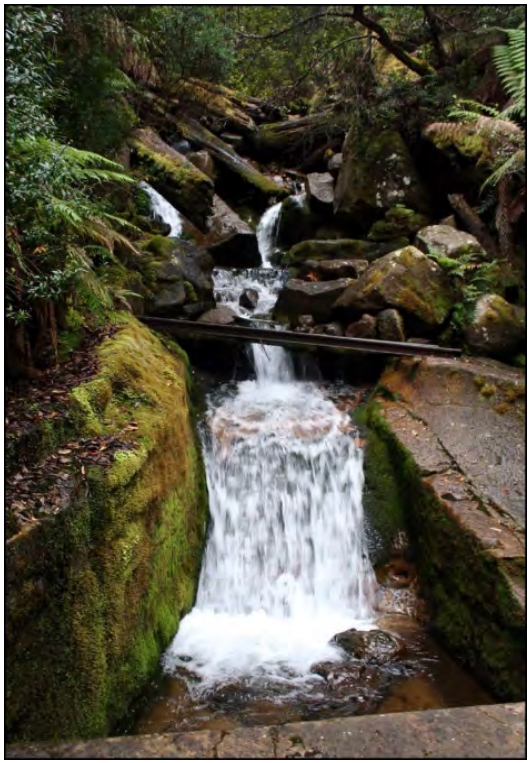

Figure 55–St Crispins Well

The intakes are generally in good condition and have had minimal modification over their lifetime, although there has clearly been a phase of repair and in one case, building of a replacement weir. This occurred in the 1910s augmentation of the MWSS, generally recognisable by the use of concrete and dolerite, as opposed to the sandstone and mortar used in the earlier work.[66] Restricting public access to the intakes themselves is justified given water quality concerns however it may be possible to interpret the intakes along the Pipeline Track to inform visitors about their construction and function.

At one intake a small supplementary weir has been recently constructed out of local rock and this is certainly a preferable methodology for future construction in preference into the use of mass or pre-cast concrete elements at the intakes. This will, however, have to be tempered with any future operational requirements at the intakes. It is desirable to interpret the intakes for visitors, given the lack of public access. This can be done in the context of explaining both the structure and function of the intakes as well as the rationale for restricting public access to this sensitive area of the watershed.

[66] McConnell (2009)

Figure 56–Intake with 20th century supplementary stone and concrete works.

2.8.4 Feature D/4–The North West Bay River Weir

Figure 57–Historic view of North West Bay River Weir

The North West Bay River Weir marks the final extent of the Mountain Water Supply System, in the final phase of its expansion in the early 20th century. The Weir itself is a simple mass concrete structure, which diverts water into large diameter metal pipes and then to the Siphon, which carries the water across steep valley terrain before linking in with the main pipeline between St Crispins and Neika.

The Weir is a robust concrete structure that appears to have had little in the way of modification since its construction, as these two photos, showing the weir circa 1920 and in 2007, demonstrate.

Access to the weir is largely restricted to operational personnel due to a large landslide in the 1990s which has left a section of unstable hillside above a portion of the Track.

Figure 58–Contemporary view of North West Bay River Weir

2.8.5 Neika to North West Bay River Weir Summary

This section of the System has relatively few conservation issues, due to the robust and simple nature of the structures associated with the System. The relative public inaccessibility of the intakes and the North West Bay River Weir should be mitigated through additional interpretation.

Sections of the 1880s cast iron pipe are still visible and in service along this section of the Track and have been repaired either through the replacement of failed sections or the installation of sleeves and clamps. The use of these simple repair methodologies should continue, subject to the pipeline continuing to meet Southern Water's operational requirements. Wholesale replacement of the Pipeline is not desirable unless the ancillary problems become intolerable, e.g. water quality or adjacent environmental impacts. In such circumstances, a section of the pipeline should be retained and interpreted along the Track.

The System from Neika to North West Bay River Weir is less accessible to the casual visitor due to its distance from Hobart and the status of the Pipeline Track as a single lane track, which must be walked and returned along by visitors. The Track is generally wide and well-maintained and is accessible by both bicycle and walkers. This section of the Track provides the opportunity to interpret the 1880s and 1910s extensions to the System and, given the present inaccessibility of North West Bay River Weir, this is necessary as the associated structures are inaccessible. There are also opportunities to interpret now-lost aspects of the System, such as the wooden tramway from Neika which was used in the construction of the upper reaches of the System.

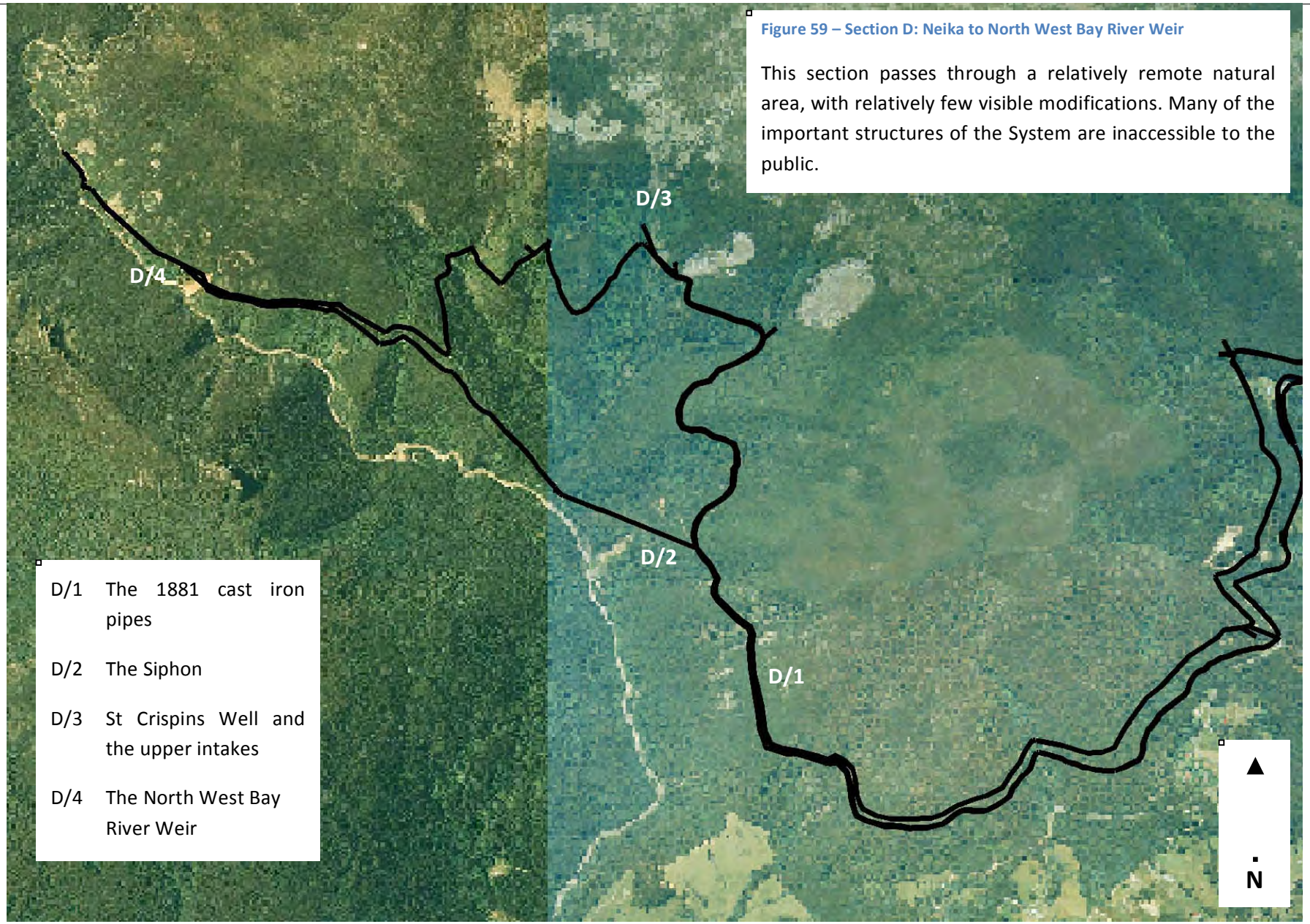

Figure 59 – Section D: Neika to North West Bay River Weir

This section passes through a relatively remote natural area, with relatively few visible modifications. Many of the important structures of the System are inaccessible to the public.

D/1 The 1881 cast iron pipes

D/2 The Siphon

D/3 St Crispins Well and the upper intakes

D/4 The North West Bay River Weir

2.9 Section E–Ridgeway Section

The focal point of this section is the Ridgeway Reservoir, the major service reservoir built in 1918 as a part of the final expansion of the Mountain Water Supply System. Ridgeway Reservoir and associated infrastructure represent an important operational part of the System.

From its commissioning in 1918, water was diverted to Ridgeway Reservoir from Halls Saddle at the west end of Chimney Pot Hill. This initially lessened the flow to Gentle Annie Falls and, by the 1940s, water had been completely diverted away from the Falls. Water was conveyed through a 15" concrete pipeline around the east side of Chimney Pot Hill (below the present day Chimney Pot Hill Road), then down slope to Ridgeway Reservoir, following the rough line of the construction tramway which was used to bring stone from the quarry at Chimney Pot Hill. A structure (Old Meter House) roughly halfway along this section provided a method to control the flow to the Reservoir. From Ridgeway Reservoir, water was piped in concrete pipes to the Upper Reservoir. Additional pipelines led to the No 2 and 3 Receiving Houses, located in the Waterworks Reserve. The No 2 Receiving House has been demolished and the No 3 Receiving House was added c 1921-1923 when additional water was sourced from Lake Fenton and supplied to Ridgeway.

Ridgeway also had an extensive construction village and depot, including barracks and stables for contractors, which was located in the valley bottom, now inundated by the reservoir. While none of this is visible any longer, an opportunity exists to interpret this hidden aspect of the area's history. Other minor sites associated with the construction of the Reservoir, such as quarry sites, are present in the area, but are not dealt with in this report.

It should be noted that Ridgeway Park was not inspected as a part of the fieldwork for this project and the descriptive information relies on the 1998 assessment by McConnell *et al*. Furthermore, this document concentrates on those features identified in the 1998 assessment which relate to the water supply history and excludes many ancillary features identified by McConnell *et al*. As no fieldwork was undertaken within Ridgeway Park, there are no contemporary photos of the site.

Key features of this section of the System include:

E/1 Ridgeway Reservoir

E/2 Valve House

E/3 Site of construction barracks, stables and watchmen's house

E/4 Halls Saddle to Ridgeway Reservoir Pipeline

E/5 Old Meter House

E/6 Self-acting tramway route

E/7 Ridgeway to Waterworks Reserve Pipelines

2.9.1 Feature E/1–Ridgeway Reservoir

Ridgeway Reservoir is the largest of the three reservoirs within the System and was built between 1914 and 1917. It is a concrete arch dam, which is an arch structure with the main arch projecting back into the water body. The advantage of this type of design is that it uses the weight of the water in the reservoir to push down on the dam structure for greater stability. While the main body of the dam is of concrete, it made substantial use of local stone for aggregate and there are a number of quarries related to the construction around the area of the dam. Water is

fed into the dam from the west end, via a pipeline from Halls Saddle. Water is released from the dam via outlets in the northeast and travels via a series of pipelines to Waterworks Reserve. The dam also incorporates a spillway along its southern side.

The dam remains in service and is believed to be in generally good condition.

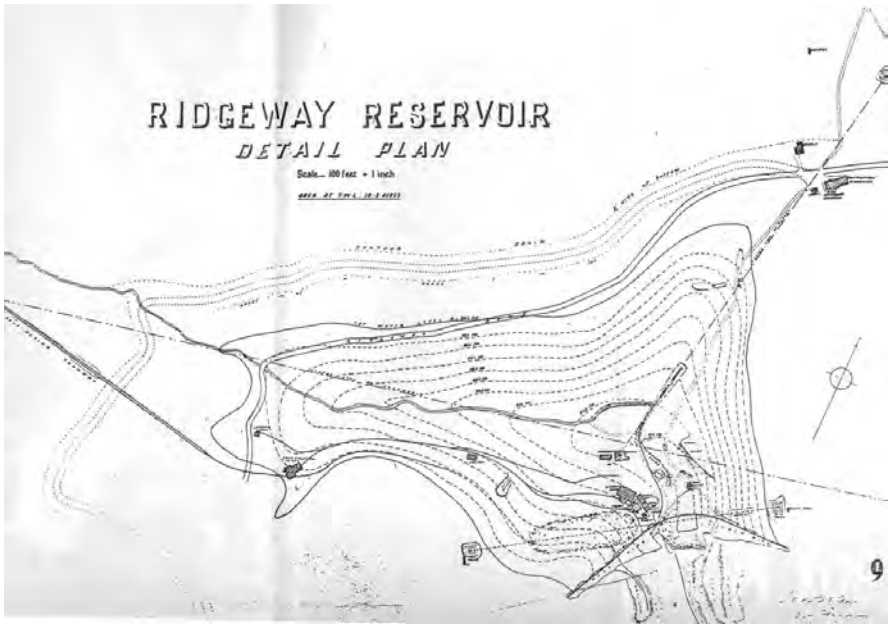

Figure 60–Plan for Ridgeway Reservoir, c 1905

2.9.2 Feature E/2–Valve House

The Valve House was constructed in concrete, contemporaneously with the Reservoir and serves much the same function as the valve houses on Reservoirs No 1 and 2. It provides a means of controlling the flow out of the reservoir into the pipelines to the north, which feed into Reservoir No 2 at Waterworks Reserve.

2.9.3 Feature E/3–Site of construction barracks, stables and watchmen's house

An extensive construction village was built at Ridgeway, for the housing of men and equipment, as the site was comparatively remote from Hobart at that time. Much of the construction area is within the dam itself and is now drowned. Aspects of the construction village, including the site of the barrack and stables and the post-construction caretaker's house survive as potential archaeological sites just north of the Reservoir. While these sites are no doubt disturbed due to later activity on site, they are features which merit interpretation for visitors. McConnell *et al* noted some surface material in these areas which may relate to these functions.[67]

2.9.4 Feature E/4–Halls Saddle to Ridgeway Reservoir Pipeline

Ridgeway Reservoir is fed via a steel pipeline which diverted water from the former alignment of the 1860s pipeline down Chimney Pot Hill. The pipeline into which the water is diverted is not technically remarkable in and of itself and is completely subsurface, but the diversion and the changes this wrought on the earlier infrastructure of the System are an important aspect of the site's history which should be interpreted from Halls Saddle.

2.9.5 Feature E/5–Old Meter House

The Meter House was constructed as a part of the pipeline from Halls Saddle and is an important component in controlling water along this section of the System. The Old Meter House was not visited as a part of

[67] McConnell et al. (1998) Pp 5-7.

this report and its exact construction and condition are unknown. Its function should be interpreted within the context of the Ridgeway extension to the Water Supply System.

2.9.6 Feature E/6–Self-acting tramway route

The self-acting tramway was a part of the construction infrastructure for Ridgeway Reservoir and was used to bring stone down from quarries at the top of Chimney Pot Hill. While little survives of the tramway route (and nothing of the tramway itself) its function in the construction of the reservoir should be interpreted.

2.9.7 Feature E/7–Ridgeway Reservoir to Waterworks Reserve Pipelines

Water collected in Ridgeway Reservoir is directed to the Upper Reservoir at Waterworks Reserve via a series of underground pipelines. Initially water was directed to Waterworks Reserve via a pair of underground concrete pipelines, to the No 1 and No 2 Receiving Houses, before entering the Upper Reservoir. The second pipeline came out of service in the mid-20th century and the No 2 Receiving House was demolished. The third pipeline was added c 1921-3 as a 23" concrete pipeline and brought water to the No 3 Receiving House at Waterworks Reserve before entering the Reservoirs. This third pipeline was added due to the extra capacity gained when water began to be sourced from Lake Fenton.

None of the pipelines are visible but opportunities exist to interpret their route and history.

2.9.8 Ridgeway Section Summary

Ridgeway Park, along with the extension of the intake pipeline from St Crispins Well to North West Bay River, represents the final phase of expansion of the Mountain Water Supply System. It was the last in a series of major additions to the System and took a major earlier component of the System (i.e., the section of Pipeline from Halls Saddle to Receiving House No. 1 which included Gentle Annie Falls and the Pipe-Head Well) out of service. Today the Reservoir continues to serve its original function, with minimal modification. Some of the area around the reservoir (outside the fence) is available for passive recreation and considerable opportunity exists to interpret this last phase of the System's history and its linkages to the System as a whole. No major heritage conservation issues exist for this section of the System.

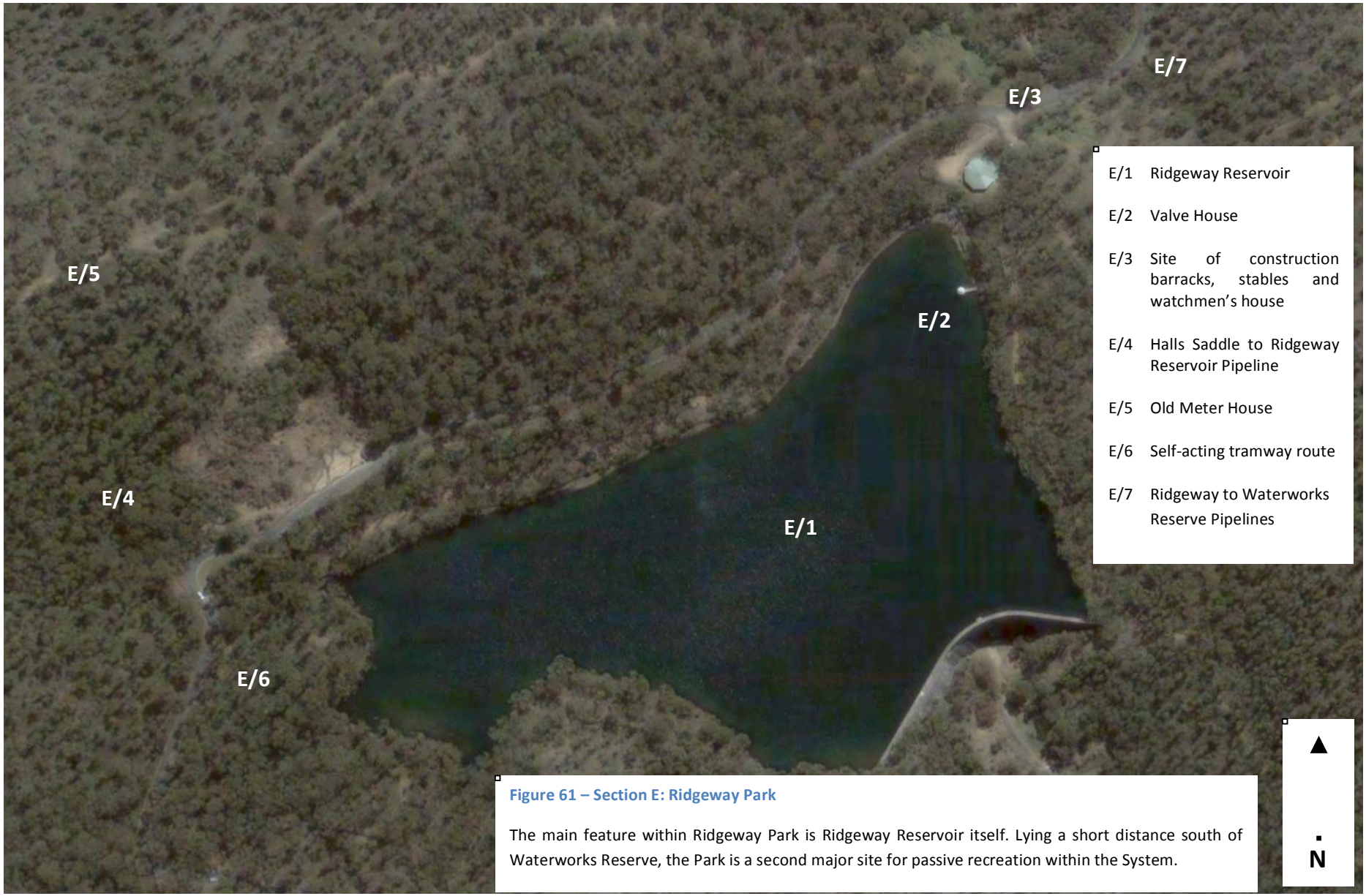

Figure 61 – Section E: Ridgeway Park

The main feature within Ridgeway Park is Ridgeway Reservoir itself. Lying a short distance south of Waterworks Reserve, the Park is a second major site for passive recreation within the System.

2.10 Condition of the historic fabric

Fabric condition is variable along the System, with the active parts of the System generally subject to regular maintenance while the inactive parts of the System receive less regular maintenance. Condition is also being affected by visitation in the form of walkers and cyclists which can have frequent, low-level impacts to elements of the System. Vehicular traffic associated with infrastructure maintenance is also an issue as, while such access is infrequent, impacts can be severe, particularly to fragile elements such as the sandstone troughing.

Most features along the route of the System do not require a great deal of intervention however some work must be undertaken to address impacts to the sandstone troughing and erosion issues, which are probably the two greatest influences on the condition of the heritage items generally. Additional issues arise from vegetation encroachment and bushfire/bushfire management.

Most elements of the water supply system are in relatively good repair in maintenance terms. The priorities for maintenance should be:

- The Pipe-Head Well
- The Receiving House
- The aqueducts over Sassafras and Longhill Creeks
- The stone piers at Longhill Creek[68]

These are all highly significant elements of the earliest part of the water supply system that either have been damaged or are fragile due to the nature of their construction.

The condition of each of the historic features discussed above is noted in the following table and is ranked according to the following system:

Rank	Description	Interpretation
1	Very good	The item requires little attention for 10+ years
2	Good	The item requires maintenance in the next 10 years
3	Fair	The item requires attention in the next 5 years
4	Poor	The item requires attention in the next 12 months
5	Failed	The item has failed and requires immediate attention

[68] Note these conservation priorities were intially set in 2008 and these elements have not been reinspected by the author prior to finalisation of the CMP.

Section	Site	Condition rating	Major issues / recommended actions
A – Waterworks Reserve	A/ 1 Reservoir No 1 (Lower Reservoir)	1	No significant issues
	A/2 Reservoir No 1 Valve House	1	No significant issues
	A/3 Reservoir No 1 Date Stone	1	No significant issues
	A/4 Reservoir Keeper's Cottage Site (potential archaeological site)	?	Condition of site unknown
	A/5 Reservoir No 2 (Upper Reservoir)	1	No significant issues
	A/6 Reservoir No 2 Valve House	1	No significant issues
	A/7 Receiving House	3	Significant conservation work required to stonework. Roof replacement is desirable.
	A/8 Regans Gully Bridge	2	Investigate tree root impacts & repair as necessary
	A/9 Concrete pipe stands	1	No significant issues
	A/10 Pump house	1	No significant issues
	A/11 Sandstone walls	2	Monitor condition, remove vegetation

B – Waterworks Reserve to Fern Tree	B/1. The Pipe-Head Well	4	Monitor condition, remove vegetation, repair damaged stonework
	B/2. Gentle Annie Falls	2	Monitor condition
	B/3. The sandstone troughing	1-3	Varies along the length. Replace damaged capstones with new sandstone. Remove encroaching vegetation and roots. Manage surface wear and moisture saturation of stonework through surface treatment. Clear vegetation away from remnant stonework.
	B/4. The Sluice House	3	Gentle cleaning of sandstone. Repair to door, monitor sandstone roof edging.
	B/5. Halls Saddle	1	No significant issues
	B/6. The Sassafras Creek & Longhill Creek aqueducts	3	Cleared of vegetation in 2007. This should be maintained annually. Consider cutting back the surrounding canopy to allow greater sun action on the stonework. Remove graffiti.
	B/7. Stone Piers for Trussell Bridge over Longhill Creek	3	Undertake structural investigation. Clear encroaching vegetation.

Section C – Fern Tree to Neika	C/1 The Fern Tree Bower	2	Investigate reinstatement of sympathetic landscaping
	C/2 Silver Falls Weir	2	Investigate replacement of weir and/or intrusive equipment
	C/3 The Wishing Well	1	Monitor condition Investigate replacement of fences and screening with a more sympathetic design
	C/4 The Twin Bridges	2	Investigate replacement with a more sympathetic design Work is also required at many intakes, which will need sympathetic restoration.[69]
Section D – Neika to North West Bay River Weir	D/1 The 1881 cast iron pipes	2	Monitor condition and repair as required.
	D/2 The Siphon	?	Not inspected
	D/3 St Crispins Well and the upper intakes	3-4	Work is required at many intakes, which will need sympathetic restoration. [70]
	D/4 The North West Bay River Weir	1	No significant issues

[69] Pers. Comm, A Crawford, Southern Water
[70] Pers. Comm, A Crawford, Southern Water

Section E – Ridgeway Park	E/1	Ridgeway Reservoir	?	Note – none of the structures or sites within Ridgeway Park were investigated for this report. Their condition is unknown but it is anticipated the operational structures are in good condition (i.e. the dam and valve house) and the other site features require interpretation rather than any substantial conservation treatment.
	E/2	Valve House	?	
	E/3	Site of construction barracks, stables and watchmen's house	?	
	E/4	Halls Saddle to Ridgeway Reservoir Pipeline	?	
	E/5	Old Meter House	?	
	E/6	Self-acting tramway route	?	
	E/7	Ridgeway to Waterworks Reserve Pipelines	?	

Chapter 3 – Heritage significance of the Mountain Water Supply System

3.1 Heritage significance of the Mountain Water Supply System

The Tasmanian *Historic Cultural Heritage Act* 1995 sets out the criteria for listing on the Tasmanian Heritage Register:

A place meets the criteria for listing on the Register if:

(a) it is important in demonstrating the evolution or pattern of Tasmania's history;
(b) it demonstrates rare, uncommon or endangered aspects of Tasmania's heritage;
(c) it has potential to yield information that will contribute to an understanding of Tasmania's history;
(d) it is important as a representative in demonstrating the characteristics of a broader class of cultural places;
(e) it is important in demonstrating a high degree of creative or technical achievement;
(f) it has strong or special meaning for any group or community because of social, cultural or spiritual associations;
(g) it has a special association with the life or work of a person, a group or an organisation that was important in Tasmania's history.

It is recommended that the entry for the Mountain Water Supply System on the Tasmanian Heritage register be updated to reflect this more detailed understanding of the significance of the place.

The Mountain Water Supply System meets the significance criteria as follows:

Criterion (A)–it is important in demonstrating the evolution or pattern of Tasmania's history;

The Hobart Mountain Water Supply System is significant for its ability to demonstrate the evolution of the water supply for Hobart from its earliest phases until its final expansion. The need for fresh water is a critical need of a major city. In the 1850s, the supply of drinking water to Hobart was inadequate and badly polluted, with fewer than half of Hobart's houses receiving piped water. The creation of the Hobart Mountain Water Supply System demonstrates the triumph of a publicly funded scheme over previous schemes that were bedevilled by private monopoly, short-term planning and corruption.

The elements of the Mountain Water Supply System include functional and non-functional features from all phases of the System's history. These features demonstrate the ongoing challenge of supplying the expanding population of Hobart between 1861 and 1918 with an adequate supply of fresh water. The classical and decorative architectural styles employed for certain features of the System – for example, the No. 1 Receiving House – transcend the merely functional.

Criterion (B)–it demonstrates rare, uncommon or endangered aspects of Tasmania's heritage;

Several aspects of the Mountain Water Supply System are uncommon at a national level, and the System in its entirety is unique in Australia for its intactness. In particular, Gentle Annie Falls – which was created to direct water down a slot cut in a rock face – is a rare type of man-made waterfall. The elegant 1880s stone aqueducts across Longhill and Sassafras Creeks are rare structures within Tasmania, and the Chimney Pot Hill Water Meter is rare as a c1910 water meter still in use as a functioning part of major urban water supply system.

Criterion (C)–it has potential to yield information that will contribute to an understanding of Tasmania's history;

The System has some research potential through the archaeological remains of features such as the caretaker's house at Waterworks Reserve and construction village at Ridgeway Reservoir. Further research into ancillary features such as the quarries used in the construction of the System will provide greater insight into the building of the System. Potential also exists to document the late 19th century recreational and residential uses of parts of the System, particularly around Fern Tree.

Criterion (D)–it is important as a representative in demonstrating the characteristics of a broader class of cultural places;

The Mountain Water Supply System is representative of a late 19th century gravity-fed water supply system, such as was created on the Australian mainland, in England and in other parts of the world. In particular, the puddled clay core dams – Reservoirs No. 1 and No. 2 – are typical of reservoirs built in the second half of the 19th century, and are similar in construction to dams built in the 1850s and 1860s to supply fresh water to Melbourne and Brisbane respectively. It is nevertheless the case that much of the Hobart Mountain Water Supply System is a particular response to specific local geography and shares few characteristics with the water supply systems of other Australian capital cities.

Criterion (E)–it is important in demonstrating a high degree of creative or technical achievement;

The Mountain Water Supply System demonstrates an ongoing capacity for engineering to supply the growing city of Hobart in the face of difficult terrain. This is demonstrated in particular by the slots cut into the cliff face at Gentle Annie Falls, by the aqueducts crossing Longhill and Sassafras Creeks and by the inlets between Neika and North-West Bay River Weir. Moreover, much of the architecture and stone work incorporated in the System combines elegance of design with functional quality. The concrete arch dam at Ridgeway Reservoir, constructed between 1914 and 1917, was the largest dam of its type at the time of construction.

Criterion (F)–it has strong or special meaning for any group or community because of social, cultural or spiritual associations;

The Mountain Water Supply System is significant to the community both as a part of the infrastructure of the city as well as for its value as an important recreational resource close to the city. Fern Tree (the Bower

and Silver Falls), the Wishing Well, St Crispins Well, the Pipeline Track and the Waterworks Reserve have played significant parts in the recreational lives of both Hobartians and visitors to the area for well over one hundred years.

Criterion (G)–it has a special association with the life or work of a person, a group or an organisation that was important in Tasmania's history.

The Mountain Water Supply System has an ongoing association with Hobart City Council, which is an important organisation within Tasmania's history. The Council was established as Hobart Municipal Council in 1852. From the outset it had responsibility for providing Hobart's water supply. For a decade it was only able to come up with short-term solutions. The Mountain Water Supply System was an initiative of Hobart Municipal Council and opened in 1862. The Council has been involved in the System's operations throughout its existence.

3.2 Statement of heritage significance

The Mountain Water Supply System is a substantially intact work of engineering with surviving elements which span the major phases of expansion between the 1860s and the 1920s. It is unique amongst the water supply systems for major Australian cities as the System is still largely connected and can still be experienced as an entire system from the furthest-flung intakes at North West Bay River and on Mount Wellington to the major reservoirs at Waterworks Reserve and Ridgeway Park, which continue to service the city of Hobart. This survival is largely due to the rugged topography which the original system followed, which has not been encroached upon by urban and suburban development, as has occurred in other capital cities. While many of the early elements of the System have been bypassed, almost all of the key original elements of the System survive and can be understood in terms of their function within the System. The presence of the sandstone troughing, visible above ground for much of the lower part of the System, both preserves the early 'pipeline' and provides a linking element which does not exist in the systems of Sydney, Melbourne and Brisbane. The System is of high aesthetic and recreational value, due to the bush areas through which the System flows and the robust but attractive examples of the early waterworks technology, exemplified by structures such as Reservoirs 1 and 2, the Receiving House, Gentle Annie Falls the Pipe-Head Well and the aqueducts which span Longhill and Sassafras Creeks. The System has limited potential for archaeological research, and throughout its history has had a strong association with Hobart City Council.

3.3 Statutory obligations

The Mountain Water Supply System is listed on the Tasmanian Heritage Register as reference R1597. Registration places certain obligations upon parties wishing to undertake works to a registered place and an application for approval to undertake works is required under Section 32 of the *Historic Cultural Heritage Act* 1995 (Tas).

Elements of the Mountain Water Supply System are also listed on the *City of Hobart Planning Scheme* 1982[71]

- Pipeline Track Culverts and linear corridor Halls Saddle
- to Long Creek
- Halls Saddle Sluice or Valve House

[71] *City of Hobart Planning Scheme* 1982 – Appendix 1, Schedule F, Pg 142.

- Sassafras Creek Stone Aqueduct/Stone troughing
- Dunns Creek Stone Aqueduct/Stone troughing
- Dunns Creek Stone Piers & Abutments
- Fern Tree Bower Archaeological Remains
- Silver Falls Structure and place
- Fork Creek Wishing well and associated structure
- Long Creek Remains former bridges – stone supports

Under P20 of the *Planning Scheme*, Hobart City Council controls development which may affect items on the Heritage Schedule and may require their conservation and enhancement.[72]

Part of the System is also located within Kingborough Council area. While the System is not listed under the *Kingborough Planning Scheme* 2000, a 2007 review of heritage items in the Kingborough Council area has recommended the parts of the System within that council area be listed as heritage items under the local planning scheme.[73]

3.4 Curtilage of the System

The heritage curtilage for the System should be amended to include Waterworks Reserve, an area around the Ridgeway Reservoir and associated infrastructure in Ridgeway Park and the route of the Pipeline (Pipeline Track) from Waterworks Reserve to North West Bay River Weir. The listing should include a buffer along the pipelines to ensure ancillary features are included within the curtilage. This buffer should be a minimum of 10 metres which is the minimum width of the pipeline corridor, but may be wider where there is physical or documentary evidence of ancillary features or where the extent of any features has not been fully assessed and there is a requirement to protect the potential heritage of a broader buffer zone. For planning purposes, potential heritage impacts should be considered within 50m of the System and its key elements.

[72] *City of Hobart Planning Scheme* 1982 P20, Pg 21.

[73] McConnell, A., Knaggs, M. & Scripps, L. 2007 *Kingborough Heritage Survey Report (Stage 2 of the Kingborough Heritage Review)*. Report to the Kingborough Council and Heritage Tasmania

Chapter 4 – Management Issues and Challenges

The scale and complexity of the Mountain Water Supply System presents a range of challenges that impact upon its management and the conservation of its heritage significance. This section outlines the key management issues and recommends solutions which will provide for a balance of operational, recreational and conservation outcomes.

4.1 Mountain Water Supply Heritage Working Group

Management of the Mountain Water Supply System is spread across three key agencies, which have responsibilities for different areas and aspects of the System. These include:

Southern Water (formerly Hobart Water) – responsible for inspecting and maintaining the in-service parts of the infrastructure upstream of Fern Tree. Southern Water has responsibility to provide bulk water supply to the greater Hobart area and nearby, covering supply to eight municipalities, and to monitor and manage water quality within the System. It also contributes towards the maintenance of sections of the Pipeline Track and associated assets that provide operational access to its infrastructure.

Hobart City Council – responsible for providing reticulated water to the people of Hobart. It manages the land around the System from Neika to, and including, the Waterworks Reserve, Ridgeway Park and is the land management agency for sections of Wellington Park containing the pipeline. It also has responsibility for maintaining the sections of the Pipeline Track available to the public (i.e., excludes the section affected by landslip leading to North West Bay Weir), managing active and redundant infrastructure and providing interpretation.

Wellington Park Management Trust – responsible for strategic management of the land and catchments of Wellington Park which includes the System west (uphill) from Fern Tree to North West Bay River Weir, as well as for the larger natural areas surrounding the System. The Trust is also responsible for historic heritage conservation within the Park and for providing for recreation within the park, where this is does not impact on the natural and cultural values of the Park.

At present, these groups work co-operatively through the Mountain Water Supply Heritage Working Group (MWSHWG), which has representatives from each agency (as well as a representative from Heritage Tasmania (since the System is listed on the Tasmanian Heritage Register) and an independent heritage practitioner and meets roughly quarterly. The MWSHWG reports back to its constituent agencies to develop a consensus approach to managing the System. The MWSHWG will have the responsibility for overseeing the implementation of this document and for seeking appropriate resources from the constituent agencies. It should be noted that while the MWSHWG was established to promote a more cooperative and heritage aware approach to managing the System, the Group has no formal authority for decisions making and operates in a limited advisory capacity.

4.2 Other stakeholders

There are also a range of interested community groups, particularly the Fern Tree and Ridgeway Community Associations, which have particular interest in the recreational and conservation outcomes in the area. The Fern Tree Community Association has also been responsible for providing a range of interpretive signage, particularly around Fern Tree.

The Tasmanian Heritage Council has a statuary role under the *Historic Cultural Act 1995* in entering places with cultural heritage significance in the Tasmanian Heritage Register. As the secretariat to the THC, Heritage Tasmania also has a role in relation to registration and works related matters.

The MWSHWG may also wish to consider additional members to assist with the management of the System. Key potential members include:

Telstra – Telstra has telecommunications cables and pits along sections of the Mountain Water Supply System and access by their vehicles has been suspected of causing damage in some locations. Telecommunication cables are also run along the aqueducts which ideally should be relocated. At a minimum Telstra should be briefed on the conservation issues for the System and, potentially, invited to sit on the MWSHWG.

Community and activity groups – Community groups, particularly at Fern Tree and Ridgeway, have had an influence on the conservation and interpretation of the System and their continued participation should be encouraged. Similarly, activity groups such as walking and cycling organisations should be invited to be involved to develop approaches to managing activity-specific impacts and issues and to promote the System.

Heritage practitioners – it may be appropriate to establish a position on the MWSHWG to represent heritage practitioners in Tasmania, with a representative from Australia ICOMOS or a similar Tasmanian group. In addition to providing advice to the MWSHWG, the representative may be able to assist in promoting the System.

Field staff from participating agencies – it is critical that representatives from the field staff of Hobart City Council and Southern Water are invited to participate in the group. This is necessary to ensure field management issues are identified and management responses can be practically implemented.

In the interests of the MWSHWG not becoming too large and unwieldy, it is probably unnecessary for each of these groups to be represented on a regular basis. Rather, it is desirable to establish a baseline of understanding across these groups, potentially through a workshop or face-to-face briefing upon adoption of the Conservation Management Plan, with a standing invitation to bring issues of concern to the MWSHWG, or to be called upon for advice, as necessary.

4.3 Management Structure

As it is not anticipated that this management structure is likely to change in the foreseeable future, it is imperative that the MWSHWG and other stakeholder groups work towards a common set of goals to ensure consistency and co-operation. The core group should include other stakeholders as required to deal with identified management issues.

This CMP is a product of consultation with each of these key affected stakeholder groups and should be collectively endorsed by the MWSHWG and its constituent agencies and be used to guide future management of the place.

At the same time as seeking endorsement for the CMP from Hobart City Council, Southern Water and the Wellington Park Management Trust, there may be value in formalising the role of the MWSHWG through Terms of Reference.

Suggested Terms of Reference for the MWSHWG include:

Manage as a single entity – The main goal of the MWSHWG should be the integrated management of all sections of the System as if it were being managed as a single entity. The aim should be consistency in management practices, overarching goals and interpretation that will keep the System open and the heritage items along its length conserved and interpreted for Tasmanians and visitors into the future.

Developing a vision for the Mountain Water Supply System – The MWSHWG should develop a joint position on the future of the Mountain Water Supply System. While this document sets out the management and conservation issues, and suggests some potential interpretive measures, further thought and input is required at the local level as to how the System should be presented and enhanced for the benefit of the people of Hobart and Australia.

Endorsing a monitoring and management framework – Initially the MWSHWG and constituent agencies should endorse the CMP as the basis for the management of the System and monitoring progress against its implementation. In the longer term, management strategies and actions will need to be updated based on work completed and new issues encountered. This should include a formalised approach to monitoring both the needs and impacts of visitors to the System and the condition and maintenance of the historic fabric of the place.

Influence works and maintenance – The MWSHWG members must work to influence their respective organisations to both work within the framework set out by this document as well as seeking appropriate resourcing to ensure works are carried out and that staff from individual agencies adequately understand the sensitivities of the track and their responsibilities.

Input to works – The MWSHWG should have input to any major works proposed by any of the constituent agencies, to ensure these works are consistent with the vision, conservation principles and needs of the other member organisations.

Review the CMP – The CMP should be reviewed every five to ten years, depending on circumstances. The MWSHWG should initiate and guide any review process.

Promoting the System – The MWSHWG has a key role in promoting the System, developing consistent messages to be used by the constituent agencies and working with other groups such as community organisations to ensure the System is promoted appropriately.

Training – The MWSHWG should work with constituent agencies to ensure that maintenance and works staff from each agency are appropriately trained and review internal management procedures, to ensure management is consistent with the overall goals for the System.

4.4 Maintenance

Maintenance along the Mountain Water Supply System is important to maintain the operational functionality of the active parts of the System, to prevent inadvertent damage to the surrounding natural environment (e.g. through erosion caused by leakage), to facilitate the conservation of the significant heritage items along the route of the water supply system and to provide a safe and enjoyable recreational experience for local residents and visitors.

Given the variable conditions along the length of the System and the status of some parts of the System as operational versus

decommissioned,[74] different maintenance options will be required in different locations. This document establishes a range of acceptable options which can be used in specific locations depending on the precise nature of the problem.

One of the major maintenance issues along much of the Pipeline Track is the management of the sandstone troughing. This demonstrates evidence of historical wear due to foot traffic, recent wear due to vehicle and bicycles traffic and specific areas of damage caused from vehicles, as well as general wear and tear associated with a structure nearly 150 years old.

Past management of the sandstone troughing has included the replacement of broken capstones with pre-cast concrete replacements and in some areas the stone capping has been covered over with gravel to reduce wear; however this has caused some concern as to whether the stone is becoming too saturated with moisture and therefore more fragile. In cases where the fabric has become too fragile to repair effectively, it may be necessary to consider diverting the Track away from the affected area if possible.

Different management techniques will need to be employed at different locations along the System, do deal with specific issues. A range of management options is outlined in Chapter 5.

As work will likely be performed by a mix of in-house staff and external contractors, it is important that staff are appropriately briefed and that guidelines are developed and set in place where appropriate. Guidelines were recently developed for the cleaning of the sandstone aqueducts. The *Mountain Water Supply System, Hobart: Heritage Maintenance Guidelines* should be formally adopted by the MWSHWG and the constituent agencies as the basis for managing these issues. Maintenance staff will need to be appropriately trained in the use of the Guidelines and the Guidelines will need to be reviewed regularly to ensure they are effective and the techniques are appropriate for specific areas of the Track.

As the MWSS is a listed place on the Tasmanian Heritage Register, a Works Approval is required for all works. Works and maintenance can be expedited where there is a maintenance schedule that has been reviewed and been given an Exclusion Licence by the Tasmanian Heritage Council. It is recommended that the *Mountain Water Supply System, Hobart: Heritage Maintenance Guidelines* be submitted for consideration by the THC for such a Licence.

4.5 Vegetation management

Vegetation management is a major issue along parts of the System. In some areas, vegetation has significantly overgrown important structures. While an investigation undertaken in 2006 did not reveal significant damage to the sandstone troughing from tree roots[75], vegetation has the potential to damage other structures along the route of the System. The

[74] **Operational** in this context refers to the part so the System which are still in use as active parts of the water supply, such as the intakes, sections of pipe work and the reservoirs.
Decommissioned items are those non-functional elements which are principally of value through their ability to demonstrate the history of the place and which contribute to its character.

[75] McConnell, A. (2006). Mountain Water Supply System Pipeline Inspection Report (Stephensons Place to Waterworks Reserve).

Pipe-Head Well suffered significant damage to some of its sandstone elements due to a tree fall and other sections of the Pipeline Track may be at risk from similar issues.

In some areas, it is desirable to cut back vegetation away from historic structures, to prevent vegetation attack to the structures and to imporve solar access to allow structures to dry out. This should however be carefully considered where the structures are located on reactive clay soils, as drying may have other unintended impacts.

While the Water Supply System does pass through significant natural areas with scenic value, this should not prevent the management of vegetation which is causing damage to historically significant structures. As a cultural landscape, the Mountain Water Supply System owes its character at least partially to human intervention and management of both historic and natural features should be able to be undertaken sympathetically. Given both the significance and the fragile nature of elements of the System, particularly the 1860s sandstone features, active management of vegetation in the immediate vicinity of these features is appropriate and desirable, to prevent future damage.

4.6 Upgrades

As part of an operational water supply system, the Mountain Water Supply System will require upgrades in future to deal with issues including function, reliability, capacity and water quality. These upgrades should be undertaken in a manner which minimises the impact on highly significant historic fabric. In advance of any significant program of works, an assessment of the potential heritage impacts should be undertaken.

Upgrades which involve the replacement of fabric of lower significance, such as sections of cast iron pipe, can be undertaken with minimal impact on significance. Upgrades which affect more significant fabric, such as the aqueducts or the reservoirs themselves, need to be carefully designed to have minimal impact on these structures. This will need to be assessed on a case-by-case basis.

4.7 Design principles for new works

New works will inevitably be required along the Mountain Water Supply System, for operational water supply reasons, visitor amenity and safety, replacement of existing facilities which have exceeded their useful life or due to damage from fire, storm or other accident. These structures could include works such as safety fencing, shelters, culverts, etc. New structures should be designed to be low-key and harmonious with the character of the System and should be developed in accordance with a consistent set of principles. The character of the Mountain Water Supply System is variously rural and industrial/functional, sitting within a larger natural area. The exception to this is the Waterworks Reserve itself, which primarily presents as a managed recreational space.

New structures should ideally only be introduced when necessary to continue the function of the System, to deal with a safety issues, to facilitate the interpretation of the place or to provide public access in a manner which does not compromise the heritage values of the System.

Design principles for new structures should include:

- New structures should be functional and informal rather than decorative, reflecting the functional character of other structures along the System.

- Structures should be robust in appearance and function.
- Structures should reflect the variously rural, natural and industrial character of the System.
- Appropriate materials should be used including rough-cut sandstone and bush rock, iron and undressed timber rather than modern materials such as dressed timber, colour bonded metal, stainless steel or glass.

4.8 Operational Issues

A key aspect of the significance of the place is its continued function as a significant part of the Hobart water supply for nearly 150 years. Works which are designed to maintain the function of the Pipeline are to be encouraged and where necessary, compromises which favour the continued operation of the System or a particular asset are preferable over other solutions which would see elements of the System be decommissioned or abandoned.

Operational works do however need to respect the cultural, historic and natural values of the place and a need to maintain operations should not be seen as "carte blanche" to make operational changes to the assets of the System.

Operational issues identified in the past have included:

- Landslips caused by pipe leakage, drainage issues and bank instability
- Perceived "negligent" management
- Water quality issues
- Infiltration of the Pipeline from septic systems
- Issues with the cast iron pipe work on the aqueducts
- Working at height on the historic structures
- Unsympathetic new work such as the safety infrastructure at Silver Falls Weir

To be dealt with effectively, management recommendations need to be integrated into the existing asset management systems and procedures for Hobart City Council and Southern Water. These procedures and systems should be amended to note the historic features identified in this document and the need to identify and consider potential impacts in the design of works to the System. This includes amending any procedures dealing with emergency access, to ensure any potential accidental damage to significant features is minimised.

4.9 Recreation

Recreation has been a significant aspect of the Mountain Water Supply System since the late 19th century. The types of recreation have changed in the 21st century but the need for recreational access remains important.

At present, recreation is generally confined to walking and cycling. These uses are generally both compatible with the System however there are areas which are more sensitive than others.

The System presently lacks designated "destination" sites along its route, other than Waterworks Reserve, Silver Falls and St Crispins Well, which would encourage specific activities at different locations. While the Waterworks Reserve itself is a key destination site, other sites exist along the route which could serve as locations to attract visitors, drawing people along the path of the System and providing locations for interpretive "nodes".

Major potential destination sites include:

- Gentle Annie Falls
- Halls Saddle
- The Fern Tree Bower
- The Wishing Well

Each of these provides a logical stopping point along the route of the System and has scenic or historic qualities which may be of interest to visitors. These locations are also less sensitive in heritage terms and provide potential locations for the establishment of interpretive facilities or picnic grounds. Additional interpretive facilities at Waterworks Reserve and Ridgeway Park would also assist in directing potential visitors to destination sites along the route of the System, as well as providing a context for the place as a part of an integrated whole.

Concerns have been expressed regarding the closure of certain of the walking tracks due to water quality or safety concerns. These are beyond the scope of this document to address, save to say that if issues of water quality and safety can be managed then the re-establishment of historically used paths across the Mountain should be encouraged.

4.10 Access

Access to the Mountain Water Supply System is generally via the entrances to the Pipeline Track at the Waterworks Reserve, Fern Tree and Neika. Ridgeway Park is a separate destination which is not along the Pipeline Track. In general, the Track follows the historic route of the System save for the diversion below Gentle Annie Falls. It is desirable to re-establish the Track along the full length of the Pipeline to aid interpretation and allow visitation to the Pipe-Head Well. It would be desirable to incorporate a track along the Pipeline from Halls Saddle to Ridgeway Park, taking in the last phase of the System, but the feasibility of this has not been investigated.

A key issue which requires further information is the extent of visitor usage and the nature of usage, to judge the extent of the problems and appropriateness of associated responses. Visitor monitoring should be undertaken at key locations including the Waterworks Reserve, Fern Tree, Neika and Ridgeway Park to gauge the number and frequency of walkers and cyclists to different sections of the System. The number of vehicle movements should also be monitored.

Access falls into three general categories:

- Recreational access (walking and cycling)
- Maintenance/operational vehicle access (routine planned maintenance and new work by Hobart City Council, Southern Water and Telstra)
- Emergency access (unplanned work by Hobart City Council, Southern Water and Telstra which may be out of normal hours)

4.10.1 Recreational access- general issues

Recreational access should remain restricted to walking and cycling. Other activities such as horse riding and motor biking are likely to impact on water quality and cause damage to the features of the System such as the sandstone troughing, as well as creating conflicts with other uses due to the narrowness of the Pipeline Track.

The Pipeline Track should generally be kept in the alignment of the original pipeline. Where the path has been diverted, as at Gentle Annie

Falls, an additional path should be provided which follows along the original alignment of the Pipeline.

The sandstone troughing particularly provides a linking element along the Track and should be used both to guide visitors and interpret the historic function of the System. In other areas, this function can be served by the pipes, where visible. Where possible, the troughing should be left exposed. Where this is impractical due to conservation issues, the route of the troughing should be marked by a marker mounted in the ground above or adjacent to the troughing. It may also be desirable to establish interpretive media elsewhere along the route where the Pipeline fabric changed, such as the transition from troughing to earthenware pipe, or cast iron pipe.

Certain locations along the Pipeline Track present bottlenecks for the shared usage of the track by cyclists and walkers. The Twin Bridges particularly are too narrow to accommodate traffic in both directions. Track widening should be undertaken at bottleneck points where it can be done without disturbing significant historic fabric or clearing sensitive vegetation. Widening of the Twin Bridges should also be considered.

Beyond St Crispins Well, a previous severe landslip has closed the Track to all but operational personnel. It is desirable to reinstate access along this route, subject to the successful remediation of the landslip zone, although it is acknowledged this will be a long-term project. In the interim, investigations should be undertaken for possible alternate walking routes to the North West Bay River Weir. A new high track to Wellington Falls has however been established.

4.10.2 Recreational access- cycling

It has been noted that in some areas, particularly in the steep slope below Fern Tree, that damage has occurred to the sandstone troughing, with anecdotal suggestion the damage is caused by cycle use, although the exact cause is unclear. The cause should be investigated through formal monitoring of bicycle and other usage along this section of the Pipeline Track. If necessary, an initial way to attempt to control this is through the installation of signage at the top of the hill indicating that this is a sensitive landscape and bikes should be walked to the bottom of the hill. Another option would be to provide an alternate cycle route at this location. Investigation of alternate cycle routes were not included in the brief for this study.

A more radical, and less desirable, option would be the installation of one or more chicanes along the hill to inhibit cycle riding. This is a high intervention option and is not particularly desirable but may be necessary if less interventionist measures are unsuccessful in managing the problem. Should chicanes be installed, options should be looked at for using natural materials such as stone or undressed timber to construct the chicanes as opposed to the colour bonded metal chicanes which have been used in other areas of the Track.

4.10.3 Recreational access – walking

Walking appears on current information to be the primary method of public access to the Track and the rest of the System. The walking track is generally in very good condition and only a few sections, such as the descent from Fern Tree and Gentle Annie Falls, present serious grades. Walkers constitute the major “audience” for the Track.

Where steep grades are present, it is desirable to provide alternate paths around those grades, where possible, to provide access to those walkers with more limited mobility. This may however not be feasible in all locations and, wherever possible, should be restricted to the re-establishment of overgrown or disused tracks rather than forging new paths.

Walkers also present a potential threat to delicate heritage items and they should be discouraged from walking on sensitive structures such as the aqueducts and the sandstone trough capping. This can be achieved initially through low-key signage at major access points which highlight the sensitivity of historic fabric.

Where walking presents an ongoing impact to historic fabric, particularly the sandstone troughing, consideration should be given to diverting the walking track away from affected areas, although this should be the option of last resort. Attempts should first be made to control access to sensitive areas through other means, such as the provision of alternate routes or controlling access through strategic planting of vegetation in a manner which may block pedestrian access but allow visual access to historic features.

4.10.4 Routine maintenance access

Routine maintenance access is presently undertaken by Hobart City Council, Southern Water, the Wellington Park Management Trust and Telstra. The exact frequency of this access should be monitored in addition to recreational access. At a minimum, it is recommended that the System be subject to complete inspection on an annual basis. Sensitive fabric, such as the sandstone trough capping, should ideally be inspected more frequently, ideally 2 to 3 times per year.

The major issue that has been identified from maintenance vehicle access is damage to the sandstone troughing, in areas where vehicles have been driven over or parked on the sandstone capping. This has been noted as causing damage in the form of cracked and dislodged capstones. Part of the problem may be the lack of awareness of vehicle drivers that the troughing is present within the access track. Uncovering buried troughing or the installation of markers along the route of the troughing would assist in identifying sensitive areas.

The most direct way of addressing this issue is to ensure those staff bringing vehicles into the area are briefed to not drive or park vehicles on top of the troughing and, if possible, to limit vehicle access to the Pipeline Track to specified locations which will have low impacts to historic fabric.

4.10.5 Emergency access

The other key form of access is 24-hour emergency response access, to deal with the failure of equipment along the Track and other parts of the System, or to respond to natural disasters such as fire. Provision for this sort of access must remain, however emergency response personnel should be briefed and procedures from relevant agencies amended to note the sensitivity of the area and the need to keep vehicles off the sandstone troughing wherever possible.

4.11 Presentation and Interpretation

The Mountain Water Supply System should be presented to the public as an integrated system, where the components all make a contribution to the overall functioning of the System. This should include presenting an historical understanding of how and why the System developed, to facilitate understanding of the changing needs of the local community and evolving technology which kept the System functioning and helped it

to expand. The integrated presentation of the System requires a consistent approach, style and quality to its interpretation, as well as consistency in the style and quality of safety and visitor infrastructure, which together will assist visitors in understanding the integrated and interdependent nature of the System, and not focus only on the individual element they may be visiting.

Interpretation is a key element in bringing a site to life for visitors. This is particularly important in a large and complex site such as the Mountain Water Supply System. Without good interpretation, visitors can lack an understanding of the context for the individual components. Interpretation allows these components to be understood as part of a greater whole and assists in understanding the related stories about the development of the system and the growth of Hobart as a city.

Interpretation should work on a range of levels, catering for various audiences including casual and recreational visitors, heritage tourists, operational staff and employees. This document is not an interpretation strategy for the System but outlines a range of issues which need to be taken into consideration in the development of an Interpretation Plan.

4.11.1 Audience

No formal work has been undertaken to determine the audiences for the interpretation of the System. Anecdotal information indicates that the key audiences are recreational walkers and cyclists, local residents and operational and maintenance staff of responsible authorities. Some cultural tourists may also seek out the Mountain Water Supply System however the extent of the promotion of the place to encourage this is not known. Further work to identify audiences and their needs will assist in the development of an effective interpretation strategy.

4.11.2 Integrated interpretation on site

One of the major challenges for the interpretation of the Mountain Water Supply System is its length and the disconnected nature of its assets. While visitors may experience parts of the System, such as the aqueducts at Fern Tree or the Waterworks Reserve, they may not necessarily understand these elements are part of a larger whole. Effort needs to be made to present the place as an interconnected system, with interpretive media which link the different key features of the system and provide interpretive “nodes” which draw visitors from place to place. Off-site interpretive media should also be provided for those interested people who may have limited mobility or no opportunity to visit the place.

In terms of the style and design of on-site interpretive media, the character of the landscape in which the System sits should be respected. Much of that landscape, with the major exception of the Waterworks Reserve, has a rural “early colonial” feel, within a natural setting. Care should therefore be taken to introduce interpretive media which respect this feel and do not distract or detract from the appreciation of historic elements.

At present, the interpretive media along the route of the System include a series of signs erected at different times by different groups, including Hobart City Council, the Wellington Park Management Trust and the Fern Tree Community Association. Interpretive maps have also been prepared by the Fern Tree Community Association and the Wellington Park Management Trust. These media should be reviewed by the MWSHWG, ideally within the context of an Interpretation Plan, to ensure coordination of messages, themes and allow resources to be used effectively.

4.11.3 Key interpretive nodes

Along the route of the System, there are several obvious key interpretive nodes. These are either places of high historical significance in their own right or are logical entry, exit or stopping points along the route of the System. While the placement of interpretive media in these locations should be backed up by further research into visitation and audience, key potential locations include:

Location	Rationale	Suggested interpretation
Waterworks Reserve	Local recreational destination Major historic features Entry/exit point	Signage System map Site map Refresh Receiving House display
Gentle Annie Falls (top)	Logical stopping point Scenic location	Signage
Halls Saddle	Scenic location	Signage System map
The aqueducts	Major historic features	Signage
Fern Tree village	Logical stopping point Entry/exit point	Signage System map
Fern Tree Bower	Local recreational destination Major historic features Scenic location	Signage
Wishing Well	Major historic features Logical stopping point	Signage System map
Watchorns Hill	Entry/exit point	Signage System map
The Siphon (start)	Major historic features Logical stopping point	Signage
Tram Terminus (below St Crispins Well)	Major historic features Logical stopping point	Signage System map
North West Bay River Weir * Or at the gate to this section of the Track if it remains closed to the public	Major historic features Logical stopping point	Signage System map
Ridgeway Park	Local recreational destination Major historic features Stand-alone site	Signage System map Site map

Some of these locations already possess the suggested interpretive media however they differ in presentation and are not necessarily linked within one interpretive framework.

4.11.4 Off-site interpretation

As the Mountain Water Supply System is an important heritage place for Tasmania, it is desirable to provide some level of off-site interpretation to encourage visitation from outside the local visitor catchment and to provide for those interested people who may be unable to visit the place.

Interpretive brochures, maps and other media should be made available through the websites of the various stakeholder agencies, particularly Hobart City Council and the Wellington Park Management Trust, due to their responsibility for recreational services. Other initiatives, such as a "virtual walk" along the System could be done using existing third-party online systems such as Google Earth or Microsoft Virtual Earth. This

allows a level of simple, low-cost interpretive media which are available throughout the world.

Off-site interpretation should continue to be supported with other forms of on-site interpretation such as displays at easily assessable locations such as the Waterworks Reserve as well as brochures and online interpretive information.

4.11.5 Promotion and interpretation

With a site like the Mountain Water Supply System, interpretive signage along the route is going to be the key medium for the majority of visitors. An important part of making the visitor experience feel integrated will be the establishment of consistently styled interpretive media linked by an overarching interpretation strategy. A recognisable commonly used symbol or design brand developed for the System and used by all responsible agencies will assist in this integrated feel.

Interpretation also needs to be adequately promoted to the target audiences. This includes advertising in appropriate publications, holding events designed to attract target visitors and providing opportunities for operators of sympathetic events to participate in the interpretation of the place.

With respect to the System, key promotional opportunities could potentially include:

- Promotion of the site as a destination for local schools interested in Tasmanian history, water management issues and/or environmental issues.
- Developing guided interpretive walks or cycle tours in conjunction with a commercial tour operator.
- Promoting the System through the Tasmanian Heritage Festival, Mountain Festival or other local heritage-themed events.
- Holding public events to celebrate key achievements in conservation or interpretation works.
- Working with recreational cycling groups to establish a “heritage cycling” event or trail, which clearly identifies which sites are and are not suitable for cycle access.

4.11.6 Visitor management

The other aspect of interpretation, particularly on a site like the Mountain Water Supply System where visitation will be principally self-guided, is the management of visitors to the place. Visitor expectations need to be managed and visitors must understand the nature and sensitivity of the places they are visiting. In some cases, it may be appropriate to establish visitor facilities in key locations.

In order to appropriately cater for visitor needs, interpretive media, particularly as key access points along the System, need to inform visitors of the following points:

- The distances they will be travelling
- Location of key facilities such as toilets and water
- The sensitive nature of historic fabric, the local environment and restricted areas to preserve water quality

It is not recommended that visitor facilities such as toilets be placed along the Pipeline Track but it may be desirable, based on visitor research, to establish robust, low-key visitor facilities such as benches and designated picnic areas at appropriate locations.

Chapter 5 - Conservation policy

A Conservation Policy sets out the key goals for managing the historic values of a place and the following policy is designed to encompass the multiple values of the System for its history, its function and its recreational value. This policy should be adopted by the MWSHWG and other stakeholders involved in the management of the place as a basis for decision-making.

5.1 General Conservation Policy

- The Hobart Mountain Water Supply System will be managed in a manner which recognises the cultural significance of the System, recognises that the System has multiple values for historical recreational and operational reasons and strives to balance these multiple values in a sympathetic manner.

5.2 Recognition of multiple values

- The Mountain Water Supply System is recognised as a place with a high degree of heritage significance as the early water supply for the City of Hobart. This significance is expressed through both the continued function of much of the System and in the historic fabric which can be found along its route.
- The System is also recognised as containing and passing though many places of natural beauty and environmental value on Mount Wellington. These natural features contribute to the enjoyment of the place but do not subsume the important evidence of human activity involved in the construction of the System.
- The entire area is recognised for its value as an important recreational asset for both local residents and visitors. Open public visitation is encouraged and should be facilitated in ways that promote, but do not impinge, upon the historic values of the System or the natural values of the surrounding area.
- The operational parts of the System, which continue to form part of Hobart's water supply system, take much of their significance from their continued function. Efforts will be made to accommodate that continued function in ways which minimise impacts to the historic natural and recreational values of the System.

5.3 Conservation of significant fabric

- Historic fabric from all phases of the System is present and important, and will be recognised, conserved and protected.
- The greatest emphasis will be on conservation of fabric which is fragile, particularly from the earlier phases of the System.
- Wherever possible, reasonable compromise will be made to keep operational parts of the System in service. Efforts will be made to keep operational changes within areas of the later phases of the System, wherever possible. This may involve the introduction of new fabric within historic areas to maintain function.
- Alterations to operational fabric will take into account heritage values and will seek to minimise impacts to those values.
- Where function cannot be maintained, decommissioned fabric will be retained in situ and interpreted, provided this can be done safely and without compromising other values of the place.

5.4 Promotion of the place and its values

- The System will be presented as a whole, integrated entity and efforts will be made to present the context of individual elements within that system and to direct visitors to other locations along the System.
- A common approach will be taken to the interpretation, promotion and presentation of the System. This will include consistency in the design of interpretive media and overall "branding".
- The presentation of the System will strive for consistency in the style and quality of visitor infrastructure along its route.

5.5 Active management

- A mechanism will be established to coordinate the complex management of the System, its components and its multiple values.
- Proactive management will be taken for areas of high significance and sensitivity, including routine and cyclical maintenance.
- Guidelines will be developed to guide the design of new visitor management and interpretive elements within the System. These Guidelines will stipulate appropriate designs and materials for introduced fabric.
- A forward program of conservation works will be developed and integrated into business planning and budgeting.
- Periodic monitoring will be undertaken of visitation, visitor impacts and general condition of historic fabric and will be used to inform and refine future management actions.

5.6 Interpretation of history and values

- A common approach will be developed towards the interpretation of the System and the key messages to be presented. This interpretation is to include recognition of the multiple values and functions of the System.
- Further research into the history of the System will be encouraged and used to inform future interpretive decisions about the place.

This Conservation Policy is not exhaustive and should be amended as new information comes to light, works are completed to the System and a wider vision is developed for how the place will be presented and promoted into the future. This Conservation Policy will particularly need to reflect visitor needs once these have been ascertained in greater detail.

Chapter 6 – Recommendations

This chapter sets out a range of specific recommendations for addressing the heritage issues for the Mountain Water Supply System, to improve its management, conservation and interpretation. These Recommendations conform to the Conservation Policy for the System and are designed to deal with the management issues known at present and to outline the work necessary to fill any gaps in current knowledge.

These recommendations are specific to managing the historic fabric and issues affecting the heritage significance of the System. They do not cover other management issues within the area around the System, such as managing flora and fauna or visitor amenity, except where those issues have an impact or potential impact upon the heritage values of the System.

6.1 Management Recommendations

Recommendation 1 – Integrating management across the System

The main issue which needs to be addressed to improve management across the Mountain Water Supply System is to work towards integrated management across the responsible authorities.

1.1 Hobart City Council, Southern Water and Wellington Park Management Trust should adopt this CMP as the basis for future management and agree to jointly oversee and work towards its implementation.

1.2 Upon adoption of the CMP, the constituent agencies should amend their internal documents and procedures to ensure consistency with the policies of the CMP. These should be endorsed by the Mountain Water Supply Heritage Working Group prior to implementation.

1.3 The Mountain Water Supply Heritage Working Group (MWSHWG) should be formally recognised by these three management agencies and constituted under the Terms of Reference suggested in the CMP.

1.4 Groups currently not involved in the management of the System but with an interest or potential impact, should be briefed by the MWSHWG, as necessary. Key groups include:

- Telstra
- Community groups
- Walking groups
- Cycling groups

Stakeholder groups should be provided with a joint briefing on the CMP, its intent and recommendations, upon its adoption by the key management agencies for the System.

1.5 The entire Mountain Water Supply System should be included under one heritage listing under the Tasmanian *Historic Cultural Heritage Act* 1995, from the Waterworks Reserve to the North West Bay River Weir and including the elements contained within Ridgeway Park. This listing should include all significant elements identified in this report.

1.6 The curtilage for the listing should include the Waterworks Reserve, portions of Ridgeway Park and all historic infrastructure along the Pipeline within the 10 metre pipeline corridor. A 50-metre buffer either side of the Pipeline should be established to ensure ancillary features such as quarry sites are captured by the listing, however this buffer does not need to be included within the heritage listing.

1.7 A forward budget for conservation and interpretation of the System should be developed under the auspices of the MWSHWG, based on

the priorities established in this CMP with funds contributed from the constituent management agencies.

1.8 Review this CMP every 5-10 years, or as necessary due to significant changes in management issues for the System.

Recommendation 2 – Monitoring the condition and use of the System

Different conservation techniques and interpretative measures will be required at different locations, depending on the change in condition and intensity of use of these areas. Establishing monitoring regimes is essential to ensure resources are effectively used in areas of greatest need.

2.1 Monitor the condition of the historic fabric of the place on an annual basis to determine the areas receiving the greatest impact from visitation and implement appropriate visitor control or conservation measures in those locations.

2.2 Where condition monitoring has indicated a risk or damage to significant fabric, action should be undertaken to mitigate the risk and repair the damage without delay.

2.3 Undertake visitor monitoring at key locations including the access points at the Waterworks Reserve, Fern Tree, Neika and Ridgeway Park, to determine the level of use of the different sections of the System by walkers, cyclists and operational vehicles.

2.4 Results of visitor and usage surveys should be used by the MWSHWG to feed back into strategic planning for the System and to adjust priorities for conservation or interpretation as necessary.

2.5 Surveys should be redone every 5 to 10 years to determine changes to the use and visitor needs of different sections of the System.

Recommendation 3 – Retain the System in operation

A key aspect of the significance of the System is the fact that it continues to function nearly 150 years after its construction. While modified and added to, these modifications have generally not obscured the earlier phases of the System, allowing it to be understood as a functional whole. Retaining this function is critical to retaining the significance of the System.

3.1 Retain the operational components of the Mountain Water Supply System in service, including intakes, weirs, pipe sections and other functional components wherever they can be sympathetically upgraded to meet operational, safety and water quality requirements.

3.2 Monitor the impacts of operational activities upon the historic fabric of the System and adjust management practices accordingly, to minimise operational impacts on historic elements of the System.

3.3 Sympathetic modification to historic fabric is permissible when the alternative may be the decommissioning of an historic feature.

3.4 Any potential modifications should be reviewed for heritage impacts and those impacts should be minimised as much as possible during the design phase.

3.5 Modifications made to continue water supply operations should be sympathetic in terms of function and appearance and should not obscure historic fabric.

3.6 Where operational modifications will require significant alteration or loss of historic fabric, the element should be decommissioned,

conserved and interpreted. This should however be an option of last resort.

Recommendation 4 – Introduced fabric

In order to maintain both the operations and recreational values of the System, it is recognised there will be an ongoing need to introduce new fabric to the system. This should only be done where there is a clearly determined need to introduce new fabric as opposed to reusing existing fabric.

4.1 New fabric should not disrupt the essentially natural and industrial character of the System and the Track.
4.2 Design Guidelines should be prepared under the auspices of the MWSHWG which sets consistent design principles for new fabric for interpretation and visitation management within the System.
4.3 The Design Guidelines should prescribe a suite of suitable materials sympathetic to the heritage significance of the system whilst having regard to availability, asset lifecycle costs and environmental sustainability.
4.4 New fabric for operational water supply purposes should minimise, wherever possible, its impact and intrusion on historic elements of the System. Where possible, this new operational fabric should be consistent with the principles of the Design Guidelines.
4.5 Wherever possible, sympathetic materials such as sandstone, rough cut timber and unpolished metal should be used for new elements such as retaining walls, fencing and barriers.
4.6 Where such materials cannot be used, new elements should be concealed or screened using sympathetic materials or screen plantings wherever possible.
4.7 Existing infrastructure such as interpretation, chicanes and visitor infrastructure should be reviewed for consistency with the design principles and be progressively replaced where inconsistent with those principles.
4.8 A Statement of Heritage Impact should be prepared for new work as required and any necessary statutory approvals be obtained.

Recommendation 5 – Staff and contractor training

Much of the routine maintenance work to the System is undertaken by the staff of Hobart City Council and Southern Water or by subcontractors working for these agencies. Staff and contractors need to be adequately briefed on the sensitivities of the System and the Track to ensure maintenance activities are sympathetic and accidental damage does not occur to significant fabric.

5.1 Develop a briefing for operational and maintenance staff from both agencies which highlights the key historic features and sensitive areas along the System. This could take the form of a 'toolbox talk' but will ideally include a site inspection component to one or more key historic places along the System.
5.2 Maintenance staff should be trained in and use maintenance approaches which are sensitive and appropriate to the System and its historic elements.
5.3 Key issues for maintenance staff to be made aware of include:
    5.3.1 Vehicle access to the Track and the need to avoid significant fabric, particularly the sandstone troughing.
    5.3.2 No attachment of items such as signage or fencing to historic fabric without appropriate conservation advice.

5.3.3 No removal or change to historic fabric without conservation advice.

Recommendation 6 – Internal management procedures

Both Hobart City Council and Southern Water maintain internal management procedures and systems which are used to plan and execute maintenance works to elements of the System and the Track. These procedures should reflect the presence of significant historic fabric and include maintenance directives which are consistent with the significance of that fabric.

6.1 Hobart City Council and Southern Water should review internal management procedures for areas and assets along the Supply system to ensure all procedures identify the presence of historic fabric and incorporate the management recommendations from this document.
6.2 Other management systems such as Geographic Information Systems and asset management databases also require updating with this information.
6.3 Where existing maintenance regimes are found to be in conflict with conservation objectives, new maintenance processes should be developed for the particular area or maintenance issue which incorporates conservation advice.

6.2 Physical Conservation Recommendations

A range of physical conservation issues have been identified throughout the System. Some are overarching issues while others relate to specific elements of historic fabric.

General conservation issues

Recommendation 7 – Vegetation control

Vegetation represents one of the biggest risks to historic fabric along the route of the System. This risk can take the form of vegetation growth on historic fabric, attack by tree routes, danger from bushfire or damage due to falling trees or branches. Significant damage has occurred at the Pipe-Head Well due to a tree fall and areas of the sandstone troughing are potentially under threat from tree route action. While the scenic and natural values of the area are acknowledged, vegetation still needs to be managed in a way which will protect historic fabric of high significance.

7.1 In general, vegetation should be cleared around the bases of historic fabric. Climbing plants particularly should be kept off of historic fabric.
7.2 For larger trees, an arboricultural survey should be undertaken to identify those trees directly threatening historic fabric. Trees identified as causing damage or with the strong potential to cause damage to historic fabric should be removed.
7.3 Vegetation growing in or on historic fabric should be cleared by hand pulling for small plants or by spraying with herbicide and cutting back for larger, woody plants.
7.4 Herbicides should only be used directly on plant growth and should not be applied to historic fabric.
7.5 Root systems growing on historic fabric should be cut and poisoned and allowed to die back and shrink before removal.

7.6 Any use of herbicides shall be subject to the consent of Southern Water to ensure that water quality is not compromised.

7.7 Trees should be removed from embankments adjoining historic fabric to prevent damage in the event of a fall, subject to arboricultural assessment.

7.8 Large trees which may damage historic fabric in the event of a fall should be removed as soon as they are identified. Around key elements of historic fabric, including the aqueducts and Pipe-Head Well, all significant trees within 10 metres should be inspected for their potential to fall.

7.9 Where tree roots are infiltrating historic fabric, particularly stonework, cut roots back and install underground root barriers in affected locations.

7.10 Trim back the tree canopy around areas of historic fabric which are subject to high levels of growth of lichen, moss and other plants attracted by very damp climates. This is particularly the case at the aqueducts below Fern Tree. This improved solar access will help dry out the affected area and reduce the attack from moisture-loving plants.

7.11 Where new plantings are required, use appropriate native species and do not plant woody plants or trees within 1 metre of historic fabric.

Recommendation 8 – Attachments to historic fabric

In a number of locations, modern fabric has been attached to historic fabric to accommodate contemporary infrastructure needs. The major areas where this has occurred is at the aqueducts, with the attachment of telecommunication cables, and at Silver Falls Weir at Fern Tree, where modern safety and access equipment has been installed which is visually intrusive. In general, new fabric should not be attached to historic fabric. Telecommunications cables have also been run within sections of sandstone troughing. It is recommended these existing attachments be progressively removed and relocated elsewhere.

8.1 Wherever technically feasible, progressively remove modern attachments to historic fabric.

8.2 Telecommunications cable should be removed from the aqueducts below Fern Tree and relocated underground away from historic fabric.

8.3 Telecommunications cables should be removed from sandstone troughing and relocated in conduits at least 1 metre away from the sandstone troughing.

8.4 Investigations should be undertaken at Silver Falls Weir as to how the safety equipment can be reconfigured to be less visually intrusive to the site or how the weir itself can be rebuilt to accommodate required changes more sympathetically.

Recommendation 9 – Managing the sandstone troughing

The sandstone troughing presents one of the biggest conservation challenges for the System. This is due to its length, condition and the high degree of wear it receives from foot, cycle and vehicle traffic. Given its length and the diverse terrain it passes through, there is no universal solution to its conservation. A range of conservation techniques are set out below which should be used in affected sections of troughing, as appropriate.

9.1 Wherever possible, the troughing should remain exposed to provide a visual linkage along the route of the Pipeline Track.

9.2 A full condition survey should be undertaken of the troughing using visual inspection and a measuring wheel, which records the condition of precise lengths of the troughing. This should include selective uncovering of buried sections to determine their condition, at approximately 50 metre intervals. This information should be used to prepare cost estimates for implementation of these conservation recommendations for the differently affected sections of the troughing.

9.3 Condition monitoring should be based on the track section designations established by Hobart City Council for maintenance purposes. Future trough maintenance should be integrated into the routine management regimes for those sections, based on the survey recommended above.

9.4 Maintenance staff and contractors should be briefed that vehicles should not be driven over or parked on sandstone troughing (see also Recommendation 5 – Training).

9.5 Where sections of the troughing are unstable but still carry water (groundwater or runoff), use low impact repair techniques such as slip lining with modern flexible pipe to keep the troughing in service.

9.6 Where sections are unstable but out of service, backfill affected sections with clean sand to prevent failure of the sandstone lids. Sand should be packed in sandbags to prevent washout.

9.7 Where sandstone lids are damaged, the best repair technique will be to replace broken lids with new sandstone lids. The replacement lids should fit and be of similar design but be distinguishable from the original cap stones, and the date of replacement inscribed on the stone.

9.8 Modern concrete lids should be progressively replaced in sandstone.

9.9 A regular program of lid replacement should be established which sets a target and budget for replacing, say, 25 meters of sandstone lids per annum. This should be factored in as a routine annual maintenance item for the Track.

9.10 Roots which are infiltrating the sandstone troughing should be cut back and have root barriers installed along the outside of the troughing to prevent reoccurrence (see Recommendation 7 – Vegetation Control).

9.11 In selected areas where a high degree of wear has been identified, it may be necessary to cover over the sandstone to protect it. A layer of geotextile should be placed over the troughing, which should then be covered with a hand-compacted crushed gravel.

9.12 Where troughing is covered over and affected by excessive moisture, sections should be re-excavated and exposed to air to allow them to dry out. These sections should be carefully monitored for several weeks following exposure to determine if exposure has adversely affected the fabric. If necessary, fabric should be conserved in accordance with one or more of the recommendations above, as appropriate.

Recommendation 10 – Fencing and access control

Fencing and access control devices, such as chicanes, have been installed in a number of places along the Track. This has been to address issues such as potential for falls from steep slopes, to provide handrails on steep grades or to manage traffic speed and flow. While it is acknowledged that such devices are necessary, most are unsympathetic to the character of the System and, as they reach their end of life, should be replaced with sympathetic alternatives based on the Design Guidelines recommended

above. This is particularly important where such devices are juxtaposed with important historic features of the System.

10.1 Existing fencing and access control devices should only be removed at the end of their operational life.

10.2 Once removed, fencing and devices should be replaced with sympathetic alternatives, based on the recommendations in the Design Guidelines. Any new access control devices or fencing should use these sympathetic alternatives.

10.3 Sympathetic materials include sandstone and bush rock, rough-cut timber and logs or unpolished metal.

10.4 Wherever possible, alternative methods of access control should be considered, such as establishing appropriate native plants to block access (where this will not cause damage to historic fabric), or the use of bush rock or logs as barriers.

10.5 New access control measures should not be overly formal or modern in appearance.

10.6 Modern materials, such as steel, should only be used where the use of other natural materials is not practical or has been shown to be ineffective. New metal should be unpolished in finish rather than colour bonded.

10.7 Wherever possible, important historic elements of the System should be left unfenced, unless there are significant public safety or water quality concerns which are unresolvable by alternative means.

Recommendation 11 – Reinstating missing historic features

Several key features of the System have been modified or lost over time. Some of these are key elements in the System and their absence hampers the understanding and appreciation of the System and the achievement it represents. The works recommended here to reinstate missing features are not essential, but are desirable and should be seen as long-term goals for the management of the System. The feasibility and cost of these options has not been investigated and will require further consultation and investigation. Further long term projects may be identified by the MWSHWG.

11.1 Conserve the Receiving House and use as a central point for interpretation of the System.

11.2 Reinstate access to North West Bay River Weir, subject to landslip concerns being adequately addressed.

11.3 Reinstate the missing top of the Valve House at Reservoir No 1.

11.4 Investigate the potential for reinstatement of water flow over Gentle Annie Falls on a permanent basis (if practical) or alternately as a temporary installation that is activated for a defined period annually.

6.3 Fabric and site-specific conservation and presentation recommendations

Recommendation 12 – Site-specific conservation recommendations

The following table sets out key conservation recommendations at the major areas of historic fabric along the Mountain Water Supply System. Some specific items require more detailed conservation investigation by a specialist to develop an appropriate conservation approach (e.g. the Receiving House). As a general principle, a Statement of Heritage Impact should be prepared for any substantial program of works which may impact on significant historic fabric, such as operational upgrades or visitor services upgrades. Interventionist conservation programs to historic fabric, i.e. to the Pipe-Head Well or Receiving House, should be guided by separate detailed documentation prepared with the input of relevant specialists e.g. architects, engineers, conservators, etc.

Sections & Features			
Section A – Waterworks Reserve			
Section A – Waterworks Reserve	**Feature**	**Recommendation**	**Frequency & details**
	A/1. Reservoir No 1 (lower reservoir)	Remove vegetation from stonework Maintain drainage systems Repoint stonework as required using appropriate lime mortar	Annual inspection & removal as necessary Annual inspection & cleaning as necessary 20 years (as necessary)
	A/2. Reservoir No 1 Valve House	Remove vegetation from stonework Repoint stonework as required using appropriate lime mortar Investigate reinstatement of the top of the Valve House	Annual inspection & removal as necessary 20 years (as necessary) Separate investigation
	A/3. Reservoir No 1 Date Stone	Gentle cleaning of stonework	Annual inspection & cleaning as necessary
	A/4. Reservoir Keeper's Cottage (potential archaeological site)	Do not excavate in this area without archaeological advice	Separate investigation (if area is to be disturbed) Interpret

	A/5. Reservoir No 2	Remove vegetation from stonework Maintain drainage systems Repoint stonework as required using appropriate lime mortar	Annual inspection & removal as necessary Annual inspection & cleaning as necessary 20 years (as necessary)
	A/6. Reservoir No 2 Valve House	Remove vegetation from stonework Repoint stonework as required using appropriate lime mortar	Annual inspection & removal as necessary 20 years (as necessary)
	A/7. Receiving House	Prepare specific scope of conservation works for the Receiving House Remove vegetation from stonework Remove concrete pointing and reinstate with lime mortar Reconstruct roof and roof drainage to historic configuration Renew internal historic display in line with Interpretation Plan	Separate investigation Annual inspection & removal as necessary Separate investigation Separate investigation Interpret
	A/8. Regans Gully Aqueduct	Remove vegetation from stonework Investigate potential tree root impact at east end Repoint stonework as required using appropriate lime mortar	Annual inspection & removal as necessary If necessary, remove tree if found to be affecting stability. Requires separate structural engineering investigation 20 years (as necessary)
	A/9. Concrete pipe stands	Monitor condition	Annual inspection If stability appears affected, conduct separate investigation Interpretive potential
	A/10. Pump house	Monitor condition	Annual inspection
	A/11. Dry stone walls	Monitor condition Remove vegetation from stonework Repair using dry stone walling techniques as required	Annual inspection As required Use traditional techniques. Do not use cements or mortars to repair damage.

Section B – Waterworks Reserve to Fern Tree			
Section B – Waterworks Reserve to Fern Tree	B/1. The Pipe-Head Well	Reinstate track to the Pipe-Head Well	Investigate feasibility of reinstating track along Pipeline route, or establish new track at a lower grade. Interpret (only once access is re-established)
		Remove steel viewing platform	One-off removal of intrusive fabric
		Remove picket fencing	One-off removal of intrusive fabric. If necessary, re-instate fencing in accordance with the Design Guidelines principles
		Clear vegetation from sandstone	Annual inspection & remove vegetation from stone as required Investigate all trees within 10m for potential fall risk to feature.
	B/2. Gentle Annie Falls	Remove existing fencing and replace with sympathetic alternative	Re-instate fencing in accordance with the Design Guidelines principles.
		Trim the canopy selectively to retain view to the Waterworks Reserve	Annual inspection & trim as required.
		Repair collapsed collecting basin stone work at the base of the Falls	Use appropriate techniques; To include reuse of the collapsed stone and lime mortar.
		Investigate reinstatement of water flow over Gentle Annie Falls for interpretive purposes	Separate investigation (long term, low priority)
	B/3. Sandstone troughing	Monitor condition	Conduct detailed condition survey
		Repair in accordance with conservation techniques recommended in this CMP.	Use appropriate technique based on condition & monitoring (e.g. do nothing, sand filling, slip lining, covering,

			exposure, diversion)
		Replace concrete lids with sandstone	Ongoing program to replace 25m of lids per annum (adjust figure as required, based on condition survey)
		Keep culverts and gutters open and cleaned, and repair erosion or other damage around these features.	Annual inspection and cleaning as required. Repair work needs to be professionally assessed prior to works
		Remove any trees growing out of troughing embankment which are found to be at risk of collapse	Separate investigation
	B/4. Halls Saddle	Interpret	Interpret construction of Ridgeway Reservoir & impacts of diversion on earlier sections of the System.
		Create a walking track to Ridgeway Reservoir, along Pipeline route	Investigate feasibility and necessity
	B/5. The Sluice House	Reinstate door to original configuration	Replace intrusive fabric using original design for the structure.
		Clean sandstone	Initial gentle cleaning, annual inspection and then clean as required.
		Investigate repair of damaged sandstone roof edging	Separate investigation to reinstate missing fabric. Use stone which is a close colour match but do not chemically treat to match the weathered colour of the building. Use appropriate lime mortar. Do not use concrete mortar on this structure for any reason.
	B/6. Sandstone Aqueducts over Sassafras Gully and Longhill Creek	Clean and remove vegetation in accordance with the Heritage Maintenance Guidelines (McConnell 2007)	Integrate into HCC management regime for the Pipeline Track
		Open up canopy around aqueduct to improve solar access and reduce attack from moisture-loving vegetation	Initial cut-back followed by annual inspection and trimming as required.

		Remove telecommunications cables	One-off removal of intrusive fabric
		Remove remnant metal strapping from base of piers	One-off removal of intrusive fabric
		Remove graffiti	Monitor and clean as necessary. Hand clean only – do not use pressure sprayers.
		Investigate soundness of iron pipeline supports. If necessary, replace with modern stainless steel supports designed to match original configuration.	Separate investigation
		Integrate "tying on" attachment points to new pipeline supports to facilitate future maintenance of the aqueduct at height.	Separate investigation
	B/7. Stone Piers for original wooden troughing over Longhill Creek	Undertake structural investigation to confirm stability of piers	Separate investigation
		Hand clear large vegetation around piers to distance of 1 meter.	Initial one-off cut back, monitor and repeat as necessary.
		Remove any vegetation growing up the sides of piers	Annual inspection & remove as necessary.
		Repoint stonework with lime mortar as required.	Every 5-10 years or as directed by structural investigation
Section C – Fern Tree to Neika			
Section C – Fern Tree to Neika	C/1 The Fern Tree Bower	Develop a landscape plan for Fern Tree Bower which investigates (and provides for) the extent to which the pre-1960 configuration of the place can be re-established and significant heritage features can be reinstated.	Separate investigation
		Establish appropriate low-key visitor facilities such as benches and picnic tables to encourage visitation	Design in accordance with Design Guidelines principles and Landscape Plan
		Establish interpretive media	In accordance with Interpretation Plan

	C/2 Silver Falls Weir	Replace inappropriate modern timber and wire fencing at Silver Falls Weir Remove concrete from ground surface at Silver Falls Weir Investigate removal or concealment of the safety equipment on Silver Falls Weir	Design new fencing in accordance with Design Guidelines Re-landscape in accordance with Landscape Plan Separate investigation
	C/3 The Wishing Well	Monitor condition Clear vegetation from stonework Keep vegetation at least 1 metre from the Wishing Well Remove inappropriate timber and wire fencing	Annual inspection As required Cut back as required Design new fencing in accordance with Design Guidelines
	C/4 Twin Bridges	Investigate replacement of bridges with a more sympathetic design If the bridge is replaced, widen to accommodate bi-directional foot and cycle traffic New bridge may have a steel deck but rough-cut timber superstructure/hand railing is recommended. Any new bridge(s) should accommodate easy access for pipe maintenance.	Separate investigation / Design Guidelines Subject to visitation survey In accordance with Design Guidelines principles

Section D – Neika to North West Bay River Weir			
Section D – Neika to North West Bay River Weir	D/1 The 1881 cast iron pipes	Maintain in service for water supply where technically feasible Repair by slip lining, sleeving and clamping and other techniques which involve minimal impact on original fabric Where pipes must be decommissioned, retain original pipes on site and interpret	As required As required As required
	D/2 The Siphon	Maintain as required to retain in service Interpret route and function	As required In accordance with Interpretation Plan
	D/3 St Crispins Well and the upper intakes	Maintain intakes as required to keep in service. (Maintenance and repair should avoid major new works and introductions of new fabric where possible, and should aim to keep the rustic nature of the intakes). Repair sandstone intakes using local stone and mortar in preference to concrete; and repair later dolerite and concrete intakes and alterations with similar materials. Minimise use of concrete and pre-cast concrete elements Replace scour valves and intake pipes as required to keep in operation. Decommissioned scour valves and pipes should be used to interpret intakes at the level of the Track below.	As required (inspections to be at least annually) As required In accordance with Interpretation Plan
	D/4 The North West Bay River Weir	Maintain weir as required to keep in service. Future repairs in concrete should match rough finish of existing concrete weir Investigate re-establishing public access to the Weir	As required As required Separate investigation

Section E – Ridgeway Section			
Section E – Ridgeway Section	E/1 Ridgeway Reservoir	Maintain dam as required to keep in service. Interpret	As required In accordance with Interpretation Plan
	E/2 Valve House	Maintain Valve House as required to keep in service. Interpret	As required In accordance with Interpretation Plan
	E/3 Site of construction barracks, stables and watchmen's house	Do not excavate or grade this area without additional archaeological advice Interpret	Separate investigation as required In accordance with Interpretation Plan
	E/4 Halls Saddle to Ridgeway Reservoir Pipeline	Investigate establishment of walking track along Pipeline route, subject to necessity Interpret Pipeline route and function	Separate investigation In accordance with Interpretation Plan
	E/5 Sluice House	Maintain Sluice House as required to keep in service. Interpret	As required In accordance with Interpretation Plan
	E/6 Self-acting tramway route	Interpret tramway route and function	In accordance with Interpretation Plan
	E/7 Ridgeway Reservoir to Waterworks Reserve Pipelines	Interpret pipeline route and function	In accordance with Interpretation Plan

6.4 Access Recommendations

Recommendation 13 – improving access to the System

One of the major issues which has been identified along the System is that of access. Access needs to cater for walkers, cyclists and operational vehicles performing maintenance. Where possible, concessions should be made to mobility impaired to provide alternate paths which have lower grades, however this will not always be feasible and should not be undertaken where it may compromise the historic values of any of the System features. Where alternate paths are established, they should follow, as much as possible, known historic routes along the System.

In recent years riding has been formalized on the Pipeline Track from Fern Tree through to Neika and to the landslip closure. This provides a scenic riding experience and is popular with families, novice riders as well as more experienced riding for training/fitness. Opportunities exist to provide for riding on sections of the track below Fern Tree. Linked with the existing fire trail network from McDermott's Saddle, the track has the potential to cater for a range of riders including providing for off-road commuting from Fern Tree/Ridgeway to the Hobart CBD.

13.1 Undertake Track usage monitoring to determine the nature and frequency of access at key points.

13.2 The Track will continue to be used by both walkers and cyclists. Other more intensive forms of recreational access (e.g. horse-riding or motorcycling) are not recommended due to risk of damage to historic fabric.

13.3 Cycle access should only be permitted in areas which are safe for shared access with walkers and where cycle use will not damage historic fabric. At present, this is primarily restricted to the section from Fern Tree to Neika and Neika to North West Bay River.

13.4 Vehicle access is to be restricted to operational and maintenance vehicles belonging to the management authorities or their contractors. Vehicle traffic should however be minimised and alternate arrangements should be made to provide maintenance access to sensitive areas.

13.5 The feasibility of re-establishing a track along the route of the Pipeline, down from Gentle Annie Falls to the Waterworks Reserve, via the Pipe-Head Well, should be investigated. If establishing a permanent track along that route is unfeasible, a new side track should be established from the present fire trail which directs visitors to the Pipe-Head Well.

13.6 Investigate the need for recreational walkers and cyclists along the route of the System. This investigation should consider issues such as shared access, access for the mobility impaired and potential for new links between portions of the System. The investigation to consider any heritage impacts, demand and infrastructure requirements.

6.5 Interpretation and Presentation Recommendations

Recommendation 14 – improving interpretation and presentation

Some interpretation exists along the route of the System, however it is not linked by an overall framework. While signage will be the principal method of interpretation, consistency is required in terms of messages and design, to provide the visitor with an experience that helps them understand the growth and development of the track and the history of the area.

14.1 The System should be presented to the public in a consistent fashion, which acknowledges the links between the different components, emphasises the function of the System as a whole and has a consistent style and quality of interpretive, safety and visitor infrastructure along the route of the System.

14.2 Develop an overall Interpretation Plan for the System. This Plan should identify key historic themes and messages, key locations for interpretation and the audiences for different interpretive media. It should consider, in detail, both on site and off site interpretation of the System.

14.3 Develop a logo and/or "brand" for the System which is used consistently by all constituent groups on the Steering Committee and on signage and publications, to provide a unified feel to the interpretive media and the presentation.

14.4 Develop consistent styles of interpretive media which are approved by the Steering Committee and can be used in appropriate locations along the System. These media should adhere to the general recommendations about "look and feel" and appropriate materials outlined above.

14.5 Provide electronic copies of existing heritage reports for the System through the websites of Hobart City Council, Southern Water and/or Wellington Park Management Trust, as appropriate.

Recommendation 15 – new and future uses

In future, it is likely new uses and ambitions will be developed for the area containing the Mountain Water Supply System. These may include recreational, commercial or operational matters, or other matters driven by unforeseen circumstances. It is not possible for this document to anticipate and address all potential future impacts, however the following general guiding principles are recommended:

15.1 Proposed new uses to the System and the lands within its curtilage should only be considered within the context of the management framework established by this document.

15.2 New uses need to be considered in terms of not only their potential physical impact to the heritage values of the place, but also their impact upon the presentation and appreciation of the place. Commercialised uses which restrict public access, for example, would be inconsistent with the wider ambitions for the place, as set out in this and other management documents.

15.3 New uses will also need to be carefully considered in terms of potential impacts to the water supply catchment and any new uses which fundamentally compromise the ability of the System to continue in operation are undesirable.

Chapter 7 – Action Plan

This chapter sets out a recommended Action Plan for the implementation of this document and its major priorities. The MWSHWG is the entity with primary responsibility for overseeing implementation of the plan, with specific responsibilities falling to constituent agencies.

The Action Plan is broken into three streams: Strategic Issues, Conservation Issues and Interpretation Issues. Each stream has its own priorities and it is anticipated that all streams will be acted upon simultaneously, with work delegated to and taken up by the responsible agency as appropriate. Much of the work in the three streams can be undertaken in parallel as resources and funding become available, although there are some dependencies (e.g. the preparation of the Interpretation Plan before the commissioning of any new interpretive works). These streams are noted in the right-most columns of the table below as S (Strategic), C (Conservation) and I (Interpretation).

Items in the Action Plan are assigned the following categories of priority:

Immediate action – works should be undertaken immediately, as resources are available, as other works on the Action Plan are contingent upon the issue being addressed.

Recurrent – works which should be undertaken on a recurrent basis and need to be factored in to work programs and budgets for responsible agencies.

Short term (1-3 years) – works have been identified as a priority due to the goals of one of the managing agencies, community ambitions or conservation necessity.

Medium Term (3-5 years) – desirable works which will enhance the Track in the longer term, but which may require other works to be completed or which have no particular urgency.

Long term (5+ years) – works which require significant up-front planning and completion of other actions or which are “visionary” in nature.

Where works are identifiably the responsibility of a particular agency, they are coded as follows:

HCC – Hobart City Council responsibility

SW –Southern Water responsibility

WPMT – Wellington Park Management Trust responsibility

All other works are deemed to be the collective responsibility of the MWSHWG and are coded HWG.

Timing	Work	Recommendation	Responsibility	S	C	I
Immediate	Endorse CMP	1.1	HWG, HCC WPMT, SW	X		
	Brief constituent agencies	1.1	HCC, SW, WPMT	X		
	Review Mountain Water Supply Heritage Working Group membership	1.3	HWG	X		
	Amend internal procedures & information systems	6.1	HCC, SW, WPMT	X		
	Develop forward budget	1.6	HWG	X		
Recurrent (annual)	Repair 25 meters of sandstone troughing	9.9	HCC with SW contribution		X	
	Inspect all historic fabric	2.2	HCC, SW		X	
	Remove vegetation from stonework	7.1	HCC		X	
	Brief new staff and contractors on heritage issues	5.1	HCC, SW, WPMT	X		
Short Term	Conduct visitor/access survey	2.1	HCC, WPMT	X		
	Condition survey of troughing	9.2	HCC		X	
	Commission Interpretation Plan	14.1	HWG			X
	Developed a logo or "brand" for the System	14.2	HWG			X
	Commission Design Guidelines	4.2	HWG		X	
	Brief operational staff on heritage issues	5.1	HCC, SW	X		
	Remove or trim vegetation which is affecting historic fabric at key sites: • Aqueducts at Sassafras Creek and Longhill Creek • Pipe-Head Well	7.1, 7.2, 7.3, 12	HCC		X	
	Investigate potential structural issues at the following sites: • Regans Gully Aqueduct • Sandstone piers at Longhill Creek	12	HCC		X	
	Commission arboricultural survey of trees along route of sandstone troughing	7.2	HCC		X	
	Prepare and submit amended heritage listing for the System to the Tasmanian Heritage Council	1.5, 1.6	HWG	X		
	Provide existing historical reports online (e.g. Scripps 1989, Hartzell 1993, North 2008)	14.4	HCC, WPMT	X		

Medium Term	Implement Interpretation Plan	14.3	HWG, HCC, WPMT			X
	Investigate reinstatement of track to Pipe-Head Well	12	HCC			X
	Design and install new visitor infrastructure, fencing, etc, in accordance with Design Guidelines	4.3	HCC, WPMT			X
	Commission Scope of Conservation Works for Receiving House	12	HCC		X	
	Commission Scope of Conservation Works for Sluice House	12	HCC		X	
	Investigate removal or reconfiguration of equipment at Silver Falls Weir	12	SW + HWG		X	
	Remove telecommunication cables from aqueducts at Fern Tree and from within sandstone troughing	12	HWG + Telstra		X	
Long Term	Investigate the establishment of a walking track from Halls Saddle to Ridgeway Reservoir	12	HCC, WPMT			X
	Investigate the reinstatement of visitor access to North West Bay River Weir	11.2	HCC, SW, WPMT			X
	Investigate reinstatement of flows to Gentle Annie Falls	12	HWG, SW			X
	Reinstate upper portion of Valve House at Reservoir No 1	12	HCC, SW		X	
	Replace the Twin Bridges with sympathetic replacements	12	HCC, SW		X	
	Archaeological investigation of outbuildings at Reservoir No 1	12	HWG			X
	Develop Landscape Plan for Fern Tree Bower	12	WPMT			
Recurrent (longer term)	Monitor condition of all historic fabric on an annual basis	2	HCC, SW, WPMT		X	
	Repoint stonework (every 20 years, as required)	12	HCC		X	
	Review CMP (5-10 years)	1.8	HWG	X		

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