

HUNTER WATER

SECTION s170 REGISTER



ITEM NAME:

Balickera Canal and Tunnel

Contents:



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Heritage Status



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ITEM DETAILS



Item Name	Balickera Canal and Tunnel
Other / Former Names	Grahamstown Canal (Balickera Tunnel) Seaham-Balickera Canal
NSW SHI No.	3630118
GID	10799413 and 4026783
Plant No.	NA
Local Government Area	Newcastle
Lot and DP	Multiple (refer to associated mapping/GIS data)
Address	Multiple (refer to associated mapping/GIS data), primary address 301 Italia Road, Balickera NSW 2324
Curtilage	The curtilage of this asset is defined by its physical extent and does not correspond to associated legal allotment boundaries.



View of the Canal facing west from Balickera Pumping Station



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



Current Use	Water transport
Former Use	N/A
Designer / Builder	Vattenbyggnadsbyran (VBB) – Swedish Engineering Consultancy and Hunter District Water Board
Historical Notes	<p>After the end of World War II, the Hunter District Water Board became preoccupied with the adequacy of their water sources. It was in March 1946 that the Board's then President, George Schroder, first raised the possibility of using the Grahamstown Moors as a possible new water source.</p> <p>The Grahamstown Moors had a catchment area covering more than 78 square kilometres, and for years it had been known that a large amount of water could be impounded at the site. The local catchment, however, was inadequate to cater for the demands of the region, posing a significant challenge in regard to its exploitation as a storage site. Whilst investigations regarding the utilisation of Grahamstown Dam as an auxiliary to the Tomago Water Supply Works were carried out from the late 1940s, and the Board obtained 2,000 acres of the Grahamstown moorlands in 1948, an alternative proposition of constructing a much larger dam at Tillegra was preferred.</p> <p>In the early 1950s it was decided by the Engineering Experts' Committee that future investigation should concentrate on Tillegra. However, in the face of growing opposition to Tillegra Dam and following a visit to Europe to attend conferences and inspect waterworks, Schroder was able to persuade the Board to delay the Tillegra Dam and fully exploit both the Tomago sand beds and Grahamstown catchment area. The Board subsequently commissioned the Swedish consulting engineers Vattenbyggnadsbyran to investigate.</p> <p>After visiting the region early in 1953 they delivered their report in September, and with it provided their solution to the problem of the Grahamstown Moor's inadequate catchment. The scheme proposed by Vattenbyggnadsbyran provided for fresh water to be drawn from the Williams River near Seaham and conveyed by open canals and a tunnel to the storage dam constructed on the moors, formed by constructing an embankment across the natural depression. As the Williams River was tidal at the point of extraction, the Swedish engineers outlined the necessity of constructing a weir to form a barrage between the tidal salt water and the fresh river water. Once collected, this fresh water would be conveyed by open canal for approximately three miles to a pumping station at Balickera, where the water would be lifted 15 meters before gravitating towards the dam through a 1,200-metre long tunnel cut through a high ridge between the sites. The water would then feed into an outlet canal that delivered it to Grahamstown Dam.</p> <p>In February 1955, following review, the Board's Amplification Committee broadly accepted the scheme, with construction of the Dam authorised on 5th April 1955. Construction of the scheme commenced immediately after the official construction ceremony was performed by the then Premier, Mr J. Cahill, on 30th November 1957. On 9th July 1957 the Board had decided to request the assistance of the Water Conservation and Irrigation Commission, in association with the Board, to design and construct the Seaham-Balickera tunnel or canal, including automatic inlet control gates and a road bridge structure. Excavation on the Balickera end of what was called the Seaham-Balickera Canal commenced 14th July 1958, whilst excavation work at the Seaham end of the canal, on Boag's Hill, commenced on 28th March 1960.</p> <p>The works at the Seaham end of the canal included the inlet structure which was to control the flow of water from the Williams River into the canal. These concrete river inlet works, consisting of a concrete structure, were completed in 1963-64. The construction of the river inlet included the installation of the mechanical equipment of the radial gates and an electrical control line for automatic operation, which took a little longer to install. A 12-foot diameter reinforced concrete pipe conduit was laid in 1963-64, with work proceeding on the deposition of protective fill. At the same time, attention was being given to healing of the banks of the canal by filling with rock, and the bulkhead gate structure was completed and brought into use.</p>

Rock spoil was again placed on eroded sections of the Seaham-Balickera Canal as necessary during the year 1967, and in 1978-79 dredging of the canal was carried out to remove the silt and aquatic weeds. In 1980-81 more dredging was carried out to remove silt, this time from a portion of the canal between Balickera Pumping Station and Grahamstown Dam.



Figure 2: Excavations for the Canal

Source: John. W. Armstrong, "Pipelines and People"



Figure 3: Excavations for the Tunnel

Source: John. W. Armstrong, "Pipelines and People"

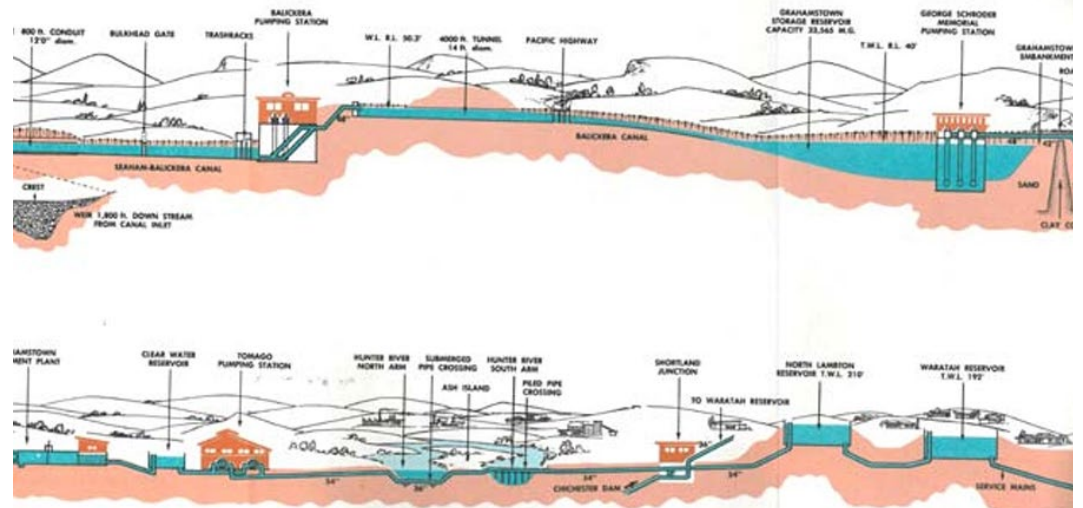


Figure 4: Grahamstown Dam System Diagram

Source: Hunter District Water Board

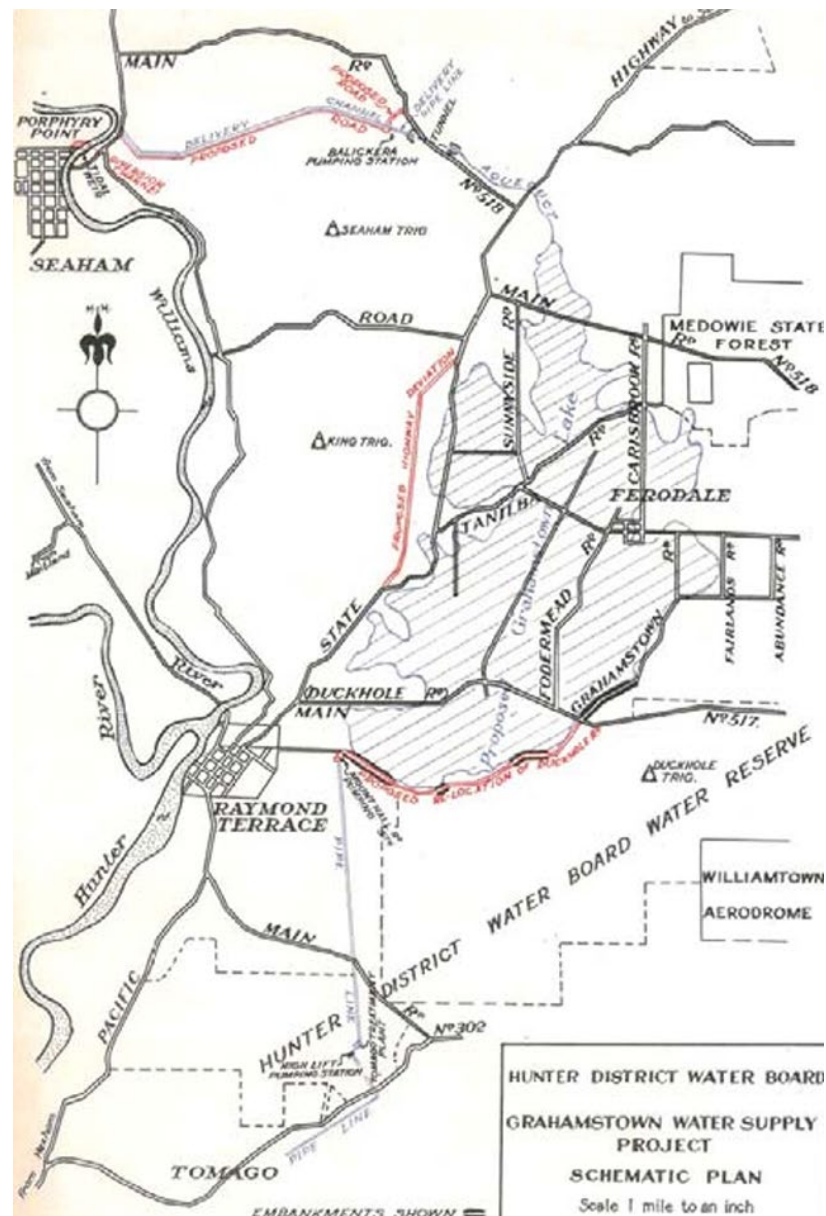


Figure 5: Grahamstown Dam/Scheme Plan

Source: Hunter District Water Board Annual Report 1954-55

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 type="checkbox"/> N/A
Heritage Asset Action Plan	<input type="checkbox"/> N/A
Aboriginal Sites Registered within the Site	AHIMS search undertaken on 27 June 2023. No sites were registered in or within 50 metres of the curtilage of the Canal.
Historical Archaeological Potential	Not assessed.

HERITAGE SIGNIFICANCE



Level of Significance	Local
Statement of Significance	<p>The Balickera Canal is a contributory element of the overall Grahamstown Scheme, providing water from the Williams River to Balickera Pumping Station for gravitation to Grahamstown Dam.</p> <p>Its significance is primarily derived from its association with and contribution to the significance of the Grahamstown Scheme and Dam. It is an integral, functional piece of infrastructure that is representative of the scale of construction and overall design intent and engineering of the Scheme/Dam. It represents technical achievement and contributes to an understanding of the historical development of water infrastructure within the region.</p>
NSW SHR Criteria	<input checked="" type="checkbox"/> a) Historical <input type="checkbox"/> b) Associative <input checked="" type="checkbox"/> c) Aesthetic / Technical <input type="checkbox"/> d) Social <input type="checkbox"/> e) Research Potential (yield new information) <input type="checkbox"/> f) Rare <input checked="" type="checkbox"/> g) Representative
Significant Elements	<ul style="list-style-type: none"> Alignment and scale of Canal. Tunnel entrances with inscriptions.

DESCRIPTION



Setting	The Balickera Canal predominately extends through rural and bushland settings to connect to Grahamstown Dam to the southeast and the Williams River to the northwest.
External Appearance	<p>The Canal is predominately an open earthen canal cut into the surrounding land with a mixture of natural (earthen or rock) and concrete embankments. Part of its length includes the 1,200 metre Balickera Tunnel, cut through the ridge between the Williams River extraction point and the Balickera Pumping Station and constructed of concrete. At either end of the Tunnel, 'Hunter District Water Board Balickera Tunnel 1962' has been inscribed into the concrete.</p> <p>The Canal connects to the Williams River through concrete flood gates at one end, enters Balickera Pumping Station thorough a series of intake pipes at the centre and on to the Grahamstown Dam at the eastern end.</p>
Internal Appearance	N/A
Overall Condition	Good.
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. 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 alignment, form and scale of the Canal. Changes to fabric may be supportable if no feasible alternative is available to ensure ongoing operation and/or safety. Note: the alignment and historical value of the Canal is of greater significance than its physical fabric. Replacement/removal of redundant or failing elements or equipment is acceptable. Consider the amalgamation of all s170 listings associated with the Grahamstown Dam into one single listing. Consider the preparation of a Heritage Asset Management Plan (HAMP) or Conservation Management Plan (CMP) for the entirety of Grahamstown Dam (including the Canal).
Priority Conservation Works	<ul style="list-style-type: none"> Assess condition of concrete and other elements (such as gates) to ensure ongoing operation to an appropriate standard. Periodically assess the need for dredging and/or weed maintenance.



Image 1: View of the Canal facing east from Balickera Pumping Station



Image 2: View of the Canal to the west of Balickera Pumping Station



Image 3: View of the northern end of the Tunnel



Image 4: View of the Canal to the north of the Tunnel



Image 5: View of the southern end of the Tunnel showing the inscription



Image 6: View of the Canal from the southern end of the Tunnel



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- 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.
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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

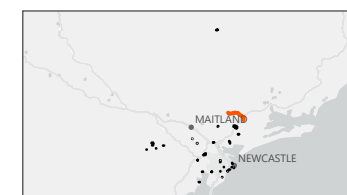
S170 Review - Heritage Curtilages

Legend

- Road
- + Railway
- Lot Boundary
- ▭ Heritage Curtilages
- State Forest
- NPWS Reserve



Balickera Canal and Tunnel



0 1,000
Metres

Scale 1:37,500 at A4
GDA 1994 MGA Zone 56

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