# APPENDIX E

## Statement of Heritage Impact

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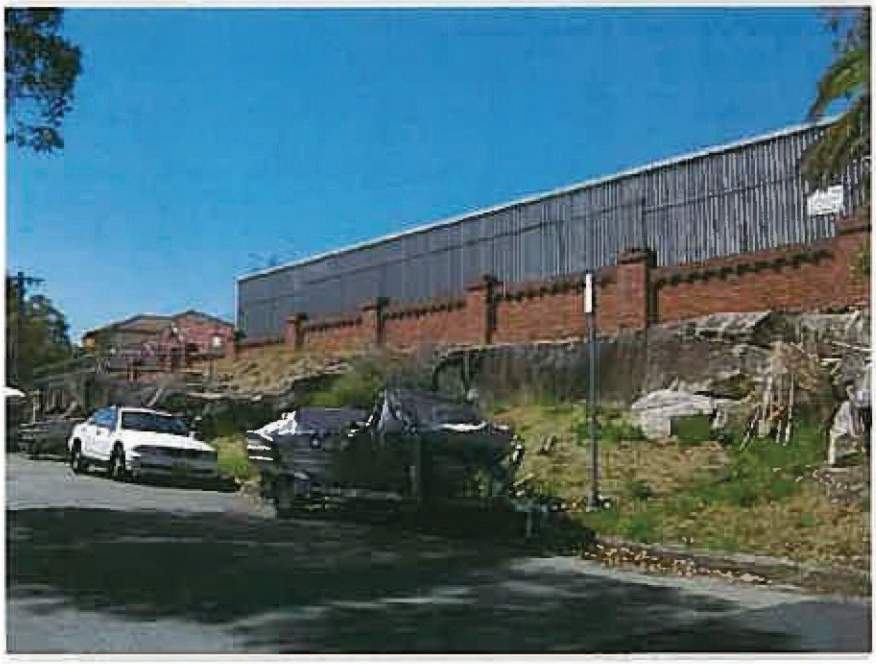
Manly Reservoir
Fairlight Street and Ashley Parade, Fairlight

# Planning Proposal
# Statement of Heritage Impact



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# Contents

# Introduction

# 1.0

## 1.1 Background

This report has been prepared for Sydney Water to accompany a Planning Proposal to rezone the site of the Manly Reservoir, at the corner of Ashley Parade and Fairlight Street, that is deemed surplus to their requirements. The site is a listed heritage item under the Manly Local Environmental Plan and as such is also included in the Sydney Water Section 170 Heritage Conservation Register.

In August 2009 the Department of Planning issued a Site Compatibilty Certificate (SCC) for the site that determined the zoning of the site to allow multi dwelling residential development was compatible with the surrounding land uses. The SCC determination application 2007-109-007 includes the following requirement:
*1. Any future development of the site shall include a full heritage assessment to be undertaken in accordance with the Burra Charter and any Heritage Council Guidelines to ensure that the proposed development will be sympathetic to the heritage significance of the reservoir structure and ensure retention of significant fabric through adaptive reuse.*


Figure 1.1
Location map showing the subject site marked with a red arrow

Source: street-directory.com

## 1.2 Report Objective

The objective of this report is to review the Planning Proposal and consider the implications, from a heritage perspective, of the proposed rezoning.

## 1.3 Methodology and Structure

This Statement of Heritage Impact has been prepared in accordance with guidelines outlined in the *Australia ICOMOS Charter for Places of Cultural Significance, 1999*, known as *The Burra Charter*, and the New South Wales Heritage Office (now the Heritage Division of the NSW Office of Environment and Heritage) publication, *NSW Heritage Manual*.

*The Burra Charter* provides definitions for terms used in heritage conservation and proposes conservation processes and principles for the conservation of an item. The terminology used, particularly the words *place*, *cultural significance*, *fabric*, and *conservation*, is as defined in Article 1 of *The Burra Charter*. The *NSW Heritage Manual* explains and promotes the standardisation of heritage investigation, assessment and management practices in NSW.

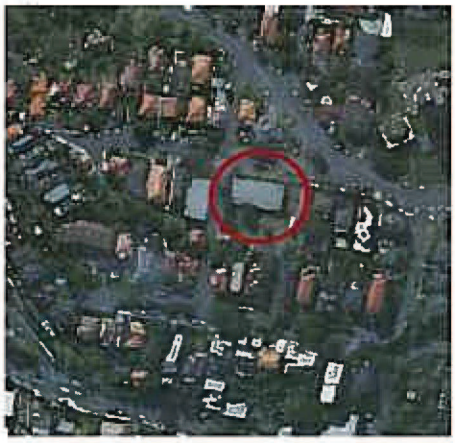

Figure 1.2
Location map showing the subject site marked with a red circle

Source: NSW Land and Property Information

## 1.4 Site Identification

The subject site, at 189 Fairlight Street, is located at the corner of Ashley Parade and Fairlight Street, Fairlight. It is described by NSW Land and Property Information (LPI) as Lot 1 DP 745080, and Lot 1 DP 911745 and Crown Land Parcel No.3548-3000.

## 1.5 Authorship

This report has been prepared by Christina Amiet, Senior Heritage Consultant, of Graham Brooks and Associates Pty Ltd and has been reviewed by the Director, Graham Brooks. Unless otherwise noted all of the photographs and drawings in this report are by Graham Brooks and Associates Pty Ltd.

## 1.6 Report Limitations

This report is limited to an investigation of the European history of the site. Recommendations have been made on the basis of documentary evidence viewed and inspection of the existing, accessible fabric. An inspection of the interior of the reservoir was not available, restricting assessment of the property to its exterior form.

Archaeological assessment of the subject site is outside the scope of this report.

# The Planning Proposal

# 2.0

The site of the redundant Sydney Water facility, Manly Reservoir, is zoned special use, and identified as an item of local heritage significance, in the *Manly Local Environmental Plan (LEP) 1988;* however, under the Manly LEP 2013 the site is currently shown as a deferred matter. It is not located within a conservation area, nor is it in the vicinity of other listed heritage items.

The Sydney Water Planning Proposal seeks to rezone the site for residential use, consistent with that of its immediate locality, prior to its disposal of the property for future development by others.

The site is currently subject to the following heritage provisions under the Manly LEP 1988:

> *18 Items of the environmental heritage*
>
> *(1) A person shall not, in respect of a building, work, relic or place that is an item of the environmental heritage*
> *(a) demolish, renovate or extend any such building or work,*
> *(b) damage or despoil any such relic or any part of any such relic,*
> *(c) excavate any land for the purpose of exposing or removing any such relic,*
> *(d) erect a building on the land on which that building, work or relic is situated or the land which comprises that place, or*
> *(e) subdivide the land on which that building, work or relic is situated or the land which comprises that place, except with the consent of the council.*
>
> *(2) The council shall not grant consent to a development application made in pursuance of subclause (1) unless it has made an assessment of:*
> *(a) the significance of the item as an item of the environmental heritage of the Municipality of Manly,*
>
> *(b) the extent to which the carrying out of the development in accordance with the consent would affect the historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the item and its site,*
>
> *(c) whether the setting of the item, and in particular, whether any stylistic, horticultural or archaeological features of the setting should be retained, and*
>
> *(d) whether the item constitutes a danger to the users or occupiers of that item or to the public.*

The Planning Proposal seeks to rezone the site under the *Manly LEP 2013* which has the following provisions:

> *5.10 Heritage conservation*
>
> *(1) Objectives*
> *The objectives of this clause are as follows:*
> *(a) to conserve the environmental heritage of Manly,*
> *(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,*
> *(c) to conserve archaeological sites,*
> *(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.*
>
> *(2) Requirement for consent*
> *Development consent is required for any of the following:*
> *(a) demolishing or moving any of the following or altering the exterior of any of the*

*following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):*
*(i) a heritage item,*
*(ii) an Aboriginal object,*
*(iii) a building, work, relic or tree within a heritage conservation area.*
*(b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,*
*(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,*
*(d) disturbing or excavating an Aboriginal place of heritage significance,*
*(e) erecting a building on land:*
*(i) on which a heritage item is located or that is within a heritage conservation area, or*
*(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,*
*(f) subdividing land:*
*(i) on which a heritage item is located or that is within a heritage conservation area, or*
*(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.*

*(3) When consent not required*
*However, development consent under this clause is not required if:*
*(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development:*
*(i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and*
*(ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or*
*(b) the development is in a cemetery or burial ground and the proposed development:*
*(i) is the creation of a new grave or monument, or excavation or disturbance of land for the purpose of conserving or repairing monuments or grave markers, and*
*(ii) would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance, or*
*(c) the development is limited to the removal of a tree or other vegetation that the Council is satisfied is a risk to human life or property, or*
*(d) the development is exempt development.*

*(4) Effect of proposed development on heritage significance*
*The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).*

*(5) Heritage assessment*
*The consent authority may, before granting consent to any development:*
*(a) on land on which a heritage item is located, or*
*(b) on land that is within a heritage conservation area, or*
*(c) on land that is within the vicinity of land referred to in paragraph (a) or (b),*
*require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.*

*(6) Heritage conservation management plans*
*The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.*

*(7) Archaeological sites*
*The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the Heritage Act 1977 applies):*
*(a) notify the Heritage Council of its intention to grant consent, and*
*(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.*

*(8) Aboriginal places of heritage significance*
*The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:*
*(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and*
*(b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.*

*(9) Demolition of nominated State heritage items*
*The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item:*
*(a) notify the Heritage Council about the application, and*
*(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.*

*(10) Conservation incentives*
*The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that:*
*(a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and*
*(b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and*
*the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and*
*(d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and*
*(e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.*

# Historical Summary

# 3.0

## 3.1 Establishment of the Board of Water Supply and Sewerage

The inauguration of the Board of Water Supply and Sewerage was the culmination of years of increasing dissatisfaction with the City of Sydney's control over the vital utilities of water and sewerage. As early as the 1860s, the ability of the City to fund and maintain these utilities, particularly those beyond their own municipal boundaries, was frequently brought into question.

It also became increasingly obvious that the growing population would soon outstrip the water supplies available from the Botany Swamps. The creation of the Water Board in 1888 was presaged by two important commissions of inquiry. In 1867, Governor Sir John Young had appointed a Special Commission to recommend a new water supply scheme and in 1875, the Sydney City and Suburban Sewerage and Health Board was appointed to inquire into and report on the best means of controlling and disposing of the City (and suburbs) sewerage. For the next few years the issues were hotly debated and an exhaustive report was prepared in 1877, much of which confirmed the conclusions reached by the 1868-1868 Royal Commission. However, no consensus could be reached with regard to institutional arrangements, with some parties favouring public ownership, and others supporting a government-owned or government-guaranteed water company.[1]

The outcome of these Commissions was twofold. In 1879, construction commenced on a new water supply system, now known as the Upper Nepean Scheme. The following year, construction began on a system of trunk sewer mains, now known as the Bondi Ocean Outfall Sewer and the Southern Outfall Sewer. Of equal significance, the *Metropolitan Water and Sewerage Act* of 1880 was passed, thereby transferring the property, powers and obligations of the City Council, with regard to the administration and maintenance of the water and sewerage system, to a Board of Water Supply and Sewerage as constituted by this *Act*. The drafting of this *Act* copied provisions from metropolitan London laws, such as the *Waterworks Act 1847* and *Waterworks Act 1863* and the *Metropolitan Water Act 1852*.

The construction of the infrastructure for which the Board was to be responsible was carried out by the Department of Works (PWD). The PWD was to remain the construction authority for the Board until 1924. Control of major infrastructure was only handed over to the Board once that infrastructure was operational by virtue of a proclamation in the *Government Gazette*. This dual departmental control was not unique; the PWD was the construction authority for a number of government departments at this time, including

1 D. Hector, 'Sydney's Water Sewerage and Drainage System,' in *Journal and Proceedings of the Royal Society of New South Wales*, Vol.144, nos. 439-440.

the Railways, Electric Telegraph, Roads and Defence works. The increasing magnitude of water, sewerage and drainage works undertaken by the PWD would result in the establishment of the Branch of Water Supply and Sewerage in 1894 under C W Darley. The Board itself had been formally inaugurated following the completion of the Upper Nepean Scheme in 1888 and the passing of the *Metropolitan Water and Sewerage Amendment Act* of 1888. The Board's primary function was:

*to take over and control the management of water supply and sewerage works then under construction by the government and those vested in or operated by the municipal council of the City of Sydney or any borough or municipality in the County of Cumberland. The Minister for Public Works remained, until 1924, the constructing authority for all major works which, when completed, would come under the control of the Board.*[2]

With the completion of the trunk sewers the following year, the Board also took control of sewerage following the enactment of the *Metropolitan Water and Sewerage Act* of 1889. Control of stormwater passed to the Board in 1894.

The Board of Water Supply and Sewerage was one of a number of colonial government authorities created in the late nineteenth and early twentieth centuries to administer government built water and sewerage systems. In Victoria, for example, the Melbourne and Metropolitan Board of Works was established in 1891. The Board was one of two government authorities established in the late nineteenth century for the purpose of administering water and sewerage facilities to a large metropolitan area within New South Wales. The other authority, the Hunter District Water Supply and Sewerage Board, was created to assume control of the Walka Water Supply Scheme, also constructed by the PWD (1892).

The original Water Board comprised three members appointed by the Government, two appointed by the City Council and two appointed by other boroughs and municipal councils within the County of Cumberland and serviced by the Board. The Board was initially responsible to the Secretary/Minister for Public Works, who in turn was responsible to Parliament; the Board would not be directly responsible to Parliament until 1924.

The management of the Board was undertaken by the president in consultation with Board members who met, at least, weekly. The implementation of Board decisions rested with the president and principal officers of the Board. The first Board members included Thomas Rowe (president; government appointee), William C Bennett (later replaced by Robert R P Hickson; government appointee), Benjamin Palmer (vice president; city representative), John Young (city representative) and James Graham and George Lander (suburban representatives). The continuing City influence on the Board is reflected by the fact that Rowe, Palmer, Young, Graham and Landers were all alderman of the City Council at one time or other.

2 M. Beasly, *The Sweat of their brows*, p.19

These early Board members undertook their duties on a part time basis. Following a Royal Commission into the management of the Board in 1897, the office of president became a full time appointment (1899).

During the early years, the Board's concerns included matters inherited from the City Council administration, such as the collection of large sums in arrears for water and sewerage rates. Collected revenues were not held by the Board, however, but paid into the Government's Consolidated Revenue Fund through the Treasury Department. The Board also sought to implement an effective form of regulatory overview of water and sewerage services, including connections undertaken in domestic construction. Previously, this had been undertaken with a somewhat laissez faire arrangement with the City's plumbers and builders.

## 3.2 Expansion of the Metropolitan Water Supply Network, 1880s-1960s

During the period 1880-1900, the Board had become responsible for nearly 2,160 kms of mains, 30 reservoirs, and 6 pumping stations, which supplied 620,000 people with a reliable potable water supply. From the beginning of the twentieth century, however, there were prolonged dry spells which had an impact on the expansion of water supply infrastructure throughout the metropolitan area. With the onset of the 1901-1902 drought, a Royal Commission was appointed; the three resulting reports recommended:
i) a major upgrade of the distribution infrastructure, in particular strengthening Prospect Reservoir; upgrading the canal leading from Prospect to Guildford; a major upgrade of the Ryde pumping station to increase capacity to the northern suburbs and upgrading mains distributing water to the southern suburbs;
ii) the identification of sites on the Cataract, Cordeaux, Nepean and Avon Rivers and that catchments for these be proclaimed; that no further mining and forestry leases be granted, and that the grazing of livestock within the catchment be prohibited;
iii) a greater emphasis on water conservation, and an increasing proportion of water which was metred; resulting in Acts of Parliament for new major headworks such as a dam on the Cataract River.[3]

With a subsequent period of drought in 1907-1911, a second dam site on the Cordeaux River was identified, but the onset of several years of good rainfall and the disruption brought about by World War One meant that this project was effectively shelved until 1918, when a Board of Experts was appointed to advise on development of Sydney's water supply. Recommendations arising from this included the proposed construction of the Cordeaux dam and the planning of Avon and Nepean dams.

3 Hector, "Sydney's Water Sewerage and Drainage System,' in *Journal and Proceedings*,

The proposals of the 1918 Board of Experts were re-examined and extended by a Committee in 1926 which eventually recommended that following the completion of the Nepean Dam scheme, construction was to commence on Warragamba Dam, with the intention that the latter should be far enough advanced that it could make a substantial contribution to Sydney's water supply by 1938. The Warragamba Dam project was then put on hold for four years through the construction of an interim arrangement, being the Woronora Dam works from 1930 (completed in 1941).

Despite these measures, the entire water supply network for the Sydney area was found to be inadequate in 1934 when a renewed, and particularly harsh, period of drought commenced. The 1934-1942 drought- to date the longest on record- set the benchmark and has since been used as the basis for water supply calculations.[4] It was found that Sydney fell far short in terms of water capacity, which warranted the construction of the major Warragamba Dam works,and later the Snowy Mountains Hydro-Electric Scheme in the 1960s.

Over this 80 year period, from the 1880s to the 1960s, and in spite of interruptions including global conflict and economic depression, the achievements of the Board were considerable: a total of ten major dams were constructed, with a storage capacity of over 400 million gallons. One hundred and twenty-nine service reservoirs were also built during this period, and over 10,300 kms of water mains laid.[5]

## 3.3 The Early Manly Water Supply

The need for a reliable water supply for the Manly population was acute by the later nineteenth century, and since its incorporation in 1877 Manly Council had lobbied the colonial government for funding and support to ultimately reduce the community's dependence on artesian wells that had become increasingly at risk of pollution as time went on.[6] Initial moves had been made in 1886 through an *Act* of Parliament which created a catchment reserve with the intention of a future water supply system.[7] A subsequent 1888 NSW Parliamentary Standing Committee on Public Works investigating drainage for Manly heard from Manly Mayor, James George Griffin, on 5 October 1880, who reported that a section of ground was dedicated to the dumping of nightsoil, deposited in pits 10 or 12 feet deep:

*But inasmuch as a great deal of water is pumped up by artesian wells from a depth of 20 to 30 feet all over this flat, and used for household and other purposes, I was sure that the continual use of night-soil in that sandy flat must ultimately become dangerous to health.*

*290 [Committee] Is Manly generally supplied by that means with water?*

*[Griffin] Yes; unfortunately that and water caught on roofs is the only water we have.*[8]

Figure 3.1
"Possible collecting water at Collins Flat, Manly", 1890
Source: Manly Local Studies Library

4 Hector, "Sydney's Water Sewerage and Drainage System," in *Journal and Proceedings,*
5 Hector, "Sydney's Water Sewerage and Drainage System," in *Journal and Proceedings,*
6 *Manly Daily*, 13 October 2012
7 S170 inventory, Manly Dam, http //www.sydneywater.com.au/SW/water-the-environment/what-we-re-doing/Heritage-search/heritage-detail/index.htm?heritageid=4573702&FromPage=searchresults
8 James George Griffin, 5 October 1888, cited in Minutes of Evidence: Drainage Works,

## 3.4 The Manly Dam and Waterworks Scheme

Following protracted negotiations, tenders were eventually called in 1890 for the proposed construction of the Manly Waterworks Scheme. This was built by the NSW Department of Public Works for the local Manly Council, and consisted of a dam, known as the Curl Curl dam; pumping station, rising main, service reservoir and reticulation. The total area of the catchment basin was 1,288 acres, with 124 acres being alienated land. A further 211 acres was resumed or purchased by the Board, and the remainder constituted Crown land dedicated for water supply under the Board's trusteeship.[9]

The Manly Waterworks scheme was constructed as one of only two independent water supply schemes in the Sydney metropolitan area.[10] Eventually it became part of the broader metropolitan supply system under the auspices of the Board on 1st January 1902, under *Act 5* of 1902.

Formally declared open on 4 February 1892, the dam structure had a capacity of 68,216,000 gallons, and was 280 feet long, 37 feet high, and with a maximum base width of 38ft. Its top water level was 91.25 feet above sea level; within a few years, however, demand was outstripping supply, and in 1909 an enlarged by-wash was excavated on the eastern side, together with the building up of an old by-wash area. This strategy meant that the top level of the reservoir could be raised to 93 feet above sea level. It was again raised in 1916, to 94.75 feet and boasting an increased capacity of 90.5 million gallons; and in 1922 to 115 feet, holding 441 million gallons.

Figure 3.2
Construction of the Manly Dam, c.1891
Source: Manly Local Studies Library

Manly. NSW Parliamentary Standing Committee on Public Works. *General report together with minutes and proceedings*, Government Printer, Sydney. 1888. p.10

9 Henry. *The Water Supply and Sewerage of Sydney*. p.131.

10 The other independant scheme, Parramatta, was taken over by the Board on 1 January 1917, under Act No.13 of 1916. Henry, *The Water Supply and Sewerage of Sydney*, p.131.

Figure 3.3
Sketch illustrating the official opening of the 'Curl Curl' dam
Source: *Evening News*, 2 February 1892

The dam's pumping plant comprised two horizontal compound Fielding and Platt duplex pumps, supplied by steam from two multi-tubular wood-burning boilers. These were replaced in 1918 by two Babcock and Wilcox boilers, which had been transferred from Potts Hills, and three years later an 18-in. Worthington plunger pump from Chatswood replaced one of the original pump units. In 1920 a filtration plant had also been installed, which consisted of a settling and coagulating basin, gravel and sand filter beds, inspection chambers and a clear water basin. The filter beds were agitated using an air compressor, and in 1928 were reconstructed to utilise graded gravel from New Zealand.[11] Over the next decade, three new Worthington plunger units and a third Babcock were installed, as well as a Wilcox boiler from the Chatswood facility.[12]

## 3.5 The Manly Service Reservoir, 1892

After long deliberation, the Red Hill area of Manly district, now known as Fairlight, was identified as one of the most suitable for water supply infrastructure to complement the Manly Dam owing to its elevation position. This area, which had formed part of John Woods' Fairlight House estate, had been undergoing gradual subdivision and residential development from the 1880s period. The site for the reservoir -known interchangeably as the Manly or Fairlight Reservoir - was located on the fringe of what became known as the Fairlight Estate Subdivision, with its construction taking place several years before the auction of Fairlight lands in 1900. This subdivision had created 24 allotments on the south side of the newly-laid-out Clifford Avenue, and a further 22 lots on the north side, divided by Bolingbroke and Ashley Parades.[13]

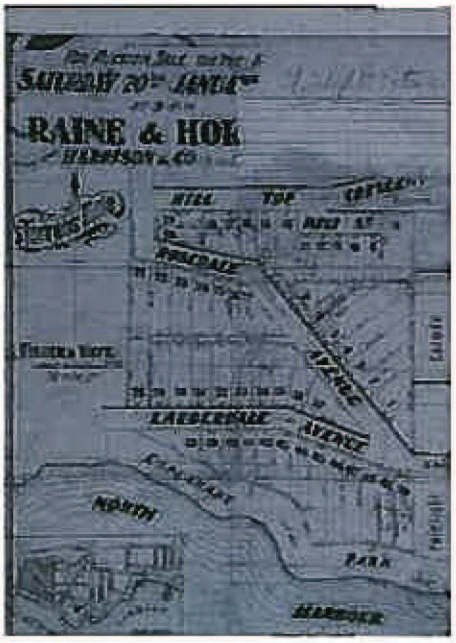


Figure 3.4
Fairlight Estate subdivision plan, showing the reservoir site on the fringe of the estate
Source: State Library of NSW

11 Henry, *The Water Supply and Sewerage of Sydney*, p.132
12 Aird. *The Water Supply, Sewerage and Drainage of Sydney*, p.81.
13 Fairlight fact sheet, Manly Council.

The service reservoir was constructed as one of the main components of the Waterworks Scheme. It has been suggested that the rock-and-concrete reservoir may have been designed by Manly Dam's engineer-in-chief C.J. Darley,[14] but local newspaper reports attributed the plans to Messrs. Harper and Harper, with the scheme constructed by Mr L. F Cundlah. An annotation on the 1890 plan for the reservoir indicated that the new, 946,000 gallon structure[15] was intended to have been roofed; this, however, did not occur, with the reservoir described in 1913 as an 'open oblong,'[16] and a 1930 aerial photograph clearly showing the reservoir as open to the sky (see Figure 3.8).

This reservoir had been designed with the intent to secure a two year supply of water for Manly 'at its present population.' From the dam, water was pumped via engines installed by Gibson, Battle and Company to the service reservoir. The four pumping engines were arranged in pairs, with each pair capable of pumping 4.5 megalitres of water to the reservoir in 17 hours. From there, water was carried by two main pipes tunneled through the rock.[17] Set 225 ft above sea level, and 200 ft above the average street level, the reservoir was cut 25 feet into the solid rock and featured a concrete superstructure, resulting in an overall total of 35 ft; its length was 100ft by a width of 30 ft.

The advantages of the new reservoir were immediately appreciable by the community:
*The service reservoir being located on the highest point about Manly, ensures a good pressure for the town, and even the Roman Catholic College and the quarantine station situated on the surrounding hills are to be served in this scheme.*[18]

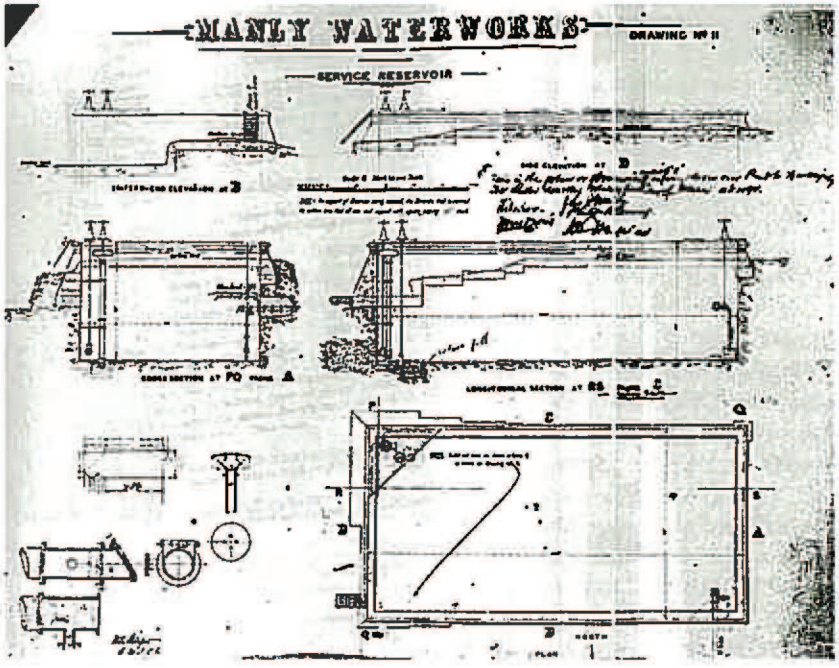


Figure 3.5
Plan of the proposed Manly Service Reservoir, 1890
Source: Manly Local Studies Library

14 MC/12/120405, Notes Manly Reservoir, Manly Library Local Studies
15 W. Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.78.
16 NSW Metropolitan Board of Water Supply and Sewerage, *Official Handbook 1913*, Government Printer. 1913
17 *Manly Daily* 13 October 2012
18 *Evening News*, 27 February 1892

The opening of the waterworks was a major occasion on the local community calendar; the Minister for Public Works, Mr Lyne, and Postmaster-General, Mr Kidd, together with Under-Secretary for Works, Barling, Engineer-in-Chief for Habors and River, Darley, and chief clerk General Post Office Dalgarno, were joined by a select number of visitors on a special steamer to Manly for the ceremony. Having been greeted by the Manly Mayor and other local dignitaries, the official party was escorted in a number of vehicles firstly to the dam and pumping station, to enjoy *'a light luncheon....Mr Lyne, after a few speeches, started the machinery. Then a visit was paid to the service reservoir on Fairlight Hill, and the Minister having turned the water on, all haste was made on the return journey, Sydney being reached shortly before 5 o'clock.*[19]

Having invested £8,909 15s 4d in the project, the PWD's Annual Report summarised the Manly Waterworks as *"consist[ing] of a storage reservoir, formed by a concrete dam across the Curl Curl Creek, from which water is pumped about 11 miles to a service reservoir at a sufficient elevation to command the town, and distributed by the usual reticulation.*[20]

With the exception of the removal of pumping equipment in 1936, (and its subsequent reinstatement) the basic structure of Manly Dam remained in its 1922 form until it was post tensioned in 1981.[21] This process was considered revolutionary at the time and gained world recognition when a paper was presented by Sydney Water Board engineers to the 14th Congress of the International Commission on Large Dams in Rio de Janeiro in 1982.[22]

## 3.6 Changes Affecting the Manly Reservoir

In 1906, before the enlargement of the dam, it was necessary to supplement the local supply by connecting it with the metropolitan system. This was done by laying a 10-in. main from the reservoir at Brady Street, Mosman, to the Spit, crossing under Middle Harbour with ball and socket pipes and thence to Condamine Street, where it connected with the existing main to the Manly service reservoir.[23] This work was carried out by 38 men under the supervision of overseer H Austin.[24]

With the rapid growth in the local community, the Manly service reservoir was soon hard-pressed to fulfil demand. In order to improve the supply of water to the higher areas, a small, elevated cast-iron tank (known as Manly No. 2)[25], holding a capacity of 13,238 gallons and a top water level at 270.83 feet above sea level was erected on the subject site alongside the reservoir in 1916. In addition, an electrically operated pump, automatically controlled, was installed to keep it filled.[26]

19 *Evening News*, 5 February 1892
20 Lesiglative Assembly of New South Wales, *Report of the Department of Public Works for the Year 1892* p.24
21 Register of Large Dams in Australia - Australian National Committee, www.ancold.org.au/wp-content/uploads/.../Dams-Australia-2010-v1.xls
22 s170 inventory listing, Manly Dam Wall, Sydney Water
23 Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.81
24 *Albury Banner*, 6 April 1906
25 See table of service reservoirs within the northern system in Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.78
26 Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.81

While the local residents were aware of the long-term benefits to be gained, however, they were less than impressed by the methods with which the work was carried out. It was reported that:
*On Saturday afternoon and all day Sunday the residents of Manly, who reside on the heights, were without water. The heat made matters much worse. Alterations are being effected at the local reservoir, and it is understood the supply was cut off. Had notice been given to the residents personally before the water was cut off a great amount of the inconvenience could have been avoided. This is the second time within a few months that Manly residents have been similarly treated by the Board.*[27]

When completed, this elevated tank made its presence felt on the local skyline, with a c.1920 panorama showing the tank standing out as the highest point within its surroundings (see Figure 3.6).

In 1920 an additional 12-in. main was laid to supplement the Manly supply. This followed a different route, the Middle Harbour crossing near Clontarf being in 10-in. ball and socket pipes as before. Supply from Mosman reservoir was heavily drawn upon until 1924, when the enlargement of Manly dam, additions to the pumping plant and the building of a reservoir at Bantry Bay enabled the local system to draw on other resources.[28] On the reservoir site itself, the rising main from the pumping station to the Manly reservoir, of 10-in. cast-iron pipe, was replaced in 1924 by a 15-in. main.[29] This upgrade may have been accompanied by construction of a curved red-brick fence. While to date no records have been found for this work, both the physical evidence and the 1930 aerial photograph indicates that this was extant on the site by 1930. Its construction was a reflection of the increased urbanisation of the local area, following successive phases of subdivision and residential development.

Figure 3.6
Detail of c.1920 panorama, showing the site of the reservoir and the 1916 elevated cast-iron structure before its removal from the site in 1924.
Source: Manly Local Studies Library

27 *Sydney Morning Herald*, 10 January 1916.
28 Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.81
29 Aird, *The Water Supply, Sewerage and Drainage of Sydney*, 81

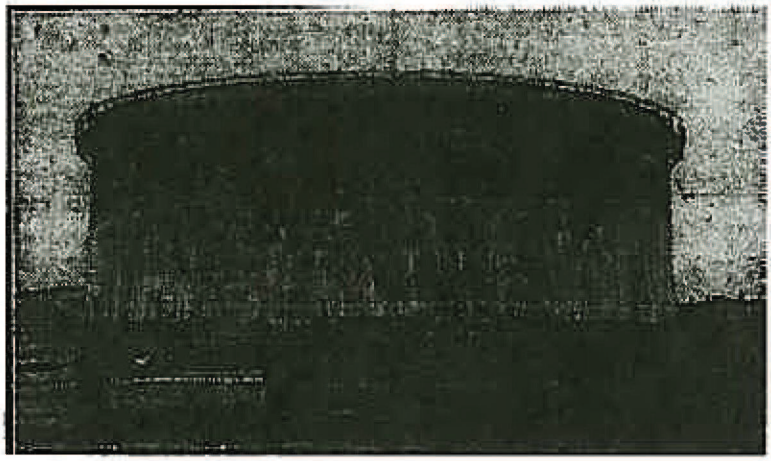

Figure 3.7
The newly completed Bantry Bay Reservoir at Seaforth, reported in the *Sydney Morning Herald* as a reservoir at Balgowlah, Manly Heights
Source: *Sydney Morning Herald*, 4 June 1924

The Manly Reservoir's supply was supplemented in 1924 by the construction of the reinforced concrete water reservoir at Seaforth, then Balgowlah Heights and now known as the Bantry Bay Reservoir. Constructed by the Metropolitan Board of Water Supply as the largest self-supporting (elevated) reservoir in Australia, it was built to take supply direct from Manly dam pumping station.[30] A 12-in. rising main was laid to serve Bantry reservoir from the pumping station and a 10-12in. trunk main was constructed from the reservoir to Balgowlah and Seaforth to feed local reticulation.[31] This project was an early initiative of the *Metropolitan Water Sewerage and Drainage Act* of 1924, which replaced the 1880 *Act* and gave the Board the power to constuct major works of water supply, sewerage and drainage.[32] The reinforced concrete reservoir, which was visible from Gore Hill, Roseville, Chatswood and Pennant Hills wireless station, had a capacity of more than 1.5 million gallons, equivilent to one day's consumption in the municipality of Manly.[33]

The completion of the Bantry Bay reservoir effectively rendered the 1916 cast-iron tank at Manly Reservoir superfluous, and it was removed from the Fairlight Street site in 1924.

In late 1928, only four years later, there was a drought in Sydney, leading to an expansion of the metropolitan water supply system. In the local area, it was reported that "the Manly reservoir is nearly empty and is being nightly partially replenished through the Pymble and Mosman reservoirs thus depleting the reticulation in the area served by these reservoirs."[34]

By this stage, Manly Dam's storage capacity had reached its limit as a viable water supply for the booming Manly-Warringah area and the western Sydney dams were adopted as the potable water supply for Manly and the 'peninsular.' This came about through

30 Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.81
31 Aird, *The Water Supply, Sewerage and Drainage of Sydney*, p.81
32 Beasley, *The Sweat of Their Brows*, p..218
33 *Sydney Morning Herald*, 4 June 1924
34 *Sydney Morning Herald*, 15 January 1929

the construction of a new service connecting the Manly supply to the metropolitan supply via a wood-stave pipeline from Pymble Reservoir to the Rocky Hill Reservoir at Beacon Hill. This project was well received by the community, with the *Sydney Morning Herald* assuring its north shore readers that there would be "*No Fear of Famine Now*:"

*Within a week all fears of water famine in the Manly and Warringah areas will have vanished; and instead of a daily supply of 750,000 gallons, these districts will have 10 times that amount of water at their service.*

*The whole source of water for the district today is the Manly reservoir, the safe draft of which is less than 1,000,000 gallons daily. Next week this will be augmented by 11.000,000 daily, rushed down by gravitation from Pymble, through a 30-inch pipe-line, seven miles long, constructed mainly of machine-bound wood, with sections made of steel and cast-iron.*

*A tremendous amount of preliminary work had to be done, for not only had access tracks to be made through what was practically virgin country, but also a roadway, which runs nearly the whole length of the pipe-line. A start was made on June 1 with day labour, and the progress has been excellent, the cost being below the estimate of £140,000.*[35]

Until this work was completed, water had to be rationed by Manly residents, owing to the small amount of water feeding through from Manly Dam.

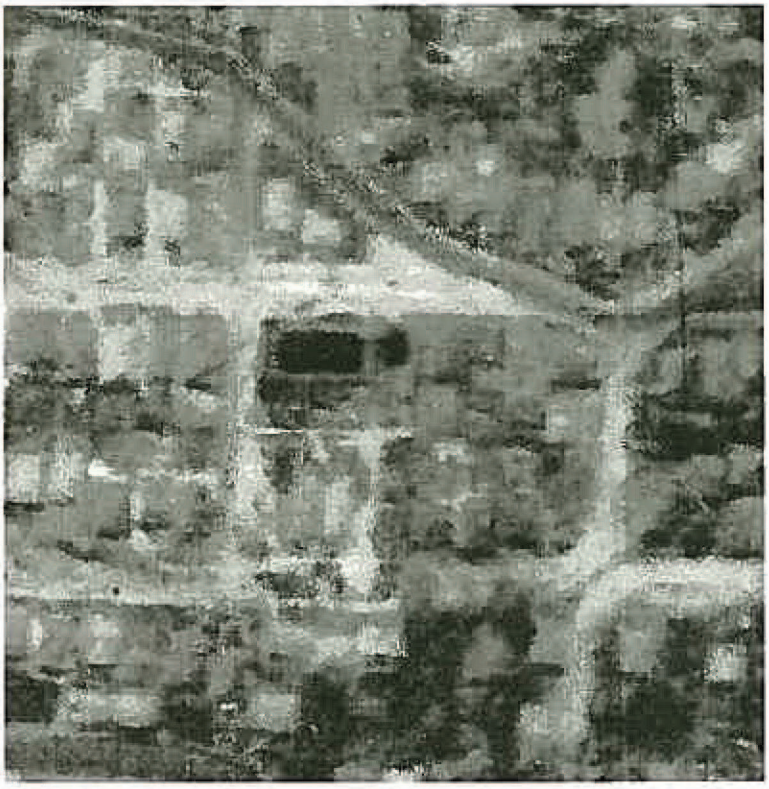

Figure 3.8
1930 aerial, showing the unroofed reservoir within its local context
Source: NSW Land and Property Information

35 *Sydney Morning Herald*, 31 December 1929

The Pymble-Beacon Hill Reservoir project was officially opened on 12 February 1930. Manly dam was then phased out as the peninsula's water supply in favour of more modern infrastructure by 1933, when the Bantry Bay reservoir was connected by main to Pymble Reservoir. With the completion of such works, the Manly supply from the Curl Curl catchment was effectively redundant. The pumping equipment was dismantled and disposed of. However, with the impact of the financial depression, construction works carried out by the Board had all but ground to a halt,[36] with the result being that with the onset of a further period of drought, the water supply network was woefully inadequate.

The drought of 1934-1942 saw the Manly dam and service reservoir brought back into service. In 1940, the Town Planning Association requested that the pumping machinery be reinstalled at Manly Reservoir, as there was a substantial quantity of water on site that was being wasted.[37]

During the peak of the drought, the Water Board officials decided to:

*draw water from the Manly reservoir. Pumps are to be installed with a capacity of 1,000,000 gallons a day.*

*"After an inspection, it was decided to proceed immediately with the installation of the pumps and chlorination plant." the secretary of the Water Board, Mr G.C. Hicks, said last night.*

*The president of the Board, Mr Upton, said last night that the opening of the dam did not mean that the water restrictions could be listed in the Manly area.*

*The water from the dam will meet the demand in part of the Manly area.*

*The chief engineer, Mr ST Farnsworth reported to the Board at tis meeting yesterday that an attempt to secure underground water from the Botany area would involve a huge expenditure for extremely problematical additional supplies over a short period.*

*Mr Farnsworth said that the completion of Woronora Dam was being expedited, and it was hoped to complete the main wall to enable storage to full supply level by about the end of September. If rain fell now 6,380,000,000 gallons could be stored.*

*Authority to borrow £1,000,000 for works in 1941-2 has been given to the Water Board.*[38]

The old pumps had been removed and disposed of in 1936, so "pumps and chlorination plant are to be installed immediately."[39] This equipment was brought from Engadine to bring Manly Dam and reservoir back into service for a ten month period lasting from January to October 1942.

36 Beasley, *The Sweat of Their Brows*, p. 219.
37 *Sydney Morning Herald*, 15 November 1940
38 *Sydney Morning Herald*, 21 August 1941
39 *Sydney Morning Herald*, 22 August 1941

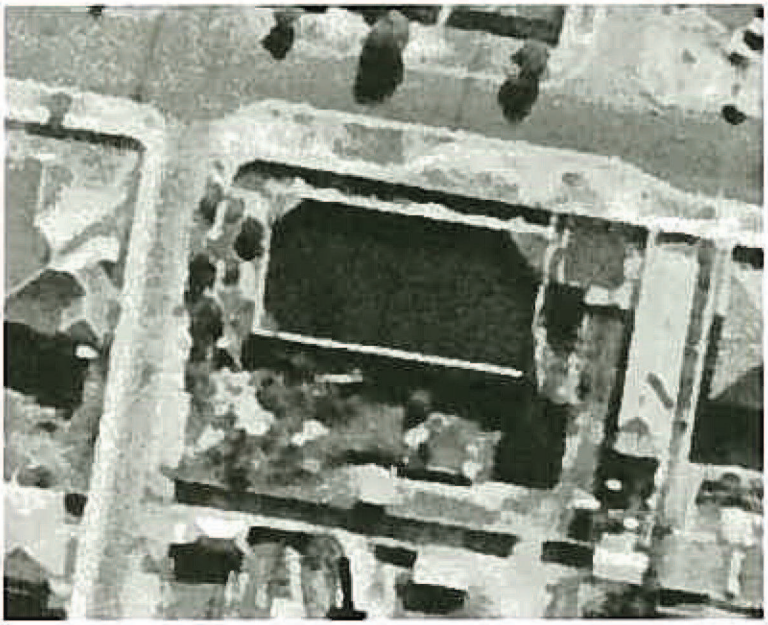

Figure 3.9
Detail of 1943 aerial photograph, showing the reservoir one year after its final phase of use
Source: NSW Land and Property Information

## 3.7 Postwar Uses

Having been effectively redundant prior to its brief resurrection during the 1940s drought, the Manly Reservoir was again mothballed. Little change was carried out on the site, with the exception being the long-delayed roofing over the structure. The reservoir remained uncovered well into the postwar period - it was finally enclosed with a metal-clad roof structure between July 1961 and May 1965. This work was carried out as part of a general programme to roof all service reservoirs. Other, more minor changes, related to the removal of old equipment and the building of small secondary structures.

The dam itself, which had also been superceded, was eventually put to public use, as was the bushland surrounding the facility; the water in Manly Dam then became a resource available for hydraulic modelling purposes in the early 1960s.[40]

After long years of disuse, and following the gradual removal of the secondary structures on the site, the Manly service reservoir was finally decommissioned and unable to serve in any viable capacity within the local community.

40 http //www.engineersaustralia org.au/sites/default/files/Manly_Hydraulic_Lab_Nomination pdf

Figure 3.10
Detail of the 1961 aerial photograph, showing the still-unroofed reservoir
Source: NSW Land and Property Information

Figure 3.11
Detail of 1965 aerial photograph, showing the new metal-clad roof structure over the service reservoir on the site
Source: NSW Land and Property Information

Figure 3.12
Detail of 1972 aerial photograph of the site
Source: NSW Land and Property Information