

# EXTENT



# WARRAGAMBA EMERGENCY SCHEME

**(SHR #01376)**

Statement of Heritage Impact for the installation of two (2) new flood doors within the adit tunnel at the deep water pumping station (Water Pumping Station – No. 9).

March 2024 — FINAL



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## EXECUTIVE SUMMARY

Extent Heritage Pty Ltd (Extent Heritage) was commissioned by WaterNSW to prepare a Statement of Heritage Impact (SOHI) for the proposed works to the deep water pumping station (DWPS) located within the heritage curtilage of the State Heritage listed *Warragamba Emergency Scheme* (SHR #01376). The scope of works comprises the installation two (2) new flood doors at the upper and lower end of the adit tunnel which aims to mitigate future flood risk, as experienced in the inundation of the underground DWPS cavern in 2021.

The proposed works are limited to the adit tunnel within the DWPS and will see no change or adverse impact on other significant extant features associated with the Warragamba Emergency Scheme site. The proposed works will see the addition of contemporary functional elements which will form part of the wider operations of the Warragamba Emergency Scheme site.

The cumulative impact of the proposed works was assessed in this SOHI and is considered to be negligible with a positive outcome through the safeguarding of the DWPS from future flood events. The proposed works and outcome are also aligned with the management policies for the site as outlined in the draft CMP (Graham Brooks and Associates 2010).

### Approvals pathway

It should be noted that wider refurbishment works are being undertaken at the DWPS to remediate flood damage and replace affected machinery and equipment. The proposed works assessed in this SOHI are a separate project and do not form part of the scope of refurbishment works to the DWPS.

The scope of works has been assessed against the provisions of the Act and has established that it does not fall within any applicable heritage exempt works. However, the proposed works is assessed to have a negligible impact to the heritage significance with an overall positive outcome for the Warragamba Emergency Scheme site. As such, the proposed works do meet the provisions for the Section 60 – Fast Track application. Application under Section 60 – Fast Track approval pathway is applicable for the proposed works at the DWPS.

### Recommendations

#### Prior to works

- Contractors must be briefed on the heritage sensitive nature of the place and informed of any recommended mitigation measures or controls required.
- Heritage induction - All relevant staff, contractors and crew should be made aware of their statutory obligations for heritage under the *NSW Heritage Act 1977*. This would be implemented as a heritage site induction outlining the significance and sensitivity of the area, the need for care and the mitigation measures to be put in place.



### **During works**

- No building or construction materials should not be stockpiled against or adjacent heritage structures or significant landscape features. Laydown areas and high-traffic areas should have a clear separation from significant buildings, structures, and landscape features.
- Any accidental damage to heritage items is to be treated as an incident, with appropriate recording and notification.

### **After works**

- All work areas must be made good upon completion of the project.

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# 1. THE HERITAGE ITEM

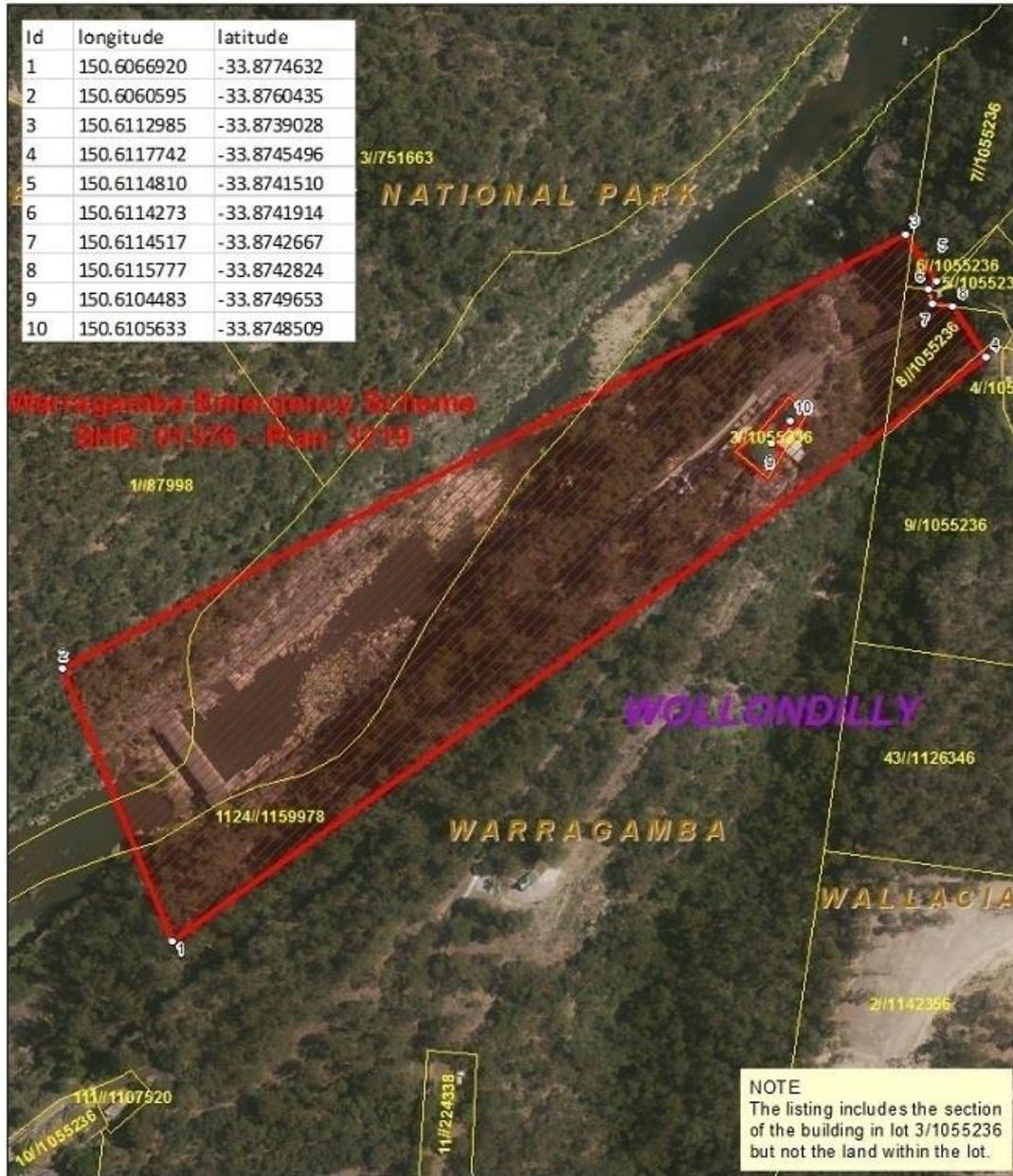
## 1.1. Site description

The deep water pumping station, also known as the Water Pumping Station – No. 9 or the Megarrity’s Creek Water Pumping Station (hereafter referred to as the ‘proposed works area’ or the ‘DWPS’) forms part of the Warragamba Emergency Scheme (also referred to as the ‘site’). The Warragamba Emergency Scheme is located approximately 65 kilometres southwest of Sydney, within the Wollondilly Local Government Area (LGA).

The wider landscape includes a complex of buildings, structures, roads, and bridge which is listed on the State Heritage Register (SHR) as the *Warragamba Emergency Scheme* (SHR #01376). The Warragamba Emergency Scheme is associated with Warragamba Dam. The proposed works area is located downstream from the main dam structure and complex which forms part of additional heritage listings on the SHR, Schedule 5 of the *Wollondilly Local Environmental Plan 2011*, and the WaterNSW s170 Heritage and Conservation Register

## 1.2. Heritage item

The Warragamba Emergency Scheme is located downstream along the Warragamba River from the Warragamba Dam. The area occupied by the site is mainly accessed via Weir Road. Key elements comprising part of the Warragamba Emergency Scheme include the weir, balance reservoir, cableway, substation, auxiliary buildings, the deep water pumping station (proposed works area), staff accommodation, Megarrity’s Bridge, and other associated water related infrastructure.



State Heritage Register - SHR: 01376 - Plan:3219  
 Warragamba Emergency Scheme  
 Warragamba Dam, Warragamba  
 Gazettal Date: 18 November 1999  
 0 30 60 90 120 Metres  
 Scale: 1:3,000  
 Datum/Projection: GCS GDA 1994



**Legend**

- Land Parcels
- SHR Curtilage
- Railways
- Roads
- Streams
- Suburbs

Figure 1. SHR heritage curtilage of the Warragamba Emergency Scheme (SHR #01376). Source: State Heritage Register.

## 1.2.1. Heritage listings

Table 1. Summary of heritage status.

| Register/listing   | Item listed (Y/N) | Item name   | Item number |
|--|-------------------|---|-------------|
| <b>Statutory listings</b>                                    |                   |   |             |
| State Heritage Register                                      | Yes               | Warragamba Emergency Scheme                                 | 01376       |
| WaterNSW s170 heritage and conservation register             | Yes               | Warragamba Emergency Scheme – Water Pumping Station – No. 9 | 4580064     |
| <i>Wollondilly Local Environmental Plan 2011, Schedule 5</i> | Yes               | Warragamba Supply Scheme and Warragamba Emergency Scheme    | 1270        |
| <b>Non-statutory listings</b>                                |                   |   |             |
| Register of the National Trust (NSW)                         | Yes               | -   | -           |

## 1.2.2. Site and its context

The following site and context description is quoted from the draft *Warragamba Supply Scheme – Conservation Management Plan (CMP)* prepared by Graham Brooks and Associates Pty Ltd for the Sydney Catchment Authority (SCA) dated June 2010:

### **Area Downstream of Dam Wall including element of the Emergency Scheme**

This precinct is located to the northeast of the dam wall and is defined by the weir located to the valley floor and associated works. The rugged topography of this precinct has dictated the location of many of the facilities including the access roads and areas of plant and equipment. Much of the works associated with the scheme have either been removed, relocated or remain disused.

The landscape character varies with naturally revegetated bushland occurring on the ridge, south of Megarity’s Creek bridge and also on the former work platforms and river valley. The recent bushfires (December 2001) clearing out some of these areas and in the case of the ridge, revealing aspects (former dam model and substation footings) associated with the Emergency Scheme workings and maintenance.

An extension of the downstream area is the newly completed spillway that forms a broad constructed form adjacent to the dam wall. Water flows of the river are sporadic in this precinct as is typical of below dam locations.

### 1.2.3. Proposed works area

The proposed works area comprises adit tunnel located at the DWPS. The DWPS is accessible via Weir Road and is constructed into the landscape within a cavern set approximately 60 metres underground.

It formerly included a tower structure which was the main visible component of the proposed works area. Following the demolition of the tower in the c.1980s, the proposed works area is not readily visible in aerial imagery of the wider site landscape. The adit tunnel and extending access shafts are the primary access point into the DWPS cavern.

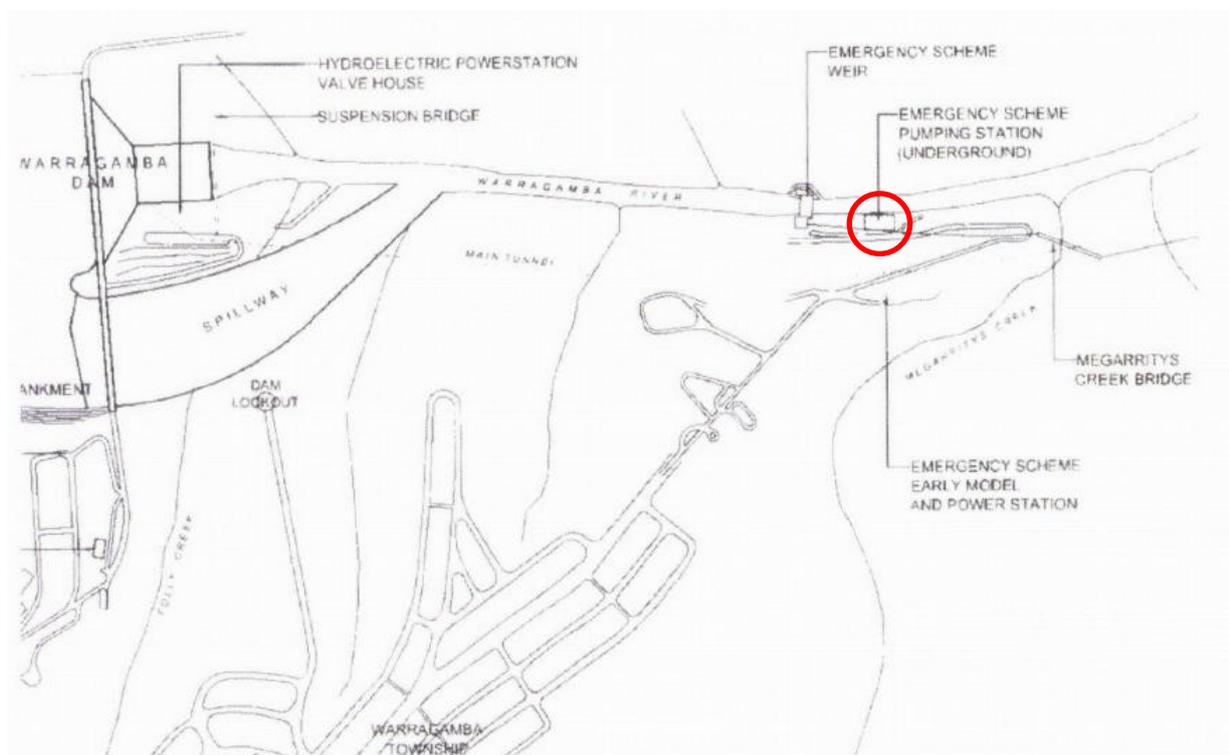


Figure 2. Map showing the proposed works area outlined in red within its wider context. *Source:* b cubed sustainability 2005, 10.



Figure 3. Aerial image of the site with underground cavern footprint indicated in red. The proposed work area comprising the underground adit tunnel alignment is indicated with the yellow dotted line. *Source:* Nearmap 2023 with Extent Heritage overlay.

### 1.3. Site summary history

The section provides a brief summary of the historical development of the Warragamba Emergency Scheme and Warragamba Dam. The following historical analysis is adapted from the draft *Warragamba Supply Scheme – Conservation Management Plan (CMP)* prepared by Graham Brooks and Associates Pty Ltd for the SCA dated June 2010 and *Megarritys Creek Water Pumping Station Stage 2 Heritage Impact Statement (Expansion and Refurbishment)* prepared by b cubed sustainability Pty Ltd for the NSW Department of Commerce and SCA dated March 2005. For a comprehensive historical analysis of the Warragamba Dam and Warragamba Emergency Scheme, refer to the reports quoted above (b cubed sustainability 2005 and GBA 2010). Extent prepared a Statement of Heritage Impact for the installation of a new jib crane to service the DPWS in December 2023.

#### 1.3.1. Warragamba Emergency Scheme

Sydney's first secure water supply was collected from the spring, known as the Tank Stream, that flowed into Sydney Cover (now Circular Quay). The Tank Stream continued to be the main source of water for the new colonial settlement until the c.1820s when a new water supply system was established, designed by mineral surveyor and civil engineer, John Busby, to transport water via a gravitational feed through an underground tunnel. The tunnel was cut through sandstone bedrock and stretch approximately two miles (3.6 kilometres) from Lachlan Swamps (now Centennial Park) to an outlet at Hyde Park (GBA 2010 16).

The growth of Sydney's population along with successive drought conditions in the nineteenth century forced the New South Wales (NSW) Colonial government to safeguard the city's water supply. This included establishing the Botany Swamps Scheme between 1859-1864 and the Upper Nepean Scheme between 1879-1887 (GBA 2010, 18-20).

Severe and prolonged drought conditions in the early decades of the twentieth century strained Sydney's water supply network. A Royal Commission was appointed in 1902 to improve, increase, and safeguard Sydney's water supply. The Royal Commission recommended for the construction of new dams to help increase water storage. The first new dam, now known as Cataract Dam, was completed in 1907. Construction of additional dams across the Nepean River watershed commenced in 1918 (Cordeaux Dam), 1921 (Avon Dam), and 1925 (Nepean Dam) (GBA 2010).

The catchment area along the Warragamba watershed was historically identified as a potential area to supplement Sydney's water supply system. While previous schemes to harness the Warragamba watershed were presented throughout the nineteenth century, planning and approval to start work on the new scheme was only provided in c.1920-1921 (GBA 2010).

The location of the new dam was chosen in 1919, located approximately 1.25 miles upstream from the confluence of the Warragamba River and the Nepean River, close to the confluence with Megarrity's Creek. However, for the construction of the new dam only commenced in April 1937

which was to proceed in four main stages comprising the Warragamba Emergency Scheme (GBA 2010, 39-40):

- Stage 1: Construction of a 50 feet weir, pumping station, and steel main to supply water to Prospect Reservoir.
- Stage 2: Increase of the pumping station capacity and size.
- Stage 3: Construction of the main storage dam.
- Stage 4: Amplification of the outlet system to Prospect Reservoir.

The first stage of the construction comprising the new Warragamba Emergency Scheme included the new weir, located close to the area tentatively chosen for the new dam. The weir was connected via two 72 inch diameter mild steel pipes which serviced the pumps supplying the steel main to Prospect Reservoir. A concrete arch bridge over Megarrity's Creek was constructed to support an emergency main/outlet main from the main dam. Upon completion in 1940, the Warragamba Emergency Scheme provided nine million gallons of water for supply to Sydney (b cubed sustainability 2005, 16-17 and Sydney Catchment Authority n.d.).

Following this, construction of the main Warragamba Dam commenced in c.1948 and was officially opened in October 1960 (GBA 2010, 91 and 128).

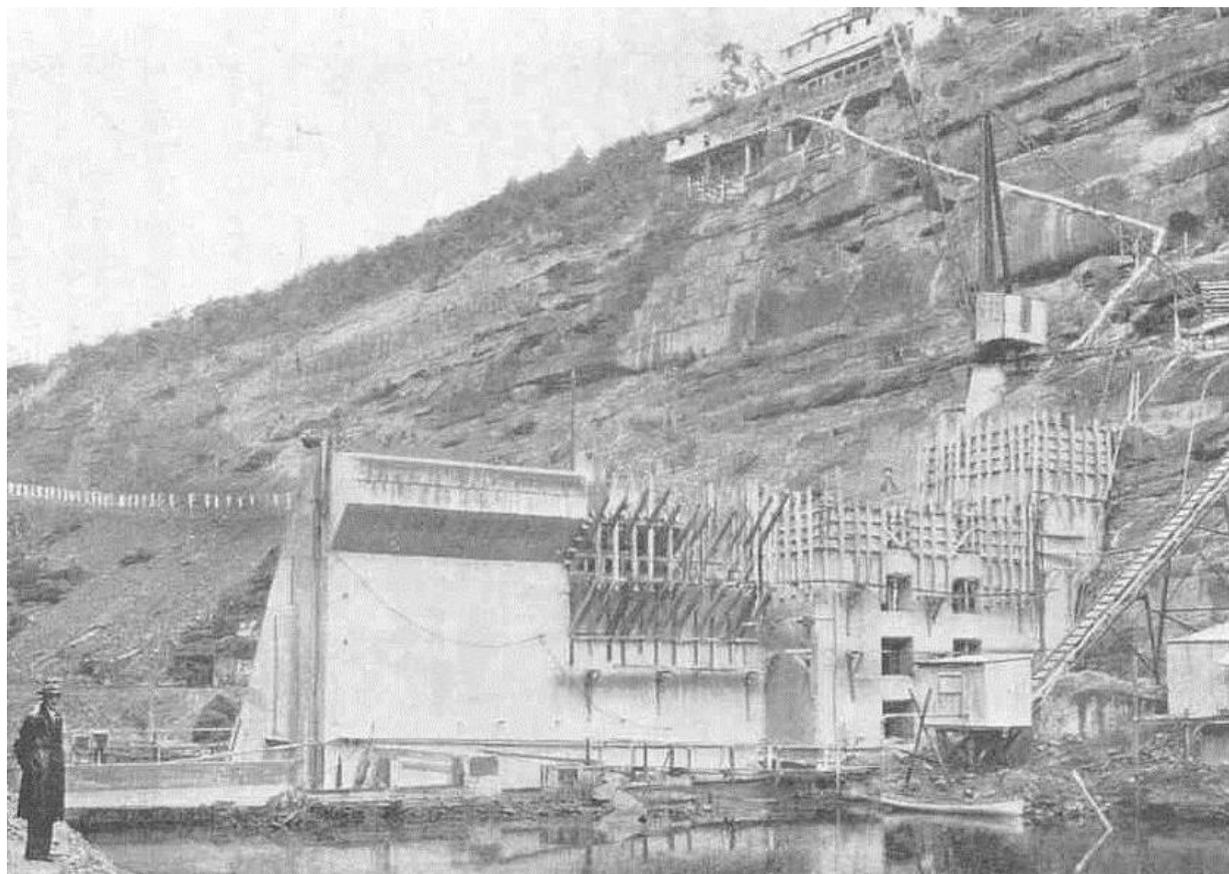


Figure 4. Construction of the Warragamba Emergency Scheme weir, 1939. Source: Water Board Annual Report 1938-1939 in GBA 2010, 67.

### 1.3.2. Historical overview of the proposed works area

Construction of the new pumping station (comprising the proposed works area) commenced in c.1937 to the designs of Bill Egan. In response to the site’s steep topography, the new pumping station was to be built underground which necessitated the excavation of 4,000 cubic metres of sandstone. Entry to the excavation site of the pumping station was via an electrically operated passenger and goods lift with a shaft tower extending over the access road to the weir (b cubed sustainability 2005, 18-20).

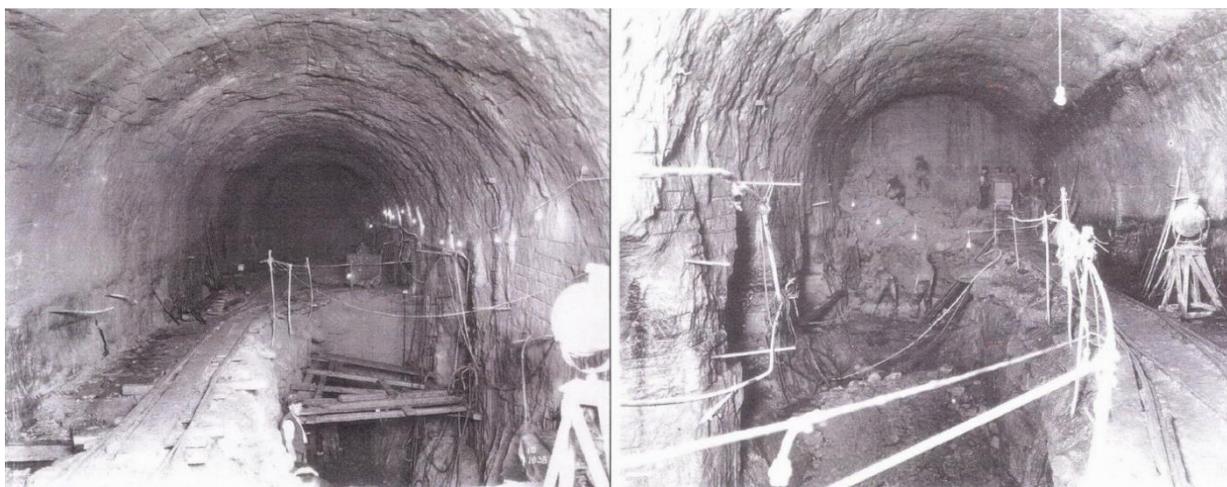


Figure 5. Excavation of the pumping station, 1938. *Source:* SWC/SCAHR & AF image number 07.10.38-10 and 03.11.38-6 in b cubed sustainability 2005, 19.

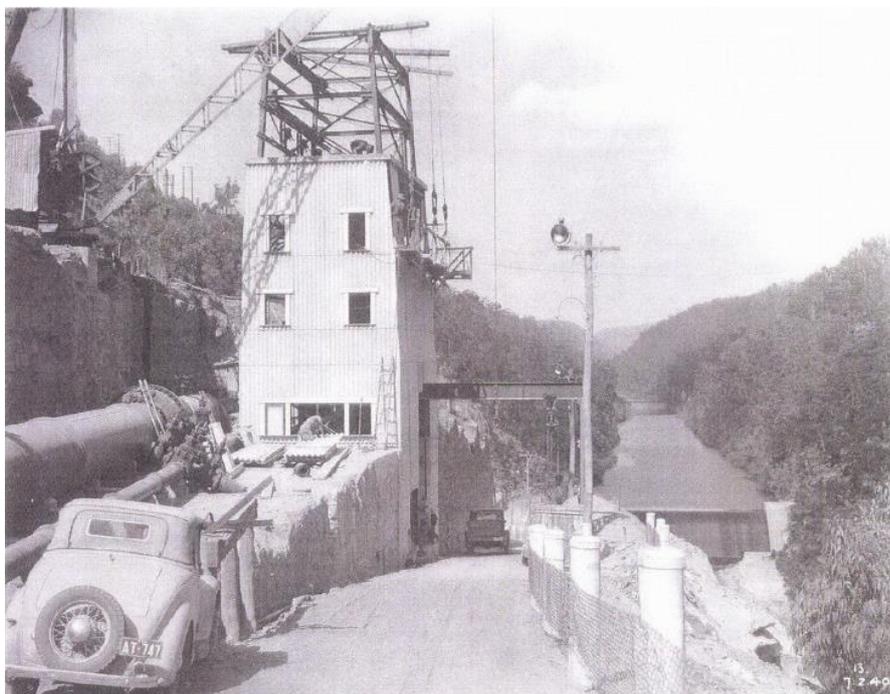


Figure 6. Photograph of the lift shaft tower and access road to the weir (visible in the lower right background), 1940. *Source:* SWC/SCAHR & AF in b cubed sustainability 2005, 20.

Excavation, concreting of the floor, and construction of the foundation beams were completed by mid-1939. The pumping station was constructed within the excavated cavern that measured approximately 52.7 metres long by 6.7 metres wide and 11.3 metres high, situated approximately 60 metres below ground level and normal river levels (GBA 2010, 70). Arched recesses and steel beams were constructed along the cavern length to accommodate the pumping equipment along with brick veneer walls (b cubed sustainability 2005, 22).

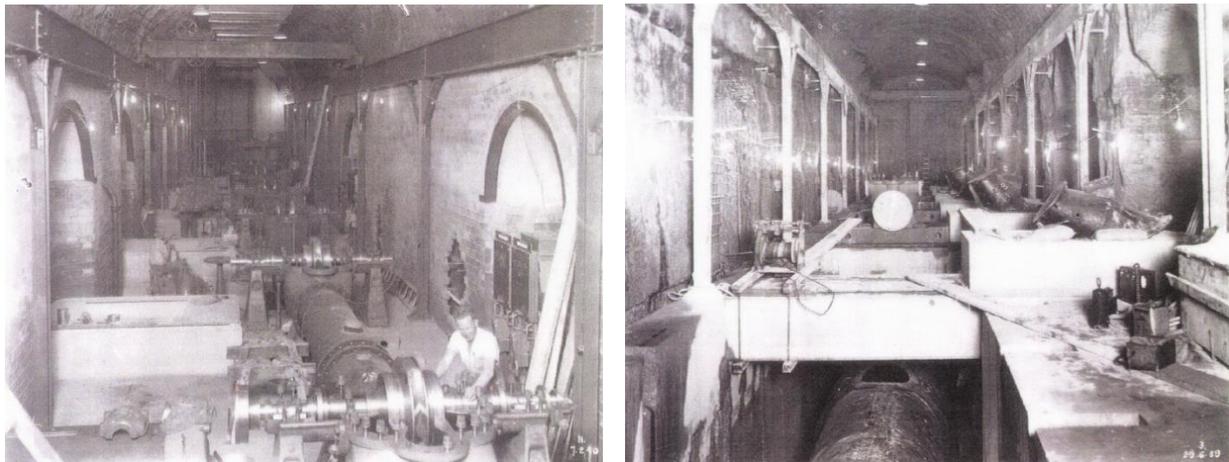


Figure 7. Photograph of the pumping station under construction, 1939 and 1940. *Source:* SWC/SCAHR & AF image number 29.06.39-3 and 02.02.40-11 in b cubed sustainability 2005, 21.

The pumping station equipment included six 1,000 horsepower motors with horizontal centrifugal electrical pumps. The pumps were grouped in three pairs which operated in parallel. There were also two auxiliary 100 horsepower pumps which provided a standby pump during periods of maintenance. The new pumping station had a daily capacity of 180ML (GBA 2010 70).

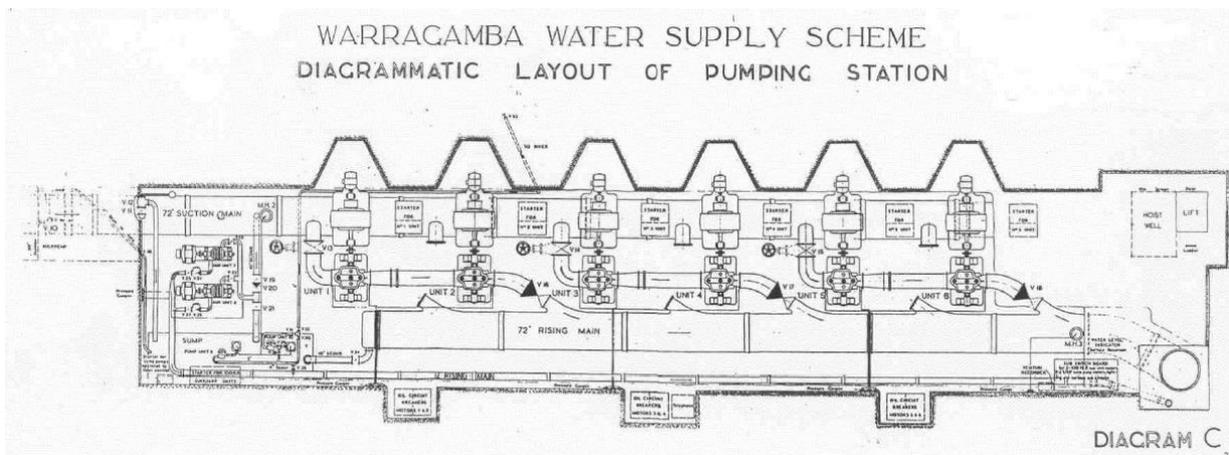


Figure 8. Plan of the pumping station, n.d. *Source:* National Trust Classification in GBA 2010, 71.

The pumps were manufactured in Australia while the motors were imported. The pumping station contained three 'Stop and Check Valves' which were manually operated and hydraulically controlled. The internal pumping station roof was lined with asbestos cement sheeting potentially act as noise insulation and to protect from falling rocks and to divert water seeping through the bedrock and down the side walls to protect the machinery (b cubed sustainability 2005, 22).



Figure 9. Photograph of the water pumping station and pumping equipment, 1941. *Source:* National Library of Australia. Call no. PIC/8732/19 LOC Album 562.

The new pumping station was able to switch between 'series' and 'parallel' pumping which had the advantage of being able to pump water at a large range of levels. The operational flexibility provided by the new pumping station was beneficial for the secure and efficient transportation of water between the site and Prospect Reservoir during the construction period of the main Warragamba Dam (b cubed sustainability 2005, 23).

The first water pumped from the pumping station by the Emergency Scheme to Prospect was delivered on 20 May 1940. The Warragamba Emergency Scheme provided a vital source of water for the city during a prolonged drought period which only abated in May 1943 (b cubed sustainability 2005, 23).

The construction of the main Warragamba Dam allowed for the increased storage of water upstream which allowed for the gravitational movement of water through the system without the

aid of the pumping station (GBA 2010 73). The pumping station remained in active use until 12 February 1959. During its first 19 years of operation, it pumped a total of 192,054 million gallons of water to Prospect Reservoir and onwards to the city. Following its decommissioning in 1959, the pumps and equipment were removed in 1966, later reused at another booster pumping station at Warragamba (b cubed sustainability 2005, 23).

Other works during the decommissioning was the replacement of the 48 inch main with a 106 inch main, skirting the southern section of the structure. The access tower was removed, and shaft infilled between 1988-1990 at which point the adit tunnel became the primary access point into the DWPS (GBA 2010, 73). The shaft entrance was capped with a concrete slab at ground level and the former entry was infilled with a concrete wall, located beside the access road. A new access shaft was constructed in the early c.1990s through an adit tunnel that provides access to the underground cavern (b cubed sustainability 2005, 28).

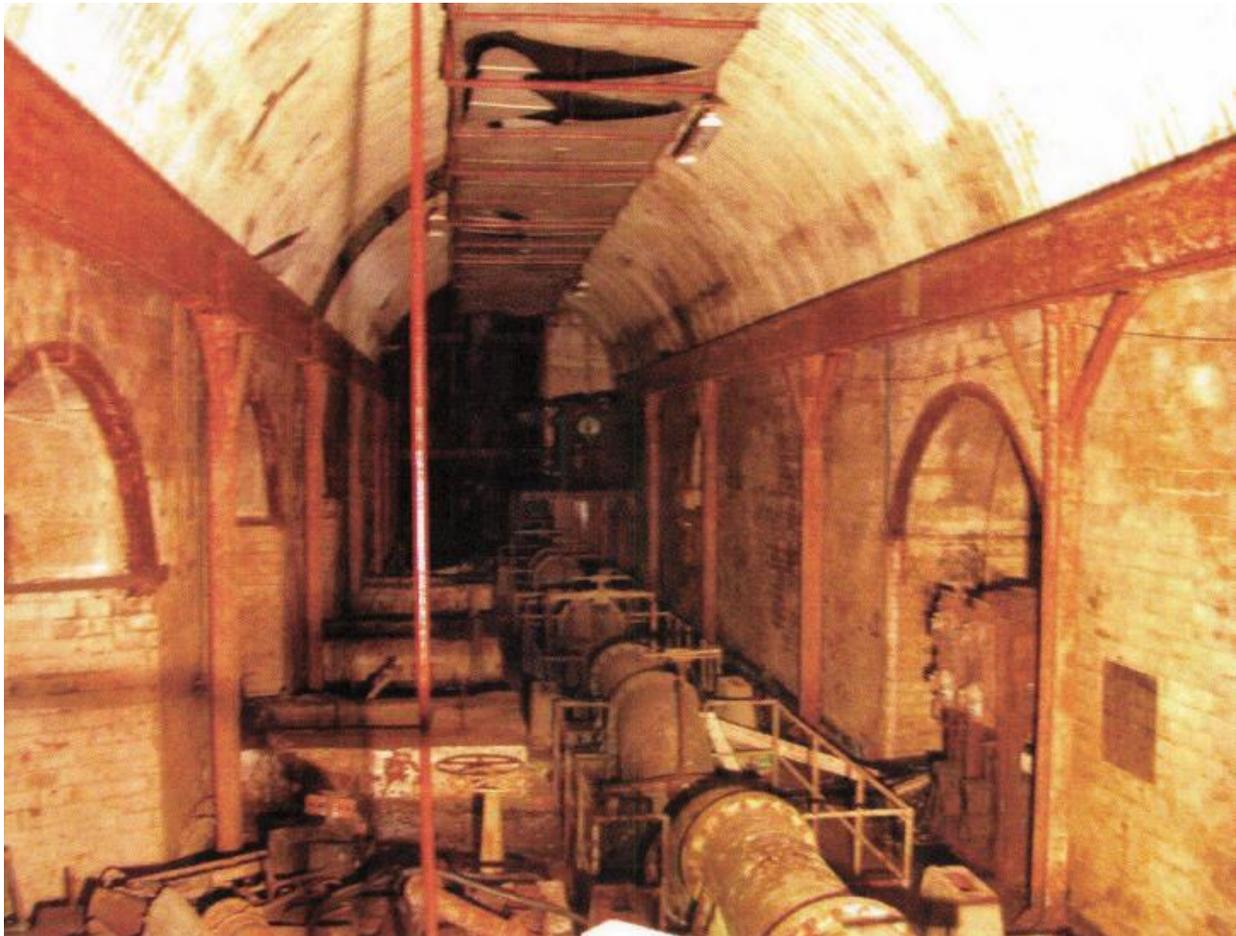


Figure 10. Photograph of the water pumping station prior to recommissioning, 2004. Source: b cubed sustainability 2005, 27.



Figure 11. Photograph of the infilled base of the former lift tower and shaft (left) and the adit tunnel (right), 2004. *Source:* b cubed sustainability 2005, 28 and 29.

The pumping station remained idle until 2004 when a decision was made to recommission the pumping station (b cubed sustainability 2005, 23). Following the recommissioning, the pumping station was refurbished as part of the Warragamba Dam Deep Storage Project. The project formed part of the NSW Government’s 25-year Metropolitan Water Plan which provides for infrastructure improvements for the increase of water supply to the Sydney metropolitan region (GBA 2010, 74).

The pumping station was refurbished in 2006 to facilitate the extraction of deep water storage from Warragamba Dam (water located below the lowest outlet point). To accommodate the refurbishment and installation of new pumping equipment, the internal cavern walls were widened and the floor deepened, including a new wet well sump (b cubed sustainability 2005, 37-38). In addition, a team of divers working at a depth of 85 metres cut a two metre hole through a section of the Warragamba Dam wall to connect a pipeline to the pumping station. The deep water pumping station (DWPS) allowed for an additional 40 billion litres of water that can be drawn from Warragamba Dam during drought periods (Sydney Catchment Authority 2010).

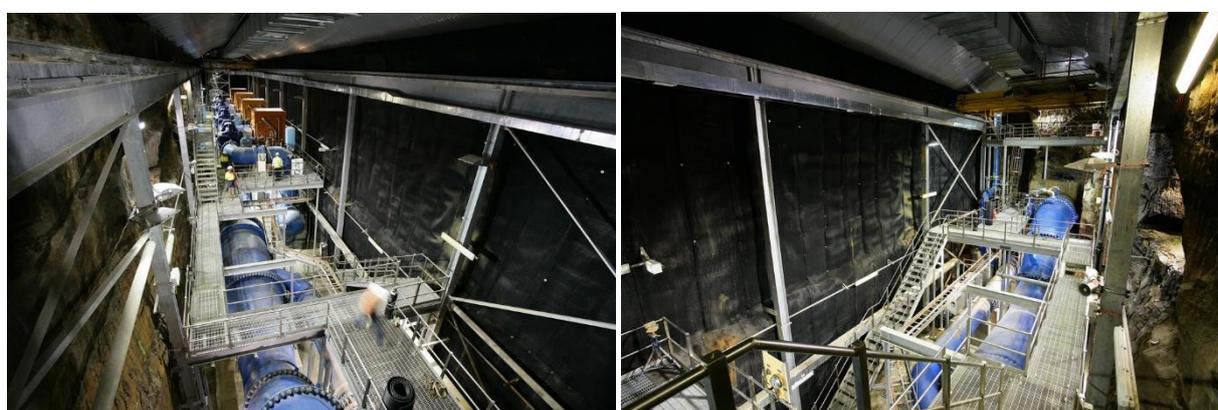


Figure 12. Photograph of the water pumping station following its refurbishment in 2006. *Source:* WaterNSW

An overview of the staged recommissioning works to facilitate the operation of the DWPS as outlined in the statement of heritage impact (SOHI) prepared by b cubed sustainability (2005) is summarised below:

#### Stage 1

- decontamination of the site comprising the removal of lead paint and asbestos materials including the original roof lining; and
- removal of all pipework, valves, mechanical and electrical items, and the ventilation system.

#### Stage 2

- construction of a new two metre opening through the dam wall with a new bulkhead;
- enlargement of the cavern space comprising the deepening of the floor by four metres, widening of both side walls by one metre, and minor enlargement of the roof. The enlargement necessitated the complete removal of the original brick veneer wall lining;
- construction of a new wet well type sump in the newly excavated floor;
- installation of new pumping equipment comprising pumps, valves, and pipe works;
- installation of a new gantry crane;
- installation of a new ventilation system;
- installation of a new false lining to the crown (ceiling);
- enlargement of an existing vertical shaft by two metres at the northern end of the site to accommodate a new rising main; and
- enlargement of the access shaft and installation of a new circular type stair.

The DWPS was affected by flooding in 2021 which saw the submersion of the entrance to the proposed work area. This led to the complete flooding of the internal cavern space, damaging the pumping equipment.

The DWPS remains out of use and is presently not operational.



Figure 13. Overview of the DWPS (proposed works area) post-2006 refurbishment. *Source:* WaterNSW



Figure 14. Photographs of the flooding leading to the submerging of the entrance tunnel and cavern. *Source:* WaterNSW



Figure 15. Internal photograph of the flooded DWPS. *Source:* WaterNSW

### 1.3.3. Chronology of changes

Table 2. Timeline summary documenting the development of the Warragamba Emergency Scheme and the DWPS

| Date    | Event   |
|---------|---|
| 1919    | The location of the new dam was chosen along the Warragamba River.  |
| 1937    | Commencement of construction of Phase 1 of the new dam comprising of the Warragamba Emergency Scheme.<br>Excavation and construction begin on the DWPS. |
| 1939    | Excavation and internal construction work mostly complete by mid-1939.  |
| 1940    | DWPS operational on 20 May 1940.  |
| 1948    | Construction commenced on the main Warragamba Dam.  |
| 1959    | DWPS decommissioned on 12 February 1959.  |
| 1960    | Official opening of the Warragamba Dam on 14 October 1960.  |
| 2004    | DWPS to be recommissioned as part of the Warragamba Dam Deep Storage Project.   |
| 2006    | Internal refurbishment of the DWPS.   |
| 2011    | Internal flooding of the DWPS.  |
| 2023-24 | New jib crane installed to service the Deep Water Pumping Station   |

## 1.4. Physical analysis

Extent Heritage inspected the site on 10 November 2023. The analysis involved an investigation into the built form and landscape setting. This section does not provide a detailed investigation of all fabric comprising the Warragamba Emergency Scheme but an overview of the elements within the proposed works area only. All images unless otherwise noted are taken by Extent Heritage.

### 1.4.1. Warragamba Emergency Scheme

The Warragamba Emergency Scheme comprises a collection of buildings and structures associated with the wider Warragamba Dam landscape. It is located upstream from Warragamba Dam along the Warragamba River and was constructed as part of the first phase of works to implement an emergency scheme for water supply, predating the main dam construction.

The Warragamba Emergency Scheme site comprises a number of extant buildings and structure that remains functional and operates in conjunction with the wider operations of Warragamba Dam. Extant buildings, structures, and features as identified in the SHR inventory sheet for the *Warragamba Emergency Scheme* (SHR #0376) include the weir balance reservoir, a 10-cable cableway, sheds, batching plants, the access road, an electrical substation, chlorination plant, maintenance staff accommodation, and the Megaritty's bridge. It includes a number of subsurface structures and elements including the DWPS (comprising the proposed works area), tunnels, and associated pipelines (SHR n.d.)



Figure 16. Photograph of Warragamba Dam. *Source:* WaterNSW n.d.



Figure 17. View upstream from the Warragamba Emergency Scheme site to the Warragamba Dam (visible in the background).



Figure 18. View downstream from the Warragamba Emergency Scheme site along the Warragamba River.

## 1.4.2. DWPS

The proposed works area comprises part of the DWPS which was constructed and operational by 1940. It is located approximately 60 metres below ground level within an excavated cavern that originally measured approximately 52.7 metres long by 6.7 metres wide and 11.3 metres high. In addition to the main cavern space, other extant elements comprising part of the pumping station structure include access shafts and adit tunnels which were also excavated into the sandstone bedrock.

The DWPS was refurbished in c.2006 resulting in the permanent enlargement of the cavern space. The refurbishment also saw the removal of original pumping station equipment and the brick veneer wall lining. Existing pumping station equipment and machinery are contemporary in nature. The surface level above the DWPS cavern is set on a terraced level which includes the access road and other contemporary mechanical and ducting structures.

The DWPS was affected by flooding in 2021 which saw the submersion of the access tunnel and internal cavern space, permanently damaging machinery and equipment. The DWPS remains out of use and is presently not operational.

Within the DWPS the proposed works area is localised to the underground adit tunnel.

**Adit tunnel**

The adit tunnel is the primary access point into the main underground cavern that houses the DWPS. It is externally accessed at a lower level within the river valley. The tunnel is excavated into the sandstone bedrock which has been left unfinished except for the floor which is laid with concrete with access tracks. Contemporary lighting, cable feeders, and piping fixtures extend across the tunnel, affixed into the sandstone walls (refer to Figure 19 and Figure 20).



Figure 19. Internal view along the adit tunnel.



Figure 20. Internal view along the adit tunnel

## 2. SIGNIFICANCE ASSESSMENT

This chapter provides the basis for assessing heritage significance in New South Wales as outlined in the *Guidelines for preparing a statement of heritage impact* (Department of Planning and Environment 2023b, 16-18).

### 2.1. Statement of significance

The following statement of significance is reproduced from the existing statement of significance for the *Warragamba Emergency Scheme* (SHR #01376) published on the Office of Environment and Heritage SHR inventory sheet:

The Emergency Scheme is representative of the collective engineering response to Sydney's critical water shortage during the Second World War period. It was the first stage in the storage and extraction of water from the Warragamba River, and was preliminary to the Warragamba Dam. All of the components are excellent examples of the civil engineering skills of the times; the Balance Reservoir is particularly significant because it provides a stilling pool downstream of Warragamba Dam for the purpose of flood discharge; the group of five cottages associated with the construction of the dam are considered to be of high significance because they housed the operations staff between 1940 and 1959. These have since been incorporated into the Warragamba township, one of the largest townships in the Shire of Wollondilly.

The following statement of significance is also quoted from the *Warragamba Emergency Scheme – Water Pumping Station – No. 9 s170* inventory sheet:

The Water Pumping Station is significant as an integral part of the Warragamba Emergency Scheme, which was developed to provide an emergency water supply to the city of Sydney following severe drought conditions in the 1930s.

The Pumping Station, along with other elements of the Emergency Scheme, is an excellent example of civil engineering skills of the time, particularly as it was built underground and had the capacity to switch between two different kinds of pumping to make the best use of the conditions available.

It was aesthetically significant, being a large underground chamber with impressive spatial quality, arched roof and decorative elements such as brick veneer lining of the internal walls.

Its significance has been diminished through the removal of its original equipment and substantial modification and enlargement in 2006.

## 2.2. Assessment against criteria

The following assessment is quoted from the s170 heritage inventory sheet for the Warragamba Emergency Scheme – Water Pumping Station – No. 9 (4580064) (Heritage NSW 2008).

Table 3. Assessment of heritage significance against the NSW Heritage Significance criteria

**Criterion (a) An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);**

The pumping station is a tangible and historical reminder of the Warragamba Emergency Scheme which saved Sydney from drought in the late 1930's, early 1940's.

It involved many important employees of the Board at that time and included use of coalminers from Helensburgh in construction of the pumping station.

**Criterion (b) An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);**

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**Criterion (c) An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);**

The Pumping Station is significant in demonstrating a rapid engineering response to Sydney's severe water shortages in the 1930's. Built underground, and with the capacity to switch between two forms of pumping, the pumping station arrangement was tailored to the conditions found at Warragamba, and as such is unique, and has features rarely found elsewhere.

The Pumping Station is aesthetically distinctive, with impressive spatial quality, and featuring an arched roof and decorative features such as brick veneer walls.

**Criterion (d) An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;**

As an integral component historically of the Warragamba Emergency Scheme, the pumping station is likely to be held in high regard by community members who experienced the drought of the 1930's, early 1940's. It has again been used in time of drought to increase Sydney's water supply as part of the Warragamba Deep Storage Access Project.

**Criterion (e) An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);**

The Pumping Station was an impressive engineering achievement. The remains of the scheme can provide insight into how the system operated. That the pumping station is underground also reflects an ingenious engineering solution given a very difficult site.

**Criterion (f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);**

The Pumping Station was built within the riverbank to make the best use of the conditions available and technical requirements, and is a rare example of an underground pumping station.

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The Pumping Station featured a pumping arrangement which allowed adaption to changed requirements and could switch between two kinds of pumping types. This was particularly useful when high lift was required, as when the Emergency Scheme was in operation, and allowed the system to adjust as Warragamba Dam was built, and less lift was needed.

**Criterion (g) An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments. (or a class of the local area's cultural or natural places; or cultural or natural environments.)**

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## 2.3. Significance of the proposed work area

The proposed work area comprises the underground adit tunnel forming part of the DWPS which was constructed in c.1937 as part of the Warragamba Emergency Scheme. Predating the construction of the main Warragamba Dam, the site contributes to the significance of the Warragamba Emergency Scheme as an original feature and integral function of the scheme.

While part of the original system of the scheme, the DWPS only initially operated for a period of nineteen years from 1940 to 1959. However, during this time, it was critical to the safety and security of Sydney's water supply, delivering over 192,054 million gallons of water to Prospect Reservoir and onwards to the city.

The site was recommissioned in 2004 and refurbished in 2006 to function as a deep water pumping station. The recommissioning necessitated permanent works that saw the alteration of the original form of the cavern, removal of original fabric, and removal of original pumping station machinery and equipment. All pumping station machinery and equipment within the proposed work area is considered contemporary fabric. Despite its new function, the DWPS continues to act as a safeguard for the city's water supply. The DPWS has been out of service since its flooding in 2021.

Within the DWPS, the proposed works is limited to the underground adit tunnel which provides the primary access route into the main chamber following the demolition and capping of the access tower in the c.1980s. The adit tunnel is excavated into the sandstone bedrock which has been left unfinished except for the floor which is laid with concrete with access tracks. Contemporary lighting, cable feeders, and piping fixtures extend across the tunnel, affixed into the rough sandstone walls.

### 2.3.1. Gradings of significance

Graded levels of significance are a management tool used to assess the relative significance of elements within an item, place or site and to assist in decision-making regarding elements of a place. The gradings of significance that have been used for elements within the study area are based on guidelines established in *Assessing Heritage Significance* (Department of Planning and Environment 2023a, 19).

Table 4. Gradings of significance definitions. *Source:* Department of Planning and Environment, 2023.

| Grading            | Justification  |
|--------------------|--|
| <b>Exceptional</b> | Rare or outstanding element directly contributing to an item's local and State significance.   |
| <b>High</b>        | High degree of original fabric.<br>Demonstrates a key element of the item's significance.<br>Alterations do not detract from significance. |
| <b>Moderate</b>    | Altered or modified elements.<br>Elements with little heritage value, but which contribute to the overall significance of the item.        |
| <b>Little</b>      | Alterations detract from significance.<br>Difficult to interpret.  |
| <b>Intrusive</b>   | Damaging to the item's heritage significance   |

The Warragamba Emergency Scheme, including the DWPS, is graded as an element of Primary significance as outlined in the draft CMP. Its primary significance is defined as quoted from the draft CMP (GBA 2010, 301-302 and 304):

**PRIMARY SIGNIFICANCE:** All those elements and features that relate to the initial construction and operation of the overall Warragamba Supply Scheme and its supporting buildings and infrastructure together with features which demonstrate key post completion development. It includes the topographical and landscape characteristics.

**Emergency Scheme, Camp & Old Township**

Components of the Emergency Scheme are representative of the initial construction phase of the overall Supply Scheme and whilst all may not retain their original integrity, represent what became the start of an initial twenty-five year public development programme that aimed to relieve and ensure the city's water supply.

Weir and later diversion tunnel.

Pumping Station.

Megarrity's Creek Bridge.

Former construction platform.

Balance Reservoir.

Early dam model.

Archaeological remains particularly of substation and other infrastructure, camps and old township.

In addition to the wider site and DWPS graded as of Primary significance, the following table grades the contribution of specific elements within the proposed works area.

Table 5. Summary of elements grading their contribution to heritage significance of the Warragamba Emergency Scheme and DWPS.

| Element  | Grading     | Justification   |
|--|-------------|---|
| Warragamba Emergency Scheme elements and wider landscape along the Warragamba River valley | Exceptional | <p>The Warragamba Emergency Scheme is located downstream along the Warragamba River from the Warragamba Dam.</p> <p>Constructed and operational by 1940, it predates the dam and continues to be an integral part of the wider function and operations of Warragamba Dam.</p> <p>Extant historical structures and elements include the weir balance reservoir, a 10-cable cableway, sheds, batching plants, the access road, an electrical substation, chlorination plant, maintenance staff accommodation, and the Megaritty's bridge. This also includes the DWPS comprising the proposed works area.</p> |
| Deep water pumping station cavern  | Moderate    | <p>The DWPS was constructed as part of the original alignment and pumping station of the Warragamba Emergency Scheme, operational by 1940.</p> <p>It remained operational until 1959 until it was decommissioned. It was recommissioned and fully refurbished in 2006 which necessitated permanent works that saw the alteration of the original form of the cavern, removal of original fabric, and removal of original pumping station machinery and equipment.</p> <p>However, the pumping station continues to act as a key safeguard for the city's water supply.</p>                                  |
| Adit tunnel  | Moderate    | <p>Following the removal and capping of the access tower, the adit tunnel provides the primary access into the proposed works area.</p>   |
| Other internal fittings and fixtures   | Little      | <p>Other internal fittings and fixtures within the adit tunnel including but not limited to the concrete floor and tracks, cable feeders, piping, and lighting are functional elements that facilitate the services required to operate and access the DWPS.</p>  |

## 3. PROPOSED WORKS

### 3.1. The proposal

The DWPS was affected by flooding in 2021. High flood levels in the river valley breached the adit tunnel, leading to the submersion of the access tunnel and internal flooding of the cavern space. The flooding permanently damaged the pumping station equipment and machinery. It presently remains out of use and not operational. To safeguard the DWPS from future flood events, the following proposed works are summarised below:

#### **New flood doors**

- Establishment of a temporary works area on the surface near the existing entrance including a demountable site shed and laydown area for materials and equipment, on the existing concrete hardstand area.
- installation of two (2) new pressurised metal flood doors at both ends of adit (tunnel) and operated via electrical conduits mounted to the concrete plug;
- flood doors to be cast in situ and affixed to the adit tunnel via concrete plugs and secured with rock bolts.
- the concrete plug will be cast around the existing functional elements including the piping and tracks with no removal of these elements; and
- installation of a 100mm drain line fitted into the concrete plug beside the floor door.

Refer to Figure 21 to Figure 24 for concept design plans of the proposed works. Available concept design plans are provided in Appendix A.

Refurbishment and replacement of the machinery and equipment is required to reinstate the function and operation of the DWPS. It should be noted that the future refurbishment scope of works is separate to the scope of works detailed in this report.

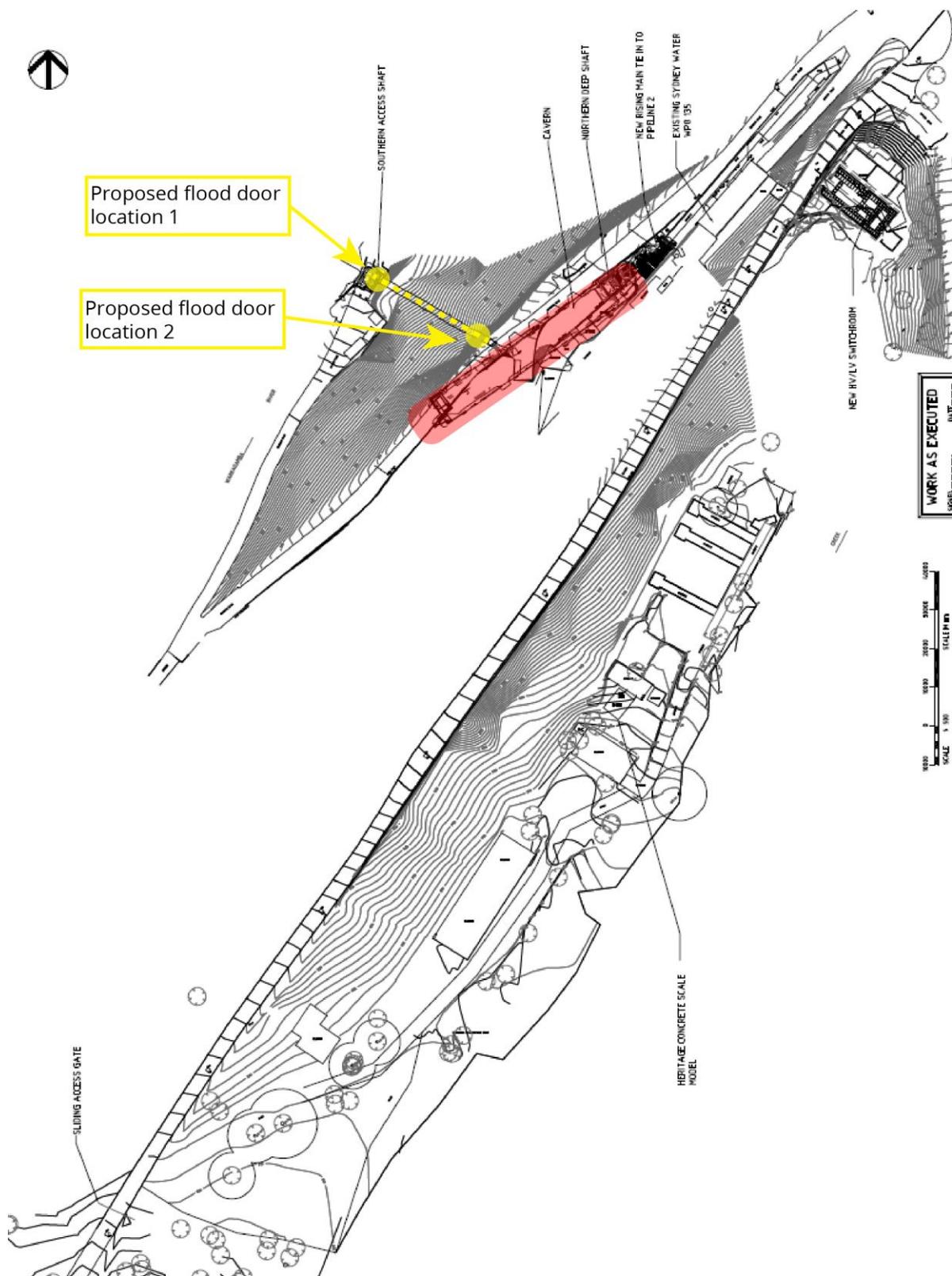


Figure 21. Proposed locations of the new flood doors (in yellow) along the adit tunnel alignment (shown with the yellow dotted line) within context of the DWPS cavern (in red). *Source:* WaterNSW 2005 with Extent Heritage overlay

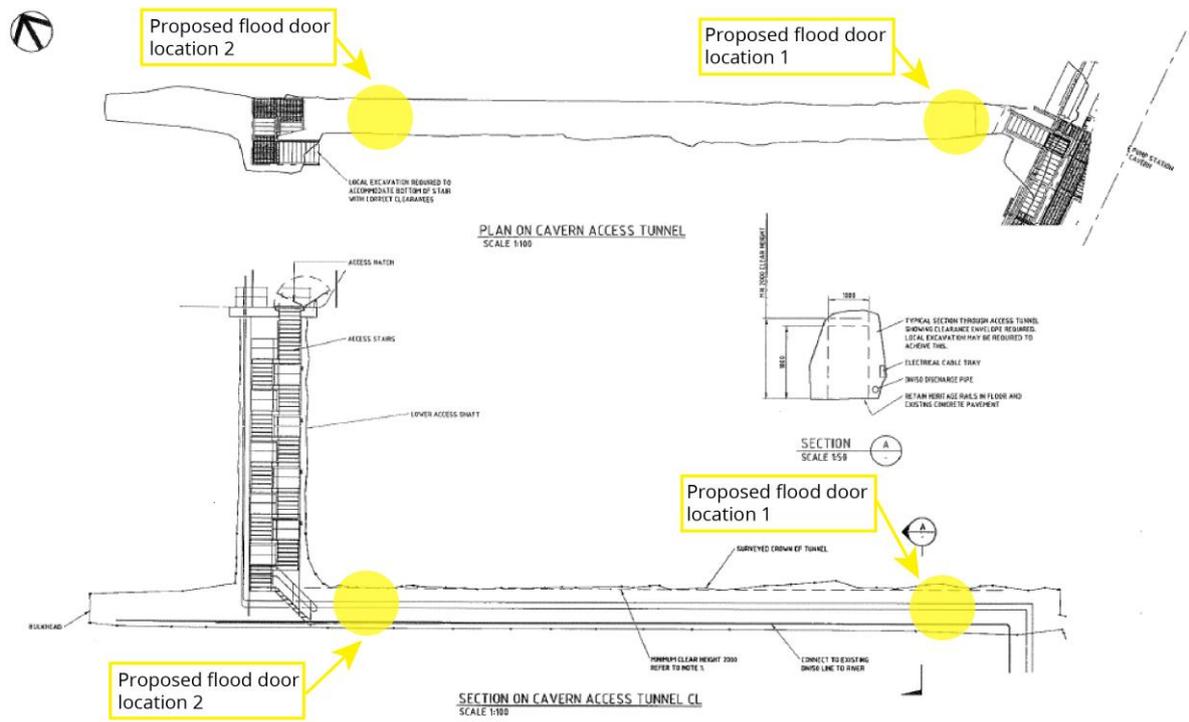


Figure 22. Plan and section of the adit tunnel showing the indicative location of the new floor doors in yellow.  
 Source: WaterNSW 2005 with Extent Heritage overlay

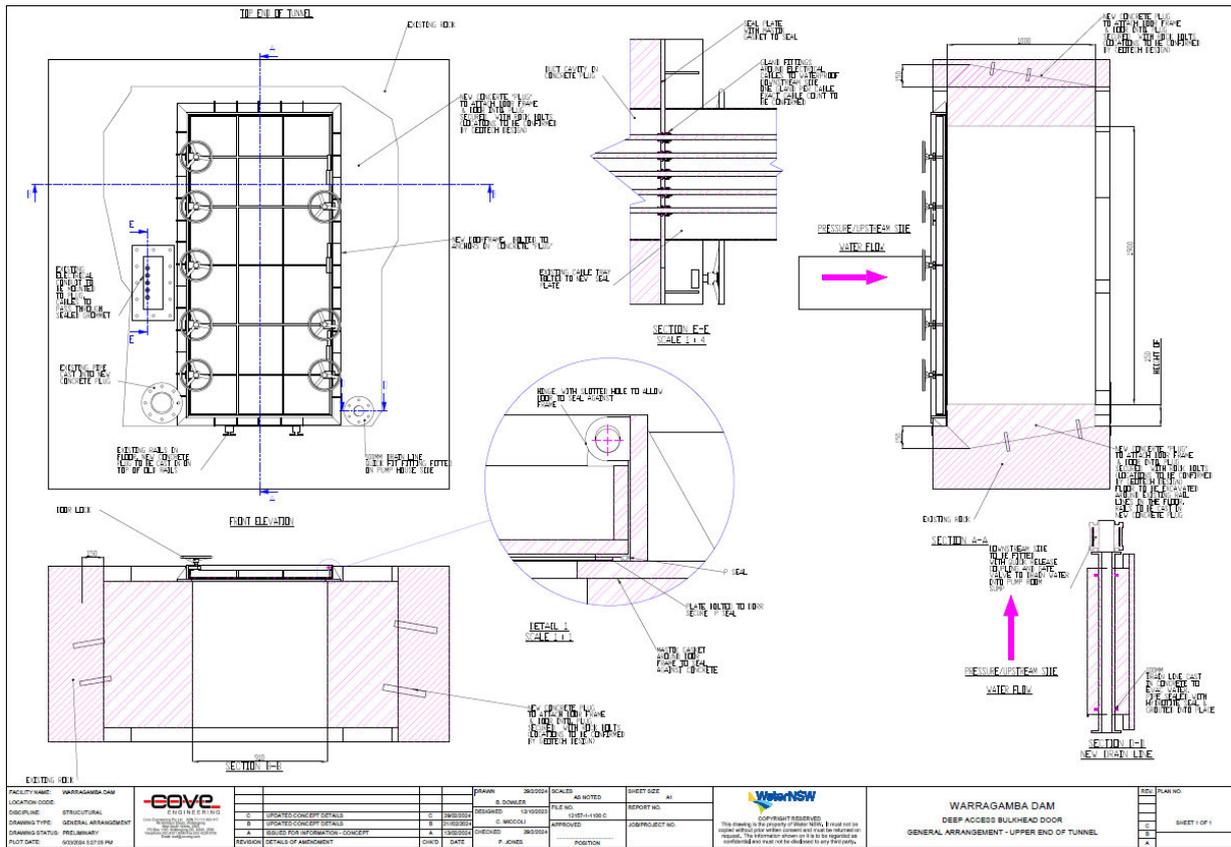


Figure 23. Concept design for the new flood door located at the upper end of the adit tunnel. *Source:* Cove Engineering 2024

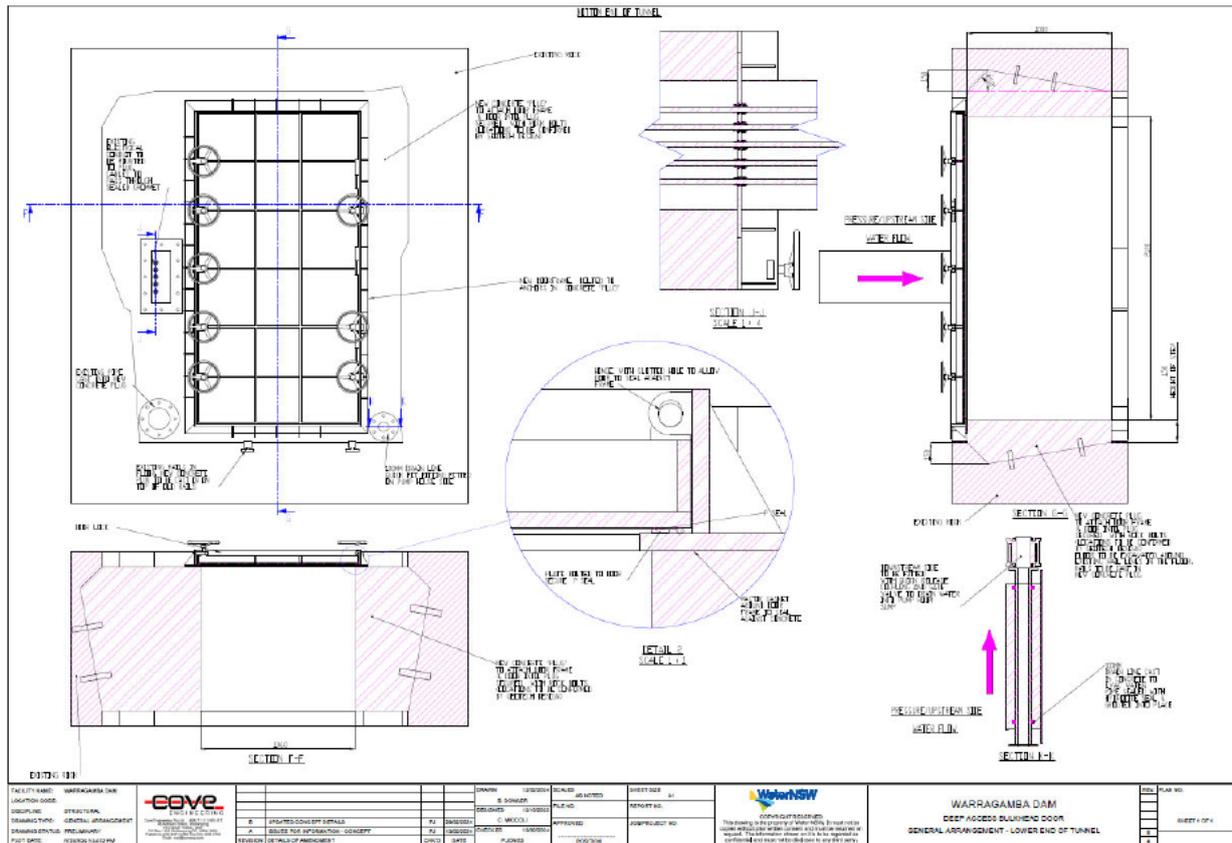


Figure 24. Concept design for the new flood door located at the upper end of the adit tunnel. *Source:* Cove Engineering 2024

### 3.1.1. Relevant plans

The application documents are as follows:

Table 6. Tabulated drawing set assessed in this SOHI report to be submitted as part of the development application.

| Drawing number | Drawing name  | Drawn by            | Date                   | Revision no. |
|----------------|---|---------------------|------------------------|--------------|
| 12157-1-1100C  | Warragamba Dam<br>Deep Access Bulkhead Door<br>General Arrangement – Upper End<br>of the Tunnel | Cove<br>Engineering | 29<br>February<br>2024 | C            |
| 12157-1-1100B  | Warragamba Dam<br>Deep Access Bulkhead Door<br>General Arrangement – Lower End<br>of the Tunnel | Cove<br>Engineering | 29<br>February<br>2024 | B            |

## **3.2. Background**

### **3.2.1. Pre-lodgement consultation**

Pre-lodgement consultation has not been undertaken with Heritage NSW.

### **3.2.2. Considerations of alternatives**

The following alternatives were considered and discounted:

- The option to do nothing was considered unviable as leaving the proposed works area as is puts the DWPS cavern at risk from future flood damage.
- The only other alternative would be the complete sealing of the adit and taking it out of service, however as the primary entrance to the DPWS, this is not feasible.

## 4. HERITAGE IMPACT ASSESSMENT

This chapter provides the basis to accurately assess the impacts of the proposed works on heritage significance in New South Wales as outlined in the *Guidelines for preparing a statement of heritage impact* (Department of Planning and Environment 2023b, 18-20).

### 4.1. Matters for consideration

The proposed works is limited to the adit tunnel within the DWPS which forms part of the Warragamba Emergency Scheme site. The Warragamba Emergency Scheme (SHR #01376) is of State heritage significance. Historical structures and elements associated with the wider site include the weir balance reservoir, a 10-cable cableway, sheds, batching plants, the access road, an electrical substation, chlorination plant, maintenance staff accommodation, the Megaritty's bridge, and the DWPS.

The DWPS is located in an underground cavern and was constructed as part of the original alignment and pumping station of the Scheme, operational between 1940 to 1959, until it was decommissioned. It was recommissioned and fully refurbished in 2006 which necessitated permanent works that saw the alteration of the original form of the cavern, removal of original fabric, and removal of original pumping station machinery and equipment.

The DWPS was affected by flooding in 2021 leading to the submersion of the adit tunnel and internal flooding of the cavern space and permanently damaged the pumping station equipment and machinery. It presently remains out of use and is not operational. The proposed works assessed in this SOHI seek to safeguard the DWPS from future flood events which involves the installation of two (2) new flood doors within the underground adit tunnel.

Refurbishment and replacement of the DWPS machinery and equipment is required to reinstate the function and operation of the pumping station which will be undertaken in 2024 and is separate to the scope of works detailed in this report.

#### 4.1.1. Fabric and spatial arrangements

The two (2) new flood doors will be located on both ends within the adit tunnel. The pressured metal doors will be secured to the adit tunnel through concrete plugs, which it will be affixed to the tunnel structure via rock bolts. The concrete plug will be cast in situ avoiding any demolition of the existing exposed rock tunnel form. The concrete plug will also be cast around and over existing functional elements including the piping and tracks. As such, there will be no removal of fabric from this proposal.

The proposed works will see the addition of contemporary fabric to the site which will have a localised minor impact to the adit tunnel. There will be no change to the overall spatial arrangement of the Warragamba Emergency Scheme site.

The proposed works are localised to the adit tunnel within the DWPS only. There will be no impact to other significant and extant structures and elements of the Warragamba Emergency Scheme site including the weir, reservoir, and Megarrity's Bridge.

#### **4.1.2. Setting, views and vistas**

The proposed work will see the addition of contemporary elements to the Warragamba Emergency Scheme site. The two (2) new flood doors will be located within the underground adit tunnels. As such, it will not be visible within the wider landscape as it is below surface level in the tunnel. The proposed works will have no impact to the wider settings, views, and vistas of the Warragamba Emergency Scheme site.

The surface works area will be temporary in nature and will include a demountable site shed and laydown area for materials and equipment. This will be located on the existing concrete hardstand area near the existing entrance and will be demobilised on completion of the works. Any visual impact is temporary.

#### **4.1.3. Landscape**

There will be no impacts to the landscape from the installation of the new flood doors which is entirely located within the underground adit tunnel. As such, there will be no impact to significant landscape features of the Warragamba Emergency Scheme site from the proposed works.

#### **4.1.4. Use**

The proposed works will safeguard the DWPS from future flood events and enable its continued use as a pumping station.

#### **4.1.5. Demolition**

The two (2) new flood doors will be affixed in the adit tunnel via concrete plugs which will be cast in situ to accommodate the existing exposed rock tunnel form and other functional elements. There will be no demolition or removal of existing elements as part of the proposed works.

#### **4.1.6. Curtilage**

The proposed works do not involve impacts to the identified curtilage of the item. No impacts apply to the curtilage of the heritage item.

## 4.1.7. Moveable heritage

The proposed works do not involve moveable heritage items. No impacts apply to moveable heritage of the heritage item.

## 4.1.8. Aboriginal cultural heritage

The heritage listing of the item does not identify Aboriginal cultural heritage values. No impacts apply to Aboriginal cultural heritage values.

## 4.1.9. Historical archaeology

The proposed works are limited to the sandstone adit tunnel. The tunnel which comprises cut sandstone bedrock and a concrete slab floor have no potential for historical archaeological resources. There are no other additional archaeological sites listed on Schedule 5 of the Wollondilly LEP 2009 within proximity of the proposed works area. No impacts apply to potential historical archaeological resources.

## 4.1.10. Natural heritage

The Warragamba Emergency Scheme is located within the wider natural landscape of the Warragamba River watershed and valley. However, the proposed works are wholly located to the underground adit tunnel within the DWPS. As such, there will be no impacts to natural heritage associated with the proposed works.

## 4.1.11. Conservation areas

The wider Warragamba Emergency Scheme and Warragamba Dam area is located adjacent to the *Warragamba Conservation Area (C4)* (HCA). However, the proposed works are localised to the DWPS which is located approximately 1.6 kilometres northwest of the HCA. As such, the proposed works will have no impact on the heritage values of the identified adjacent HCA.

## 4.1.12. Cumulative impacts

It should be noted that wider refurbishment works are being undertaken at the DWPS to remediate flood damage and replace affected machinery and equipment. The proposed works assessed in this SOHI comprise the installation of two (2) new flood doors in the adit tunnel and are separate to the future refurbishment scope of works. As such, the cumulative impact of the proposed works is considered to have a negligible impact on the heritage significance of the Warragamba Emergency Scheme site. The proposed works will have a cumulative positive outcome through the safeguarding of the site from future flood events and to ensure it remains operational as a pumping station.

### 4.1.13. The conservation management strategy

The draft *Warragamba Supply Scheme – Conservation Management Plan (CMP)* prepared by Graham Brooks and Associates Pty Ltd for the SCA dated June 2010. It provides management strategies and policies to ensure the heritage significance of the wider Warragamba Emergency Scheme site and Warragamba Dam precinct is retained and conserved. The following relevant policies are outlined in the table below:

Table 7. Tabulated CMP policies relevant to the proposed scope of works to the DWPS.

| CMP Policy (GBA 2010)  | Extent Heritage comment  |
|--|--|
| <b>11.5 Managing Change</b>  |  |
| <p><b>11.5.1 General policy for managing change</b></p> <p>Make decisions requiring change to the Warragamba Dam site with a clear understanding of the implications for the identified heritage values of the place and seek to minimise negative heritage impacts.</p>                         | <p>This SOHI has assessed the potential impacts of the proposed works to the wider Warragamba Emergency Scheme site. The proposed works is considered to have a cumulative negligible impact on the heritage significance of the site.</p> |
| <p><b>11.5.2 Assess heritage impact prior to making change</b></p> <p>Prepare a heritage impact assessment when planning options for change within the curtilage of Warragamba Dam.</p>  | <p>As above.</p>   |
| <p><b>11.5.6 Demolition</b></p> <p>Do not demolish elements of Primary heritage significance. Avoid impacts to elements of Contributory significance where possible. Where there is doubt about whether an item can be demolished, seek advice from a suitably qualified heritage specialist</p> | <p>There will be no demolition or removal of existing elements as part of the proposed scope of works.</p>   |
| <p><b>11.5.7 New construction</b></p> <p>New construction within the Warragamba Dam site heritage curtilage, is acceptable provided the new work has been assessed by a heritage specialist and adverse heritage impacts have been minimised.</p>  | <p>This SOHI has assessed the potential impacts of the proposed works to the wider Warragamba Emergency Scheme site which is considered to have a cumulative negligible impact on the heritage significance of the site.</p>               |

Chapter 12 of the draft CMP provides for the management guidelines of individual components comprising part of the wider Warragamba Emergency Scheme and Warragamba Dam site. The following table provides and expands on relevant guidelines regarding the DWPS (GBA 2010, 356-358):

| CMP Policy (GBA 2010)  | Extent Heritage comment  |
|--|--|
| <b>12.3 Area downstream of the dam</b>   |  |
| <p><b>Management and use</b></p> <p>SCA should continue the primary use of the area downstream of the dam wall for the distribution of bulk raw water, and provide vehicular access for staff and contractors. This will necessitate the SCA to undertake maintenance and upgrading where required of infrastructure such as access to WP9 (former Pumping Station, now refurbished as part of the Deep Water project), Megarrity’s Creek Bridge, pipelines, roads, electricity supply, etc.</p>   | <p>The proposed works will safeguard the DWPS from future flood events and enable its continued primary use as a pumping station.</p>  |
| <p><b>Management and use</b></p> <p>The SCA should maintain the modified Emergency Scheme pumping station and extended cavern, in recognition of its role in the overall Warragamba Supply Scheme.</p>   | <p>As above.</p>   |
| <p><b>Fabric</b></p> <p>SCA should consider conserving Significant and Contributory fabric which relates to the construction era and ongoing operation of the overall Warragamba Supply Scheme. This fabric includes: access roads, including width and alignment, weir, Pumping Station No. 9 (including more recent access), Megarrity’s Creek Bridge and pipeline. It also includes levelled platforms adjacent the roadway which are likely to be associated with the construction of the dam wall. Alteration of this fabric should only be undertaken in accordance with Policies in Section 11.5.</p> | <p>The proposed works will have no impact to other Significant and Contributory fabric of the Warragamba Emergency Scheme.</p> <p>The proposed works are limited to the underground adit tunnel within the DWPS and have been assessed to have a cumulative negligible impact to the heritage significance of the site.</p> <p>The proposed works have been assessed against the Policies in Section 11.5 of the CMP, provided in the table above.</p> |

| CMP Policy (GBA 2010)  | Extent Heritage comment   |
|--|---|
| <p><b>Adaptation</b></p> <p>Alterations should be undertaken by the SCA in a manner which ensures the retention of the characteristics of Primary and Contributory fabric. These characteristics are considered to be:</p> <p>Pumping station</p> <ul style="list-style-type: none"> <li>▪ Overall spatial configuration defined by external walls including recess blind arches and niches and vaulted ceiling and concrete floor.</li> <li>▪ Original access (although enclosed in the late 1980s) and space at the downstream end.</li> <li>▪ Open chamber at the upstream end of the structure</li> <li>▪ Various concrete and steel plinths and platforms.</li> <li>▪ Structural steel framing and corrugated ceiling lining including central ventilation shaft/spine at apex of ceiling vault.</li> </ul> | <p>The proposed works will see the installation of two (2) new flood doors. There will be no removal or alteration of significant fabric associated with the DWPS including its overall spatial configuration.</p> <p>The proposed works will safeguard the DWPS against future flood events and aligns with the Policies of the CMP.</p> |

#### 4.1.14. Other heritage items in the vicinity

The proposed works are located within the curtilage of the item and will not cause direct or indirect impacts to any other heritage items.

## 5. SUMMARY AND RECOMMENDATIONS

### 5.1. Summary

The proposed works area forms part of the DWPS located within the SHR heritage curtilage of the *Warragamba Emergency Scheme* (SHR #01376). The scope of works comprises the installation of two (2) new flood doors within the underground adit tunnel which aims to mitigate future flood risk, as experienced in the inundation of the underground DWPS cavern in 2021.

The proposed works are limited to the underground adit tunnel only and will see no change or adverse impact on other significant extant features associated with the Warragamba Emergency Scheme site. The proposed works will see the addition of contemporary functional elements to the site which will form part of the wider operations of the Warragamba Emergency Scheme site.

It should be noted that wider refurbishment works are being undertaken at the DWPS to remediate flood damage and replace affected machinery and equipment. The proposed works assessed in this SOHI are separate to the future refurbishment scope of works.

The cumulative impact of the proposed works was assessed in this SOHI and is considered to be negligible with a positive outcome through the safeguarding of the DWPS from future flood events. The proposed works and outcome are also aligned with the management policies for the site as outlined in the draft CMP (Graham Brooks and Associates 2010).

#### 5.1.1. Approval pathway

##### 5.1.1.1. Heritage Act 1977 (NSW)

The *Heritage Act 1977* provides protection for items of State heritage significance that are listed on the State Heritage Register, as well as for unlisted archaeological relics. The proposed works are located within the heritage curtilage of the *Warragamba Emergency Scheme* (SHR #01376) listed on the State Heritage Register (SHR), as such the provisions of the Act apply. The approval of the Heritage Council of NSW or its delegate, is required for works proposed for items protected by the Heritage Act 1977, unless Standard or Agency-Specific Exemptions under Section 57 of the Act apply.

#### **Section 57**

Pursuant to section 57(1) of the Heritage Act, the approval of the Heritage Council of NSW is generally required for the proposed development within a site included on the SHR, including works to the grounds or structures. Section 57(2) of the Heritage Act provides for exemptions to Section 57(1) approval requirements. Exemptions are activity specific and generally must have no adverse impact on the heritage significance of the item.

Minor activities do not require approval under the Heritage Act if they are undertaken in accordance with the guidelines set out in the *Standard Exemptions for Works Requiring Heritage Council Approval* (NSW Heritage Council, 2020). The standard exemptions apply to works relating to:

- |  |  |
|--|--|
| 1. Maintenance and cleaning  | 11. Subdivision of non-significant buildings       |
| 2. Repairs to non-significant fabric   | 12. Temporary structures                           |
| 3. Alteration to non-significant fabric  | 13. Vegetation                                     |
| 4. Alteration to interiors of non-significant buildings  | 14. Burial sites and cemeteries                    |
| 5. Repair or replacement of non-significant services (mechanical, electrical and plumbing)     | 15. Signs  |
| 6. Non-significant telecommunications infrastructure   | 16. Filming  |
| 7. Fire safety detection and alarm systems   | 17. Temporary relocation of movable heritage items |
| 8. Excavation  | 18. Compliance with minimum standards and orders   |
| 9. Painting  | 19. Safety and security                            |
| 10. Restoration of fabric that forms part of the significance of the item (significant fabric) | 20. Emergency situations and lifesaving            |

### Section 60

Any works that do not meet the requirements of exempt work will require an application under Section 60 and approval from the NSW Heritage Council in accordance with Section 63 of the Act.

While WaterNSW has its own set of exemptions from section 60 approval, the works assessed here do not fall within the scope of those exemptions, thus approval is required.

### Section 60 – Fast track

The section 60 fast track pathway is available for works that have (or have the potential to have) a minor impact on the heritage significance of a State Heritage item. To be eligible, the proposal must relate to activities or works to an SHR or IHO item, which:

1. will have little or no adverse impact on the heritage significance of the item
2. is not listed as an exemption under the *Heritage Act 1977*
3. has a cost of works up to \$150,000.

The s60 fast track cannot be used to obtain heritage approval following an Integrated Development Application (IDA) determination. In addition, a s60 fast track approval cannot be modified, except for minor administrative corrections.

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#### Extent Heritage comment:

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The scope of works has been assessed against the provisions of the Act. This report has established that the scope of works does not fall within any applicable heritage exempt works. However, the proposed works is assessed to have a negligible impact to the heritage significance with an overall positive outcome for the Warragamba Emergency Scheme site. As such, the proposed works do meet the provisions for the Section 60 – Fast Track application. Application under Section 60 – Fast Track approval pathway is applicable for the proposed works at the DWPS.

#### **5.1.1.2. Wollondilly Local Environmental Plan 2011**

The DWPS is located within the heritage curtilage of the *Warragamba Supply Scheme and Warragamba Emergency Scheme* (LEP I270) which is listed on Schedule 5 of the Wollondilly LEP 2011.

Clause 5.10 of the Wollondilly LEP 2011 applies to heritage conservation and 5.10(4) requires, amongst other things, that before granting consent under the clause, Council must assess the effect of a proposed development on the heritage significance of the item or conservation area concerned. Clause 10(5) specifies that Council, before granting const, may 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.

#### **Extent Heritage comment**

Part 5 of the EP&A Act requires any determining authority to examine and take into account the fullest extent possible all matter affecting or likely to affect the environment by reason of the activity. This SOHI meets the requirements of the Act. The Warragamba Emergency Scheme site which includes the DWPS and proposed works area, is listed on the SHR and as such, Heritage NSW becomes the approval authority. Notification to Wollondilly Shire Council is not required, however, this SOHI may be provided to Council as a courtesy.

## **5.2. Recommendations**

### **Prior to works**

- Contractors must be briefed on the heritage sensitive nature of the place and informed of any recommended mitigation measures or controls required.
- Heritage induction - All relevant staff, contractors and crew should be made aware of their statutory obligations for heritage under the *NSW Heritage Act 1977*. This would be implemented as a heritage site induction outlining the significance and sensitivity of the area, the need for care and the mitigation measures to be put in place.

### **During works**

- No building or construction materials should not be stockpiled against or adjacent heritage structures or significant landscape features. Laydown areas and high-traffic areas should have a clear separation from significant buildings, structures, and landscape features.



- Any accidental damage to heritage items is to be treated as an incident, with appropriate recording and notification.

**After works**

- All work areas must be made good upon completion of the project.

## 6. REFERENCES

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## List of definitions

| Term                              | Meaning  |
|-----------------------------------|--|
| Consent authority                 | The person or body with whose approval that act, matter or thing may be done or without whose approval that act, matter or thing may not be done.  |
| Conservation                      | Conservation means all the processes of looking after a place so as to retain its cultural significance (as defined in <i>The Burra Charter</i> ).   |
| Development                       | The erection of a building, carrying out work, use of or subdivision of land.  |
| Heritage significance             | Term used in the assessment and understanding of heritage items that have significance in relation to their historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value.   |
| Moveable heritage                 | A moveable object that is not a relic.   |
| <i>National construction code</i> | A code that sets minimum requirements for design, construction and performance of buildings, as well as plumbing and drainage systems throughout Australia.  |
| Relic                             | Any deposit, artefact, object or material evidence that is of state or local heritage significance.  |
| Setting                           | The area around an item, which may include the visual catchment.   |
| State Heritage Inventory          | An online database containing heritage items and conservation areas on statutory lists in NSW. This includes the State Heritage Register and local government items.   |
| State Heritage Register           | The NSW State Heritage Register. A list of places and items of importance to the people of NSW. Only places of state heritage significance are listed on the State Heritage Register. The State Heritage Register protects these items and their significance. |
| State Heritage Register item      | A term to describe a heritage item that is of state heritage significance and is listed on the State Heritage Register.  |

## List of abbreviations

| Abbreviation  | Meaning   |
|---------------|---|
| CMS           | Conservation Management Strategy                            |
| DA            | Development application                                     |
| DWPS          | Deep water pumping station                                  |
| EP&A Act      | <i>Environmental Planning and Assessment Act 1979</i>       |
| HCA           | Heritage Conservation Area                                  |
| Heritage Act  | <i>Heritage Act 1977 (NSW)</i>                              |
| LEP           | Local Environmental Plan                                    |
| LGA           | Local Government Area                                       |
| NSW           | New South Wales   |
| S170 Register | Section 170 State Agency Heritage and Conservation Register |
| SHI           | State Heritage Inventory, NSW                               |
| SHR           | State Heritage Register                                     |
| SOHI          | Statement of Heritage Impact                                |



## **APPENDIX A. CONCEPT DESIGN PLANS**



