

20 December 2009
Project No. 43217997

Costco Wholesale Australia Pty Ltd
Ground Floor
82 Waterloo Road
North Ryde, NSW 2113

Attention: Patrick Noone
Managing Director

Dear Patrick

Subject: Geotechnical and Groundwater Management – 17-21 Parramatta Road, Lidcombe, NSW

URS Australia Pty Ltd, (URS) was commissioned by Costco Wholesale (Australia) Pty Ltd (Costco) to undertake a Preliminary Geotechnical Site Investigations at 17-21 Parramatta Road, Lidcombe, NSW, Australia.

The purpose of this investigation was to assess the site geology, subsurface profile, geotechnical conditions and groundwater levels at the site. These investigations involved the drilling of several boreholes, construction of groundwater wells for measurement of groundwater levels and selection of soil and rock samples for index and strength testing.

In conjunction with the investigations, geotechnical design advice was provided in our report with regard to such matters as the basement carpark, excavation support, foundation systems and allowable loads, general earthworks and a range of relevant other items for a development of this nature.

On the basis of the investigations and assessment it is URS's opinion that there should be no major geotechnical constrain on the building proposed and fairly conventional designs and methods of construction are envisaged for the development.

At the time of our initial investigation URS could not gain access for drilling in the central part of the site due to the presence of the operating warehouse and distribution centre. We recommend that as a condition of any approval that further drilling be undertaken within the warehouse footprint to confirm ground conditions for detailed design of structures.

The NSW Department of Planning in their letter of 27 November 2009 has requested that further geotechnical studies be undertaken. Based upon existing investigative work undertaken, URS does not consider it necessary to undertake further physical investigation prior to the determination of the Part 3A applications. This is because the general geological, geotechnical and groundwater conditions have been sufficiently well established as part of the initial investigations to enable appropriate geotechnical design and construction implications to be made for the project.

We also refer to the letter from NSW Office of Water (NOW) dated 17 November 2009 in which they require all basements below the water table to be provided with a waterproof retention system (i.e. a fully tanked basement structure) with adequate provision for future fluctuation of the watertable level. In view of such requirements URS assumes that a tanked basement will be

included as a condition of consent for the project. The design of such a basement structure can be adapted to accommodate this requirement for the project. As part of the URS's future geotechnical investigations we will provide the necessary groundwater level information for the structural designers to address such requirements.

In response to the letter from NOW, URS confirms that no permanent pumping/extraction of groundwater will be required, however there will need to be some construction dewatering which will be generally carried out in accordance with the following principles:

- The most likely method of dewatering to drawdown the watertable by a few metres is by sump pumping and gravel drainage trenches connected to a pumping system. Given the clayey nature of the site soils it is anticipated that the rates of inflow are expected to be small despite the size of the excavation.
- Also reinjection of the groundwater outside the basement excavation retaining walls to contain the groundwater on site is not considered to be a viable method of disposal of water due to the clayey site soils not having the storage capacity to efficiently receive pumped water.
- NOW have stated that the pumped water (referred to as tailwater) is not allowed to be discharged off-site to stormwater without the controlling authority's approval.
- As part of URS's further geotechnical and environmental studies, we will sample the groundwater for relevant parameters to enable off-site disposal approval to meet the necessary water treatment and quality requirements. Such work should be included to form part of the condition of consent for the project.
- Given the anticipated low permeability clayey soils at the site and small volumes, the drawdown area associated with the basement is expected to be limited.

URS has suggested a series of appropriate conditions relating to further physical testing of geotechnical and groundwater conditions prior to the commencement of work:

- Prior to the issue of a construction certificate for excavation, the proponent is to provide a Groundwater Report which specifies of the impacts of construction groundwater pumping on other licensed groundwater users and groundwater dependent ecosystems in the vicinity of the site;
- Prior to the issue of a construction certificate for excavation, the proponent is to prepare a report on methods of dewatering and predicted volumes and associated predictions of the drawdown zone of influence beyond the excavation boundary and likely amount of ground settlement and risk of impacts on existing buildings;
- The proponent is to undertake water quality and settlement monitoring prior to and during the dewatering works.



Patrick Noone
Managing Director
20 December 2009
Page 3

We trust that the above letter meets your interim requirements. Please contact the undersigned on (02) 8925 5772 should you require further advice.

Yours sincerely
URS Australia Pty Ltd

A handwritten signature in black ink, appearing to read 'S. Rosin', is positioned above the printed name.

Steven Rosin
Principal Geotechnical Engineer