Nepean Dam

Installation of Safety Fencing

Supporting Statement

(To accompany a s60 fast track application under the *Heritage Act, 1977*)

Contents

1. Introduction

WaterNSW is Australia's largest supplier of raw water, delivering water from 41 dams, numerous weirs and regulators, state rivers and pipelines to NSW irrigators, licenced authorities, retail suppliers and Councils.

Nepean Dam was the last of the four dams that were constructed as part of the development of the Upper Nepean Scheme. The Upper Nepean Scheme as a whole has State heritage significance as the major water supply scheme for Sydney, operating as originally built for over 130 years with the 4 major dams built between 1903 and 1936 as State significant engineering feats in their own right.

The dam wall across the Nepean River was designed by NSW Public Works Department, who commenced construction in 1925 and completed work in 1936. Today the Dam supplies water to the townships of Bargo, Thirlmere, Picton and The Oaks as well as the Macarthur and Prospect water filtration plants.

Nepean Dam has heritage significance at the State level for nearly all of the criteria used to assess heritage significance. Nepean Dam in particular has significance in relation to the site's remains of the construction township, maintenance depot and landscaping (Extent Heritage, 2018).

WaterNSW proposes to undertake the installation of a safety fence to guard visitors against rock falls. The location of the safety fence is the former railway or tramway platform on the middle terrace that has six timber framed shelters which attracts visitors to the platform for picnicking. The terminology of 'tramway' will be used in this assessment although it is interchangeable with the term 'railway' in the Conservation Management Plan (CMP)(Extent, 2018).

2. Location

Nepean Dam is located on the Illawarra Plateau, to the south of Sydney, about 100 kilometres south of Sydney. The extensive catchment area is located within the local government area of Wingecarribee Council. The site is accessed from Avon Dam Road off the Hume Highway. The site is Lot12 DP1092321and is in the ownership of WaterNSW. An aerial view of the Dam is shown in Figure 1.

Figure 1 – Nepean Dam aerial view with the location of the tramway platform in red close to the dam wall (Six Maps:https://maps.six.nsw.gov.au/?config=gpr_full&token=e0b48503a22d27449bea9e2c358f0fc0 - accessed 2 March 2022)

3. Heritage Listings

The following heritage listings apply to Nepean Dam:

Register	Listing Name and Number	Status
State Heritage Register	Nepean Dam (SHR 01368)	State
Wingecarribee Shire LEP 2011	Nepean Dam Wall and Valve House (I1823)	State
WaterNSW s170 Register	Nepean Dam (4580032)	State

4. Heritage Significance, Site and Asset Description

The following is an extract from the CMP (Extent, 2018):

Nepean Dam has State heritage significance. This State significance is largely embodied in: the dam wall, inlet and outlet system, spillway and water body; the site layout; the construction terraces, tramway cutting and associated archaeological evidence; evidence of the construction camp and remaining buildings from the construction period; and the midtwentieth century landscaping.

Completed in 1936, Nepean Dam was the last of the major dams to be built as part of the Upper Nepean Scheme and as such has been a major part of Sydney's water supply for over 80 years. Nepean Dam was also one of the major water supply/irrigation dams constructed in New South Wales as a whole, during the first half of the twentieth century. It derives some of its significance from its association with the Upper Nepean Scheme, a system of large dams and water supply canals of outstanding heritage value built between 1888 and 1936.

In providing water for metropolitan Sydney and ensuring security of supply during the early to mid-twentieth century, the dam contributed to the extensive residential, commercial and industrial development of Sydney during the 1930s and 1950s. The completion of the dam during the Great Depression was one of the major public works projects undertaken in the State at the time and continues to demonstrate government responses to the economic situation.

The wall of Nepean Dam is an engineering work imbued with a sense of high aesthetic value expressed through the short curved high wall set with the steeply sided valley of the Nepean River. The design and finishes of the dam walls, crest house and lower valve house collectively continue to demonstrate Inter-War (c.1930s) era design philosophies applied to a high, curved, cyclopean gravity dam in New South Wales. The dam in its setting of the Nepean River valley has exceptional scenic qualities. The contrast of the rugged natural setting of the Nepean River Valley and its sense of isolation, with the man-made dam wall heightens appreciation of the impressiveness of its engineering and construction.

Although Nepean Dam is not in itself an innovative or unusual construction type, it tangibly and clearly demonstrates the standards and practices of engineering in NSW in the great dam building phase of the early twentieth century. It remains a physical record of the skills of engineers of this period, particularly in challenging conditions. The remnant platforms and terraces of the construction area are the largest in scale and most intact in regard to finishes and planning of all four of the Metropolitan Dams. The means of delivering stores and raw materials through the

network of standard gauge tramway lines and raised platforms is unique in NSW and the system of suspension footbridge and aerial stone ropeway to provide access and materials over the gorge were particularly sophisticated for the time, foretelling later developments at Warragamba Dam. The electric lift service is the first example of its type in a dam in New South Wales. The wall of the Dam is the highest of all the dams constructed in the Upper Nepean Catchment Area.

The surviving road layout and archaeological remains associated with the construction workers camp are relatively rare in NSW. A number of other dam construction workers camps are in areas that have been heavily modified by later landscaping or construction. The remains continue to provide tangible evidence of the lives of construction workers on major public infrastructure projects in the early to mid-twentieth century and a practice of providing on site accommodation for workers and their families that is becoming uncommon.

The principal means of transporting general supplies (including food and other domestic necessities) and raw materials such as blue metal and cement was by means of a standard gauge tramway line laid from the main southern line at Bargo to the dam, a distance of 2 1/2 miles (4 km.) The survey of the tramway route was prepared by the Public Works Department in May 1925. The route followed the alignment of the Bargo to Avon Dam Road to a point near the present-day outer entry gate to the dams, where the line deviated in a south easterly direction down to the Dam. At the Dam a number of branch lines were laid along the platforms of the construction terraces. The tramway was completed by mid-1928, and was reported in its first year of operation to have satisfactorily transported about 28,000 tons (28448 tonnes) of materials.

Initially, under Public Works Department control, the line was operated by one 60 hp Australian manufactured, Purcell, petrol locomotive. In October 1928, one month after the formal handing over of construction management to the Water Board, additional motive power was acquired through the purchase of a former N.S.W. Government Tramway steam tram no 61A, originally imported from the American manufacturers, Baldwin and Co., in the 1880s and last utilised on the Parramatta steam tramway system. The locomotive was modified to improve its haulage capabilities prior to introduction at the dam (Graham Brooks and Associates, 2003).

The item where work is to be undertaken is described in the following table (Extent Heritage, 2018).

Former Tramway Platform (1927)	
	Reinforced concrete tramway platform with concrete access steps. The platform was part of the internal tramway system used to supply goods and materials. The edge of the platform has been enclosed with steel pipe rail with wire mesh insert fence. The tramway platform is of EXCEPTIONAL significance as evidence of the original means of construction of the dam, including: - concrete platform, - steel pipe handrail with wire mesh. Six separate timber framed and weatherboard picnic shelters dating from the 1950s are located on the former tramway platform. These shelters encourage picknickers to the platform but puts them at risk of a potential rockfall from the natural rock cutting at the back of the platform.

5. Scope of Works

WaterNSW proposes to undertake the installation of a safety fence to the rear of the tramway platform and small grassed area along the rock wall. The fence will cover a distance of approximately 90m as shown in Figure 2. It will be located approximately 1.5-2m from the rear rock wall. This allows for the greatest capture of rocks falling from the wall.

The fence will be approximately 900mm in height and the posts will be installed in the concrete by using chemset bolts which would eliminate the need to concrete core the platform. The grassed section will need to have concrete footings approximately 300mm x 300mm and 300mm deep to support posts. The grassed area extends only for a distance of approximately 12m.

Figure 2 – Location of safety fencing on the railway platform.

The fence will also include gates that will allow a small bobcat or similar to access the area to clean up any rockfalls. The fence will also have small safety signs requesting the general public not to enter the area.

The fence will be close to the six picnic shelters already on the platform but will still allow for pedestrian movement around the picnic shelters by exiting the rear of the shelter. The fence will be similar to the existing fence on the edge of the platform but in addition will have a tubular centre rail as this will provide structural integrity to the fence when catching rock falls. The fence to be installed is similar to that shown in Figure 3.

Figure 3 – Fence to be installed on the tramway platform.

Figures 4,5, 6 and 7 are general shots of the tramway platform showing the location of where the fence will be constructed in relation to the overall platform and the picnic shelters.

Figure 4 – The tramway platform is made of concrete. New fence will be 1.5-2 m from the rock wall.

Figure 5 – The rock wall behind the tramway platform and picnic shelters that is subject to unsafe rock fall.

Figure 6 – Grassed area of the platform.

Figure 7 – The fence in this area will have a gate to allow access.

6. Heritage Impact Statement

There will be no adverse impact to the State Heritage Item of Nepean Dam.

The fence will be installed for approximately 90m on the tramway platform on the middle terrace at Nepean Dam. The fence will match similar existing fences that are already on site, and it will be similar to the fence already installed at the front of the tramway platform with an additional middle horizontal rail to ensure rock falls are captured by the fence and protecting the picnicking general public from harm. The fence posts on the concrete will be installed by using chemset bolts which will have little impact to the concrete platform. The grassed area will require the fence posts to be dug in and a footing established but this covers an area of only 12m of the entire platform.

Other options such as rock bolting or shotcrete to cover the rock wall were considered but were considered to have a major impact to the rock wall and the general amenity of this picnic area. There will be minor visual impact to the tramway platform as a result of the fence installation. There is already a fence to the front of the platform for safety reasons and the fence to be installed will be similar in height and style. The safety fencing is needed to ensure that WaterNSW

can safely keep this area of the Nepean Dam site open to the general public for picnicking and general Dam site enjoyment.

7. Conclusion

The works to be undertaken will not have a significant impact on the heritage item that is Nepean Dam. The tramway platform is assessed as having exceptional significance but the only direct impact to the fabric of the concrete platform will be chemset bolts used to install the fence posts and footings in the grassed area of the platform that extends for 12m.

There will be minor visual impact to the tramway platform, but a fence has already been installed to the front edge of the platform for safety reasons. The fence to be installed will be similar in style and will ensure the tramway platform can remain open to visitors for picnicking. A s60 fast track application is appropriate as the works will have little to no adverse impact on the heritage significance of Nepean Dam, will cost under $150,000 and the works could not be done as a Standard Exemption.

8. References

Graham Brooks and Associates (2003) Cataract Dam Conservation Management Plan. Prepared for Sydney Catchment Authority (now WaterNSW).

Extent Heritage(2018) Nepean Dam Conservation Management Plan. Prepared for WaterNSW.