

Hunter Water S170 Register

SHI No.: *Name:*
3630129 Hunter River Tunnel

Location No address



Description:

A brick-lined tunnel under the Hunter River containing a variety of water pipelines.

Significance:

The Hunter River Tunnel is a significant component of the Chichester Scheme. The construction of a tunnel under the Hunter River represents a substantial engineering challenge, and demonstrates the ingenuity of the Hunter District Water Board.

Assessed Significance: Local

Endorsed Significance: Local

Historical Notes:

Constructed: -1924

The Hunter River Tunnel was constructed as a part of the Chichester Dam Scheme in the early 1920s. With construction of the tunnel still incomplete in the summer of 1923-24, drought conditions forced the construction of a temporary connection. As such, two pipes were assembled in 80-foot lengths on punts and lowered to the bed of the river, where a diver coupled them together. Water from the newly constructed Chichester Dam was first delivered into the Waratah Reservoir by this system in November 1923, relieving the critical water supply position. This temporary connection stayed in use until 4th December 1924, when the whole of the 36-inch gravitation main, including the permanent Hunter River Tunnel, was completed.

In April 1928, following problems with seepage into the tunnel, the Public Works Department installed an electric pumping set to dewater the tunnel. Also during 1927-28 both pipe lines in the drive and shafts were scraped, brushed and repainted, and all ladders and platforms in both shafts were taken up, thoroughly chipped and repainted, and replaced. Consideration was also being given at this time to the installation of electric light in valve houses, shafts and drives.

It was also noted in the Annual Report for 1927-28 that the pipes had been heavily rusted, and it was proving very difficult to find a paint that would stay on in the face of the very corrosive salt water that was found to be percolating through the rock from the river above. As such, continuous efforts were made to effectively protect the pipes, however by the close of the year, no solution had been found. This, along with the problem of seepage into the tunnel which required the removal of water through pumping, were problems that continued to dog the maintenance of the Hunter River Tunnel for many years.

In regards to the coating of pipes; recoating of the pipes was once again carried out in 1928-29. However, in the following year it was concluded that no satisfactory coating for the pipes had been obtained, with all coatings tried having broken down under the damp conditions that prevailed in the tunnel. As such, patching of the paint coatings was once again receiving attention. The 1932-33 Annual Report reported that trouble was still being experienced in maintaining a coating that would satisfactorily prevent corrosion, and in 1934-35 the whole of the old coating on the pipes was removed and the length of pipe in the tunnel cleaned down in preparation for recoating due to deterioration.

In regards to the problem of dewatering the tunnel; in attempts to evict the seepage water from the Hunter River Tunnel and eliminate the need for a man to spend two hours each day operating the electric pumping set, experiments were carried out during 1930-31 to determine the possibility of installing a hydraulically operated ejector. After successful experimentation, the ejector was installed, which meant that wastewater would then be automatically lifted from the tunnel from a depth of approximately 120 feet. The pump and motor were subsequently removed and reconditioned for use elsewhere if required in 1932-33. These ejectors were found to operate so satisfactorily that arrangements were made in 1933-34 for a more permanent installation, which would be controlled from the valve house at the southern end of the tunnel, thus removing the need for an employee to go down the shaft. As such, three water-driven ejectors were installed in 1934-35; a small one capable of dealing with flow under ordinary working conditions, a second ejector for dealing with ordinary flows when the pipeline is shut off from the Dam, and the pressure head for Waratah Reservoir only is available, and a third ejector to be used only for emergency purposes should it be found necessary for any reason to remove the water from the tunnel more speedily.

In the 1933-34 Annual Report it was noted that heavy corrosion was occurring where the seepage water from the concrete roof of the Hunter River Tunnel dripped on to the steel pipe. Thus, experimental work was carried out with the object of draining this water to the side of the Tunnel. Consequently, in 1934-35 the concrete tunnel lining was

Hunter Water S170 Register

injected with grout and despite results obtained not being entirely successful they were considered to be sufficiently satisfactory to warrant the work being continued. With final works carried out in 1935-36, seepage through the tunnel was declared as having been successfully dealt with.

In 1933-34 a ¾ inch wash-out service was installed in the Tunnel for the purpose of washing down the pipes and floor where necessary.

1934-35 saw a substantial platform erected in the north shaft of the Hunter River Tunnel to facilitate the raising or lowering of materials.

The 1947-48 Annual Report told of the replacement of defective 36-inch steel pipes in southern shaft (western side) of the Hunter River Tunnel's 36-inch Chichester pipeline. In 1950-51 the replacement of the second 36-inch vertical pipe in southern shaft was commenced and completed.

The access ladders and landing to the Hunter River tunnel were replaced in 1961-62. In this same year the valve house building over the southern shaft, which had been damaged by successive floods, was demolished and replaced by a new building erected under contract. Also in 1961-62, the twin 36-inch steel mains in the tunnel were cleaned by hand, and a cement lining applied using the "Centriline" process, also under contract.

In 1974-75 the Board approved the replacement of the twin pipes, in the Hunter River Tunnel. This work was called for due to the deterioration and possibility of failure of the twin MSCL pipelines. Laid in 1920 they had deteriorated primarily due to the damp atmosphere of the tunnel. The pipes in the horizontal leg of the tunnel were replaced with fully welded 900mm steel pipes in 1976, with the two bottom pipes in the vertical leg of the south shaft replaced in the winter of 1977. New ladders were also installed at this time in the south shaft.

Designer/Builder: Public Works Department

Current Use: Water transport

Former Uses:

Physical Condition:

Recommended Management:

- This item contributes to local character and should be conserved.
 - Original details should be maintained including doors, windows and original signage.
 - New materials should be sympathetic to the nature and character of the original building.
 - In the event of major proposed changes, prepare a Conservation Management Strategy and undertake an archival recording.
 - Wherever possible, changes should be restricted to the interior of the building.
 - Routine maintenance of existing fabric is essential.
-

References:

Clem Lloyd, Patrick Troy and Shelley Schreiner 1992, For the Public Health. The Hunter District Water Board 1892-1992. Publisher: Longman Cheshire Pty Ltd, Melbourne.

Department of Public Works, Annual Reports, 1888 to 1892 and 1893-94 to 1960-61.

Glennie Jones 1967, The Movement for Newcastle's First Water Supply 1875-1885, Newcastle History Monographs No. 2. Publisher: The Council of the City of Newcastle, Newcastle.

Hunter District Water Board, Annual Reports, 1938-39 to 1987-88.

Hunter District Water Supply and Sewerage Board, Annual Reports, 1897-98 to 1937-38.

Hunter Water Board, Annual Reports, 1988-89 to 1990-91.

Hunter Water Corporation, Annual Reports, 1991-92 to 2008-09.

John W Armstrong 1967, Pipelines and People. The History of the Hunter District Water Board Newcastle, New South Wales. Publisher: The Hunter District Water Board, Newcastle.

Mal Hindley 1983, 'From Weirs, Dams and Sand', in Shaping the Hunter. Publisher: The Newcastle Division of the Institute of Engineers Australia, Newcastle.

Listings:

1 *Heritage Act - s.170 NSW State agency heritage register:*

Listing date: . Reference Number:

Data Entry: *Date First Entered:* 23/Jul/2010 *Date Updated:* 10/Sep/2010 *Status:* Partial

Hunter Water S170 Register

Images



Hunter River Tunnel location (Courtesy of Google Earth)

File: hunter river tunnel
GE.jpg

Copyright:

Image by: Google Earth

Date:

Thumbnail: t_hunter river tunnel
GE.jpg