PO Box 660
Darlinghurst NSW 1300
52 Albion Street
Surry Hills NSW 2010
Australia
Tel. (02) 9281 4399
Fax. (02) 9281 4337
t&a@tannerarchitects.com.au
www.tannerarchitects.com.au

TANNER ARCHITECTS

13 June 2008

LANDCOM
PO Box 237
Parramatta NSW 2124

Attention: Camille Abbott, Development Director

Dear Camille,

PROJECT: RESERVOIR No. 1, POTTS HILL RESERVOIRS SITE
RE: HERITAGE IMPACT STATEMENT

This letter constitutes the Heritage Impact Statement to accompany the Application for the Adaptation of Reservoir No. 1, which forms part of the Part 3A Concept Plan for the Potts Hill Reservoirs Site.

Background

- Part of the Potts Hill Reservoirs site is surplus to Sydney Water requirements and a Part 3A Concept Plan has been prepared for the redevelopment of the surplus land to the west and east of the site.
- The geotechnical investigations of this surplus land have identified the existence of some poorly compacted fill (the spoil dump) dating back to the original excavation for the Reservoirs and filling of the site, as well as subsequent on-site activities.
- To enable development of existing filled areas, one option is for some of the fill to be removed . A range of options for fill removal were investigated, ranging from total removal of all fill to partial and minimal removal.
- Options for managing the potential surplus fill include removal and disposal off-site, through to storage and management on-site.
- Reservoir 1 was the original water storage area at Potts Hill. It was constructed for water storage in 1888-1893. It was decommissioned in 2000 due to structural conditions that made it unsuitable for water storage (See Figure 1 and Figure 2. It should be noted that Figure 1 shows Reservoir 1 containing water prior to its decommissioning, and Reservoir 2 prior to its enclosure). Reservoir 1 plays no active role in SWC's operational water storage activities at Potts Hill. However, it is underlain by water pipelines that convey water to Sydney residents. It also plays a minor role in collecting stormwater run-off, which is conveyed by pipe to the Chullora wetlands, located to the east of Potts Hill.
- Reservoir 1 is currently off limits to any form of public access.
- Reservoir 1 is considered to have exceptional historic, aesthetic and technical heritage significance within the State significant site because it is one of the key elements of the site. "It is important for the unique site composition as well as for its own unique qualities." (SWC CMP 2005:207).

The Proposal in Principle

- Given that Reservoir No 1 no longer plays any role in water storage, and in view of the existence of some poorly consolidated soil on the Potts Hill site, investigations have been carried out into the possible use of Reservoir 1 to store the surplus soil under one option being considered.
- It is estimated that the amount of soil required to be stored in the Reservoir under the maximum option will fill approximately half of the Reservoir.
- Assessments of the "spoil dump" to date indicate that there is a low likelihood that the soils contain leachable material. It is expected to be "inert".
- Containment will be carried out using best practice approaches to site preparation, materials handling, construction (lining and capping, etc), management and monitoring. These processes will be in line with relevant environmental legislation, to ensure that there are no external impacts from the soil on potable water supply or stormwater conveyance from the Reservoir.
- Temporary engineering works will be needed to transport the soil material to the Reservoir, gain access to the Reservoir floor, and to distribute it within the Reservoir.
- Concepts for the use of the Reservoir involve no works to the fabric of the Reservoir.
- The filled area will be landscaped with grasses and shrubs to manage any run-off.
- Upon completion, the opportunity exists to use the Reservoir for occasional public access, subject to SWC operational and security requirements.
- Following completion of filling of Reservoir No. 1 its surrounds will be restored, and temporary engineering structures removed.

Environmental Assessment

The following description comes from the Part 3A Concept Plan Application & Environmental Assessment:

The proposed solution to the geotechnical conditions on-site is dynamic compaction of fill areas to achieve stability. A trial measure is proposed. However, if the results are not satisfactory, an alternative approach will be adopted.

The alternative would involve the removal of an amount of fill that is equivalent to the weight/pressure of the development that is likely to go on the land. This process is expected to produce an amount of surplus fill, which is estimated to be of such a quantity that is not cost effective to remove to landfill. Investigations carried out by Patterson Britton & Partners into the possible use of Reservoir 1 for storage of the excess fill has determined that it is structurally and economically feasible.

The Reservoir has the capacity to accommodate up to 6m of fill above the reservoir floor. The preferred approach to using the reservoir would see the fill located adjacent to the eastern and southern walls of the Reservoir to improve wall stability. It would be located to allow Sydney Water continued access to key infrastructure within and around the Reservoir, and allow the reservoir to continue to perform its present minor stormwater management role.

In addition to locating the excess fill within Reservoir 1, there is an opportunity to utilize part of the reservoir for the storage of stormwater or recycled water. These options are being investigated in conjunction with the redevelopment of the surplus land.

Preliminary investigations indicate that the storage of fill and water within Reservoir 1 (including site preparation and the transporting of fill) can be achieved without any detrimental impact on the fabric of the reservoir.

Heritage Assessment

History and Description

Reservoir No. 1 was the first reservoir on the site, constructed between 1888 and 1893.

Reservoir No. 1 is a rectangular shaped enclosure, constructed of earthen banks with puddled clay cores with a concrete floor. The embankments are primarily built by excavation but the south-east corner was constructed by building up with fill. The embankments are

lined on their inner faces with sandstone masonry and this facing shows evidence in places of reconstruction, both in sandstone and concrete, following failures of the embankments at various times. (Refer CMP)

Historical Significance

Reservoir No. 1 was the main component of the original Potts Hill site. Reservoir No. 1 is a relic of an earlier technological period of Sydney water resource management. It has essential links with the function and development of Sydney for over 100 years. The site displays changes in usage through different periods of Sydney water resources management.

Reservoir No. 1 was a major engineering project of its time and a major public work. It is an important component of the Upper Nepean Water Supply Scheme, one of the largest public works undertaken in Australia. The position of Reservoir No. 1 on the highest point in the region displays its original function as a gravity-fed water system.

The design of Reservoir No. 1, including its individual parts, demonstrates the attitudes towards water safety current at the time. The layout of Reservoir No. 1, its surrounds and its security features display the early attitudes towards drinking water quality.

Reservoir No. 1 contains the original intake to the Pressure Tunnel leading to Waterloo, which was and still is a major water supply line of Sydney.

Aesthetic Significance

Reservoir No. 1 and its parts demonstrate a past aesthetic style of public works

- through its materials and use of stylistic motifs in its structural features, Reservoir No. 1 links with other elements of the site and helps to display the original functional arrangements and the changes made to that arrangement;
- Reservoir No. 1 is a handsome, well-proportioned structure with landscaped surrounds which together create a very scenic space.

Social Significance

Potts Hill Reservoir Site has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons because it is held in high esteem by many generations of Water Board/ Sydney Water employees.

Research Potential

Reservoir No. 1 is a good example of a clay core earth embankment stone faced reservoir. The walls of Reservoir No. 1 are lined using sandstone block construction, a method that is no longer practiced in Australia.

Heritage Impact of the Proposal

The endorsed Conservation Management Plan supports the partial filling of Reservoir No 1:

"Reservoir No.1 has been disused since its dewatering in 2000. However, important active connections between functional Reservoir No.2 and outlets for supply of the city and suburbs are located within or associated with Reservoir No.1. This includes:

- *The 3000 mm boxed conduit along the reservoir floor, from the south-west corner to the Pressure tunnel outlet chamber, and*
- *The Supply Main No. 2, entering Reservoir No. 1 from the west and running along the reservoir floor to the two outlet valve towers on the northern side of the Reservoir.*

Both these connections are important in the functional scheme of the Potts Hill reservoirs Site and will need to remain active in any future configuration of the site, regardless of the future use of Reservoir No. 1.

As for the fabric deterioration, the Reservoir No. 1 does not currently have any issues that require immediate remedy. However, significant issues can arise suddenly on similar items. Specifically, active reservoirs feature the pool of water, which presses the reservoir floors and wall from one side while the surrounding grounds maintain a balance pressure in the counter direction. With disused reservoirs, the grounds pressure is maintained while the balance pressure of water is removed, and the statical situation is considerably changed. This is the cause of often floor lifting in dewatered reservoirs. It is anticipated that permanent distortion of the floors and walls is likely to occur as soil dries out.

Future use of Reservoir No.1 is unclear. Several options analysed in the past include:

- *Preserve partially filled with water*
- *Preserve completely filled with water*
- *Preserve empty*
- *Preserve partially filled with soil*
- *Preserve completely filled with soil*
- *Preserve partially filled with soil and partially filled with water.*

Taking into account the likely eventual collapse of walls and floor, long-term retention of the empty reservoir is not considered acceptable. It is appreciated that raising the water level above half the reservoir depth would closely match the original condition and thus be the preferred option from the heritage point of view. This preferred outcome could be achieved either through complete in-filling with water, or through partial in-filling with soil and partial with water. Other solutions are considered generally acceptable in heritage terms. (Sydney Water CMP 2005:215-216)

Heritage Impact Assessment

The proposal to partially fill Reservoir No. 1 with soil has the following heritage opportunities and constraints:

Opportunities

- A portion of the significant fabric of the walls of the Reservoir remain visible
- Low public safety risk (ie no water)
- Minimised distortion of floor and walls owing to soil drying out
- Integrity of the volume of the Reservoir can still be understood
- In situ Interpretation of the Reservoir is possible
- Complies with all Conservation Policies of endorsed CMP

Constraints:

- Loss of some integrity owing to lack of water.
- There is a remote possibility that the use of Reservoir to facilitate the redevelopment of the site may raise issues amongst Sydney Water and wider community.

The use of Reservoir No 1 for the storage of fill from the redevelopment of the surplus land has the potential to result in a range of benefits including the maintenance of the structural integrity of the reservoir and cost savings in the management of the surplus fill.

The proposed use of the Reservoir No. 1 for the storage of fill can be supported in heritage terms.

Please direct any questions regarding this submission to Megan Jones.

Yours sincerely

TANNER ARCHITECTS

Megan Jones
Director