

## SYDNEY OFFICE

Robert Bird Group Pty Ltd  
ABN 67 010 580 248 ACN 010 580 248  
Level 6, 100 Pacific Highway  
North Sydney NSW 2060  
PO Box 6461, North Sydney NSW 2059 Australia  
p: +61 (0) 2 8246 3200 | f: +61 (0) 2 8246 3201  
www.robertbird.com

Reference: MS:CS CO/ST 19231

9 December 2022

Toga Central Developments Pty Ltd  
Level 5, 45 Jones Street,  
ULTIMO, NSW 2007

Attention: David Springford

**RE: TOGA CENTRAL TANKED VS DRAINED BASEMENT**

---

Robert Bird Group (RBG) have been engaged by Toga to provide structural engineering services for the Toga Central Development. RBG is a Tier 1 Civil and Structural engineering firm with significant experience in the design of basements in the Sydney CBD.

The intent of this letter is to provide RBG's opinion that a drained basement is the most suitable solution for the Toga Central development. RBG provide the following as the key reasons for arriving at this conclusion:

1. Tanking the basement will generate hydrostatic pressures that will tend the basement to float. The self-weight of the structure, particularly the portion of the basement under Henry Deane Plaza will be insufficient to resist the buoyancy forces. To provide an appropriate level of stability a positive connection to the founding rock material will be required. This connection will likely be in the form of tension piles or active ground anchors both of which add significant cost, complexity, and embodied carbon to the project.
2. Tanking the basement means the enclosing structure will need to be designed to resist hydrostatic pressures. This will require the walls and slabs of the basement to be designed as hydrostatic elements. This increases the structural demand and hence the size and reinforcement of these elements. As an example, the slab for a drained basement would be typically 125mm thick, the same slab in a tanked system would be 1000mm thick with extremely heavy reinforcement. Not only does this increase the depth of excavation required it also adds significant cost, complexity, and embodied carbon to the project.
3. The Toga Central basement forms part of an integrated basement with the adjoining Atlassian and Frasers Dexs development. RBG understands these neighbouring basements are drained basements. In RBG's experience a tanked basement integrated with adjacent and interconnected drained basements is unprecedented. This arrangement creates waterproofing and structural interface issues between developments that make a single tanked basement within a wider drained basement infeasible.

In RBG's opinion, given that the neighbouring basements are drained basements, the only feasible technical solution for the Toga Central development is to be a drained basement.

Should you have any questions please do not hesitate to contact the undersigned.

Yours faithfully

ROBERT BIRD GROUP PTY LTD

MITCHELL STARKEY  
Buildings Lead