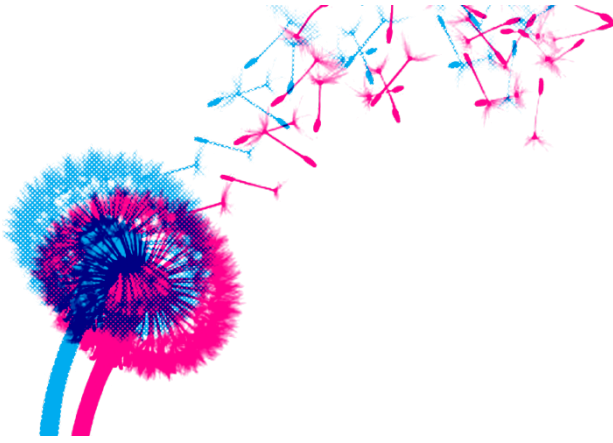
SFS Response to Submissions

(SSD9249)

Attachment 8- Methodology Statement- Working Near Busby's Bore

September 2018



This methodology has been developed to support demolition and construction around Busby's Bore. It has been developed with the input of Arup (acoustics and vibration), Curio Project (heritage and archaeology) and Aver (construction and demolition management). In particular it has been developed to respond to the comment DPE12:

While the proposal is for a concept building envelope, it is considered that further assessment regarding the protection of Busby's Bore during demolition and construction works would be required. The report should include a methodology of how the bore would be identified, protected, assessed and monitored throughout the demolition and construction works. The method should be included in detail in an updated Construction Management Plan, supported by the HIA. This document should be submitted for further consideration.

This methodology also addresses comment COS34:
The site is affected by a State Heritage Listing and General Terms of Approval should be obtained from the Heritage Council. There is a potential that the demolition works through vibration could impact Busby's Bore.

It is noted that approval for construction works is not being sought as part of the Stage 1 SSDA, however it is considered the principles contained within this methodology will be applicable to those works. Adjustments may be made to this methodology to support the construction as part of the Stage 2 application when further detail regarding the construction methodology is known.

1. Identification and Assessment

Prior to the commencement of demolition, investigations will be undertaken in an effort to determine the condition of the bore through the site. This will entail access through the existing shafts on site with known locations (Shafts 9 and 10). The exact path as the Bore crosses beneath the site, and the precise locations of Shafts 11 and 'Intervening Shaft 4' remain unknown.

The steps to be followed will include:

- Land owners consent for access and support for the methodology for the investigative works to be obtained from Sydney Water prior to seeking approval from the NSW Heritage Division to undertake investigative works of the Bore.
- If land owners consent if provided, then a Section 57 (2) Heritage Exemption will be prepared by qualified historical archaeologist and submitted to the NSW Heritage Division in accordance with the requirements of the NSW Heritage Act (1977) to undertake investigation works.
- Safe Work Method Statement for access to be developed.

The results of the investigation works will be utilised to determine the current state of the Bore, where possible to further inform the design and management of impacts to known and potential sections of the Bore during Stage 1 demolition works and future Stage 2 construction works.

Figure 1, below, demonstrates the location of the known shafts and an indicative path of the tunnel beneath the site, with reference to the proposed indicative footprint of the new stadium envelope.

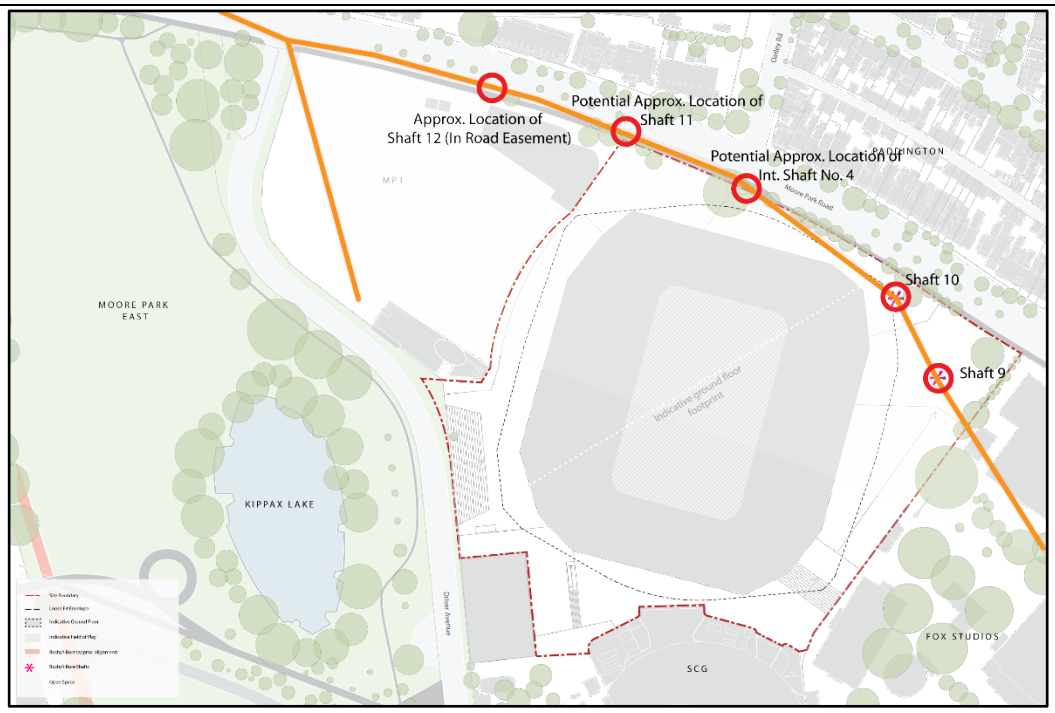


Figure 1: Locational Map of known and possible Busby's Bore shafts within SFS Redevelopment Site (Source: SJB Architects with Curio Additions 2018)

2. Protection

A physical exclusion zone will be maintained around the existing shafts and the Bore (if found during investigation works). The project archaeologist and the Site Manager will liaise regarding the best location for these barriers.

Vibration monitoring devices will be installed within the shafts of Busby's Bore in a location agreed by the project archaeologist, structural engineer and acoustic consultant. A conservative vibration criterion of 3mm/s, based on structural damage criterion for 'sensitive structures' in DIN 4150 – Part 3[1] will be applied. The vibration monitors will be calibrated to generate real-time alerts (SMS messages and/or flashing lights) when vibration criterion is exceeded.

3. Monitoring

In the event that the vibration criterion is exceeded by works on site an alert will be sent to the Site Manager. This alert will trigger a cessation of works and the project archaeologist and structural engineering advisor will be notified and requested to attend site. A visual inspect of the pits and/or Bore will be undertaken to determine whether any damage has been sustained.

An exceedance of the vibration criterion will necessitate a change in demolition and/or construction methodology. This could include:

- Re-evaluation of the vibration criterion based on results of the initial condition investigation and inspections of the structure following the commencement of works.
- Maintain vibration monitoring throughout Stage 1 and Stage 2 works.

[1] German Standard DIN 4150-Part 3 'Structural vibration in buildings – Effects on Structure'

- Reduce the size of demolition and construction equipment and develop alternative methodologies to minimise vibration.
- Use less vibration emitting demolition methods such as concrete pulverisers and smaller percussive hammers if necessary closer to Busby's Bore.
- Use rubber tracked excavators and machinery if necessary closer to Busby's Bore.
- Balance variable speed vibrating plant and operate at speeds that do not produce resonance.
- Ensure all fixed plant at the site are appropriately selected (on a risk assessment approach), and where necessary, fitted with vibration attenuation measures.
- Position vibrating plant and equipment as far apart as it practicable from each other and consider whether orientation and location of the plant can reduce vibration impacts at sensitive receivers such as Busby's Bore.
- Use non-percussive piling techniques for all piles where practicable.
- Ensure that vibratory compactors must not be used closer than 30 meters from sensitive receivers unless vibration monitoring confirms compliance with the vibration criteria specified.
- Maintain machinery and equipment.
- If necessary plan traffic flow, parking, loading/unloading areas to minimise movements within the area of Busby's Bore.