

HUNTER WATER

SECTION s170 REGISTER



ITEM NAME:

Four Mile Creek 1 Reservoir

Contents:



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ITEM DETAILS



Item Name	Four Mile Creek 1 Reservoir
Other / Former Names	Buttai No 1 Reservoir
NSW SHI No.	3630004
GID	400466
Plant No.	WR-FMC-001-RES
Local Government Area	Cessnock
Lot and DP	Lot 1 DP 724270, Lot 1 DP 814843, Lot 1217 DP 1157771
Address	John Renshaw Drive, Black Hill NSW 2323
Curtilage	The curtilage of this asset is defined by its physical configuration and does not correspond to legal allotment boundaries.



View of the Reservoir entrance



Asset location and curtilage (red boundary) (refer to [Figure 1](#) for additional detail)



Current Use	Water storage
Former Use	N/A
Designer / Builder	Public Works Department and Newcastle Council
Historical Notes	<p>Construction on the Buttai Reservoir commenced in 1880, after the passage of the Country Towns Water Supply Act by NSW Parliament. Completed in 1881, it, along with the other water infrastructure erected in the region by Newcastle Council and the Public Works Department, was transferred to the Hunter District Water Supply and Sewerage Board at the time of its formation in 1892.</p> <p>Constructed of brickwork set in Portland cement with solid concrete foundations on a sandstone bed, Buttai Reservoir originally measured approximately 120 feet by 95 feet, was 15 feet deep, and had a capacity of 1,000,000 gallons of water.</p> <p>Originally, Buttai Reservoir received water from the Walka Waterworks, which extracted, filtered and treated water from the Hunter River, before transferring it into the two summit reservoirs (the other being East Maitland Reservoir). As the Hunter River water delivered from Walka Waterworks needed to be sheltered from light to prevent recontamination after treatment, the reservoirs were covered. Buttai Reservoir was roofed with brick arches covered with earth and grass, which also helped maintain the water at a low temperature.</p> <p>Constructed on top of a range about 5 ½ miles from the pumps at Walka Waterworks, Buttai Reservoir was supplied through a 15-inch rising main. The high elevation of the reservoir, which saw a direct lift of about 270 feet, combined with the friction losses through the 9,000 yards of mains, necessitated special gears on the engines that forced the water from the waterworks to the reservoir.</p> <p>Buttai Reservoir supplied water, via gravitation, to the six district reservoirs at Minmi, Hamilton, Wallsend, Newcastle, Lambton and Obelisk Hill, providing reticulation to the City of Newcastle, Carrington, Wickham, Hamilton, Waratah, Merewether, Adamstown, New Lambton, Lambton, Wallsend, Plattsburg, and Minmi. From Buttai, the 15-inch cast iron gravitation main extended for about 17 miles across hills, ravines, and swamps as far as the reservoir in Tyrrell Street. The first water from Buttai arrived at the Newcastle Reservoir on December 31, 1885.</p> <p>In 1898 the pipeline from Walka Waterworks to Buttai was duplicated. This new rising main was constructed of 20-inch riveted steel pipes and was completed and vested in the Board on 10th May 1898. In 1903-04 a 20-inch trunk main was laid from Buttai Reservoir to Heddon Greta following approval of a scheme to extend the water mains to the townships of the coalfields to the south of Maitland. New outlet works were constructed at Buttai Reservoir to feed the old 15-inch and the new 20-inch gravitation mains which supplied the Newcastle District in 1908-09. These works comprised a valve-house with a Venturi water meter for controlling and measuring the flow of water. The work was completed in late 1908, and the permanent connection of the new 20-inch main was made in February 1909.</p> <p>As part of the scheme prepared by the Constructing Authority for the Public Works Department in the mid-1910s, which would lead to the construction of Chichester Dam, it was proposed that a steel gravitation main of eight million gallons capacity per day be constructed from the dam to connect with the existing pipeline to Buttai Reservoir, as well as an additional gravitation main from Buttai Reservoir to Waratah Reservoir. In the late 1920s, due to the increases in water reticulation thanks to the construction of Chichester Dam, Buttai Reservoir was extended (known as Buttai No. 2 Reservoir) to hold a further 351,400 gallons of water to obviate shortages of water supply to Cessnock. This extension was completed in 1928 and made available for the summer of 1928-29. The reservoirs have been connected internally.</p> <p>In 1947-48 a scheme to amplify the water distribution was investigated, which included the augmentation of supply from Buttai Reservoir to Neath Pumping Station. In 1956 a 24-inch pipeline was laid for 2 ½ miles between Stoney Pinch and Buttai Reservoirs to improve supply. In 1960-61 a 20-inch cement-lined cast iron water main was completed between Buttai Reservoir and Heddon Greta, replacing an 18-inch wood stave main. It was decided in the late 1990s to roof the remaining open reservoirs under the control of the Hunter Water Corporation. By June 1999 construction on the roof of Buttai Reservoir No. 2 had commenced.</p>

HERITAGE STATUS



Listing Details	<input checked="" type="checkbox"/> S170 Heritage and Conservation Register <input type="checkbox"/> Local heritage listing <input type="checkbox"/> State heritage listing
Conservation Management Plan	<input checked="" type="checkbox"/> Futurepast Heritage Consulting Pty Ltd, 2012, <i>Buttai Reservoirs Site Conservation Management Plan</i> , prepared for Hunter Water Corporation
Heritage Asset Action Plan	<input type="checkbox"/> N/A
Aboriginal Sites Registered within the Site	AHIMS search undertaken on 20 October 2022. No sites were registered in or within 50 metres of the relevant Lot and DP.
Historical Archaeological Potential	Not assessed.

HERITAGE SIGNIFICANCE



Level of Significance	State
Statement of Significance	<p>Four Mile Creek 1 Reservoir is the oldest operating reservoir within the Hunter Water system. Constructed as an intermediate water storage for the original water supply scheme which pumped water from the Hunter River into Newcastle, it continues to function within the modern water supply system.</p> <p>The vaulted brick arch construction is uncommon and includes a finely detailed sandstone entry. The reservoir is unusual in that the tops of the arches are exposed, allowing the structure of the reservoir to be fully viewed.</p>
NSW SHR Criteria	<input checked="" type="checkbox"/> a) Historical <input type="checkbox"/> b) Associative <input checked="" type="checkbox"/> c) Aesthetic / Technical <input checked="" type="checkbox"/> d) Social <input checked="" type="checkbox"/> e) Research Potential (yield new information) <input checked="" type="checkbox"/> f) Rare <input type="checkbox"/> g) Representative
Significant Elements	<ul style="list-style-type: none"> Stylistically similar to Newcastle Reservoirs (No 1 Reservoir). Overall form, shape, and scale of the entrance portico and original reservoir. Sandstone and brick externally and internally. The external appearance of the vaulted arches. Decorative steel vents.

DESCRIPTION



Setting	<p>The reservoir is set within an area of bushland adjacent to a mine facility. The mine operations are screened by the bushland and are not visible from the reservoir. Much of the landform immediately surrounding the reservoir has been disturbed by mounding soil around the reservoir structure, resulting in a raised mound.</p> <p>Four Mile Creek 2 Reservoir adjoins Four Mile Creek 1 Reservoir on its western and southern extents.</p>
External Appearance	<p>The entrance to the reservoir is marked by a sandstone portico in the Victorian Academic Classical style. It features a pilaster either side of an arched entry door and a pedimented bay inscribed with '1882'. The entry door is a hinged flush framed panelled timber door that has been painted dark green. A circular window is present at the rear of the entrance portico. The glass has been removed and replaced with metal mesh for security.</p> <p>The reservoir walls feature exposed yellow and red sandstock brick laid in English bond. The walls have been capped with sandstone in a steeply pitched saddleback style. Original decorative steel vents are located intermittently along the walls. Some of these have been covered with metal mesh for security.</p> <p>The roof of the reservoir consists of six arches that have been sealed in bitumen. A timber beam fixed to the roof behind the entrance portico may have served as a depth measuring device.</p>
Internal Appearance	<p>Within the portico is an access hole to the reservoir. The internal brick structure has been laid in stretcher bond. Brick columns support the arched brick roof, and steel tie rods stretch between the columns.</p>
Overall Condition	Fair.
Moveable Heritage Objects	None identified.

MANAGEMENT



Approval and Assessment Requirements	<p><u>Minor or inconsequential impacts:</u> Anything other than routine repair and maintenance must be discussed with the Environment Team to determine the level of heritage assessment required.</p> <p><u>More than minor or inconsequential impacts:</u> As above. Reference should be made to the most up to date CMP for this asset as part of any works planning, in recognition of its State significance. Additionally, consultation with the relevant local council is required.</p> <p>Demolition or removal from the register requires consultation with Heritage NSW and archival recording.</p>
General / Ongoing Management	<ul style="list-style-type: none"> Changes within the defined curtilage should be preceded by the appropriate level of heritage assessment and approval. Advice and/or confirmation should be sought from the Environment Team prior to undertaking any works. Maintain overall form, shape and scale of the Reservoir. Maintain existing entrance portico, fenestration, and significant elements. Changes to fabric may be supportable if no feasible alternative is available to ensure ongoing operation and/or safety. Replacement/removal of redundant or failing elements or equipment is acceptable to facilitate ongoing operation of the reservoir. Removal of non-significant elements is supportable. Any replacements must be appropriate/sympathetic. Consider nominating the reservoir for inclusion on the LEP and NSW State Heritage Register. Consider the amalgamation of the Four Mile Creek 1 and Four Mile Creek 2 assets into a single listing on the s170 Register.

- Undertake review of and update the applicable CMP every 5-7 years. The 2012 CMP requires revision as soon as possible.
- The policies contained within the CMP should be followed to conserve and manage the heritage values of the asset in line with the operational needs of Hunter Water.

Priority Conservation Works

- Assess and repair damage to external brickwork and sandstone, including mortar loss, spalling, delamination, and cracking.
- Clean surface of bricks and sandstone to remove discolouration and prevent deterioration.
- Investigate repair and/or replacement of damaged decorative steel vents. If replaced, the new materials should be sympathetic to the original style.

KEY IMAGES



Image 1: Entrance portico



Image 2: Entrance portico



Image 3: Steps to reservoir roof



Image 4: Decorative steel vents



Image 5: Interface between Four Mile Creek 1 and 2 Reservoirs



Image 6: Bitumen arches



Image 7: Internal portico space



Image 8: Internal reservoir space



Image 9: View within the reservoir



Image 10: View within the reservoir

REFERENCES



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- Hunter District Water Board, Annual Reports, 1938-39 to 1987-88.
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- Mal Hindley 1983, 'From Weirs, Dams and Sand', in Shaping the Hunter. Publisher: The Newcastle Division of the Institute of Engineers Australia, Newcastle.



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FIGURE 1

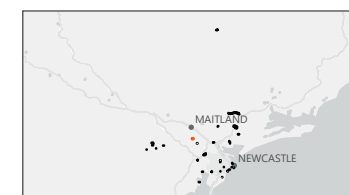
S170 Review - Heritage Curtilages

Legend

-  Road
-  Railway
-  Lot Boundary
-  Heritage Curtilages



Four Mile Creek 1 Reservoir



0 80
Metres

Scale 1:2,000 at A4
GDA 1994 MGA Zone 56

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