

John Phillpott - RE: Sydney Opera House

From: John Phillpott
To: John Phillpott
Date: 9/14/2011 3:38 PM
Subject: RE: Sydney Opera House
CC: Jim Farrell

Hi John,

As requested, we have reviewed the request to change the outfall to smaller twin pipes.

Twin Pipe Solution

The proposed design is for a 525mm diameter outfall which will drain the forecourt area. To change this pipe to twin pipes requires two 375mm diameter outfalls to provide the required discharge capacity. Whilst this is hydraulically feasible and was considered as an option, we believe there are more disadvantages to a twin pipe solution.

As the twin outfalls would originate from the same upstream pit we are limited by how much they can be separated. The pipes would be placed side by side with a 150mm gap between the pipes, thus the two outfalls would be within a 1m distance along the wall. Increasing the distance between the pipes would result in longer pipe lengths and even flatter pipe grades, the grades are already below the desirable standards. It would also require a larger upstream pit to accommodate the pipes which would increase the footprint of the excavation works.

It is our belief that installing two outfalls introduces additional flood risk to the site. The design outfall invert level is within the tidal range and will therefore be subject to sea water flowing back along the pipe. It is for this reason that non return valves (flap valves) will be installed on the ends of all pipes connecting into Pit A.4. These valves will prevent backwater flow effects through the stormwater network and are commonly used for this application. The valves would commonly be fitted to the seawall, however given the heritage importance of the sea wall in this location it was necessary to "hide" the valves in an additional pit. Whilst the aim of the valves is to reduce the effects of seawater levels on the performance of the drainage network, it is important to note valves are not failsafe. Should the non return valves become corroded or blocked in the open position by debris that (particularly in extreme tidal events) the sea water will back up through the stormwater drainage network. As each valve is a potential weakness in the network it is therefore good practice to limit the number of outfalls.

Should council and SOH agree that the visual impacts and risks associated with a twin pipe solution we will need to modify the design accordingly, however the invert levels of the pipes at the sea wall cannot be easily modified as any change to this would impact on the ability to provide the upstream Gross Pollutant Trap.

Reuse of existing outfalls

Every attempt was made to reuse the existing outfalls to minimise the impact on the seawall. However the invert levels of most of the existing outfalls was not compatible with the design.

Size of existing outfall

The existing outfall which is being "plugged" is a 375mm diameter outfall and is located further north along

the wall than the new 525mm diameter outfall. It is not possible for this outfall to be reused as it is in conflict with the service plenum which will be constructed as part of the VAPS project. The reuse of this was thoroughly investigated as part of the design development, however the site constraints mean that it is not possible to connect to this existing outfall around the structure required for the services plenum. Please also note that the new 525mm diameter outfall will be constructed as part of the early works, whilst the plugging of the existing outfall will occur during the main VAPS works and will connect this stormwater line into the new outfall.

I trust this addresses all the comments made by Council and please do not hesitate to contact me if you need any additional information.

Claire Moore

Senior Engineer | Infrastructure

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From: John Phillpott [mailto:John.Phillpott@planning.nsw.gov.au]

Sent: Friday, 26 August 2011 12:20 PM

To: Claire Moore

Subject: Sydney Opera House

Hi Claire,

As discussed please find attached a copy of a letter I received from Sydney City Council this morning.

Can you please provide a response as requested, including confirmation of the size of the current outlet that is proposed to be plugged as part of these works.

If you could get back to me sometime this afternoon it would be appreciated.

Regards,

John Phillpott

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