

Reference: AA:SM CO/CV 21317C

11 April 2024

Graeme Heatley
Via Architects
3/377 Lonsdale Street
MELBOURNE VIC 3000

Dear Graeme,

RE: 321 LOWER HEIDELBERG ROAD, HEIDELBERG EASTSITE INUNDATION / OVERLAND FLOW ADVICE

At the request of Via Architects, Robert Bird Group (RBG) have reviewed the proposed development at 321 Lower Heidelberg Road with respect to overland flows, and particularly the overland flows entering the site from Maltravers Road that cause the site to be inundated.

Water Technology have carried out TUFLOW modelling of the existing conditions at the proposed development site. The peak flow rate entering the model north of Maltravers Rd is 1.55 m³/s. Water Technology have concluded that "flows are predominantly conveyed along roadways however, flows break across the pedestrian walkway and enter the site at the Northern boundary and exit the property along King street. This corresponds to flood mapping supplied by Banyule City Council". The resultant map of water depths for the existing conditions is copied from the Water Technology advice as Figure 1.

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Figure 1 – Existing Conditions Water Depths Produced by Water Technology

Based on the map of water depths we make the following observations:

- Aside from overland flows entering the site at Maltravers Rd, depth of water at the title boundaries around the site is nominal (less than 20mm).
- Similar nominal water depths are produced at the property boundaries on the east side of Lower Heidelberg Rd.

The proposed development will result in a building, with 2 levels of basement, occupying a significant area of the site area as illustrated in Figures 2, 3 and 4. The proposed development will affect the existing overland flow path through the site.

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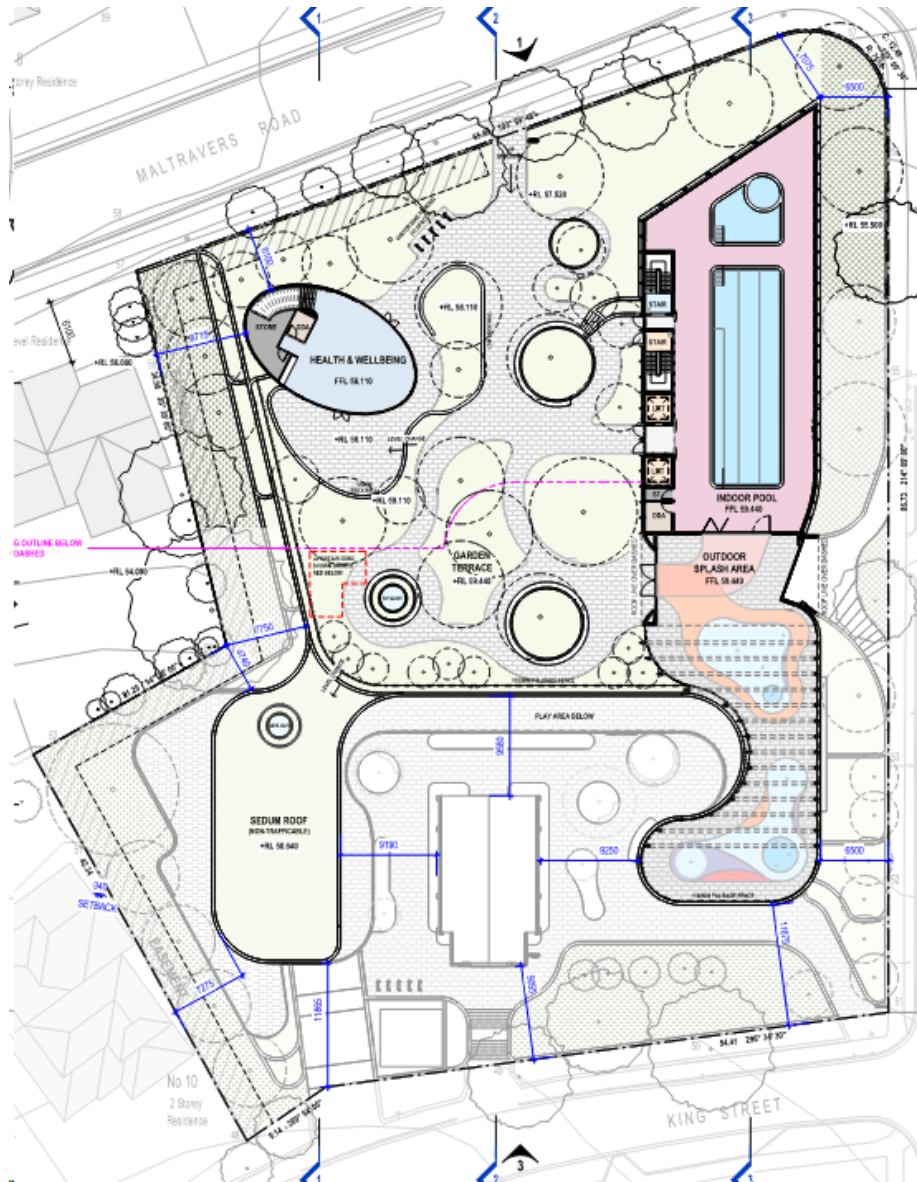


Figure 3 – Proposed Development Building Layout – Upper Ground Floor

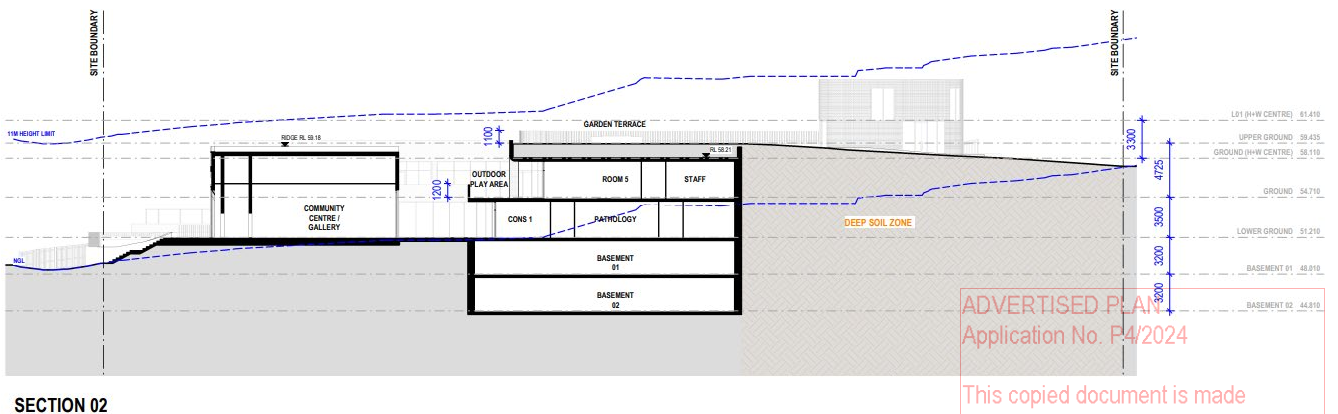


Figure 4 – Proposed Development Building Layout – Site Section

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Open space is provided around the perimeter of the building on all sides. A large garden terrace is provided fronting the northern boundary.

The northern boundary of the site is at an existing ground level of approximately RL 57.5m AHD and the south boundary is at approximately RL 49.0m AHD resulting in a fall from north to south of approximately 8.5 metres. The garden terrace matches the existing ground levels along the northern boundary with Maltravers Road and rises up internally within the site to approximately RL 59.5 AHD, 2 metres above the ground level at the boundary.

Whilst the central garden terrace rises up from Maltravers Road, the east and west edges around the building generally follow the original surface of the site, falling from Maltravers Road, south towards King Street.

The proposed site is shown overlaid with the existing conditions water depths produced from flood modelling by Water Technology in Figure 5.

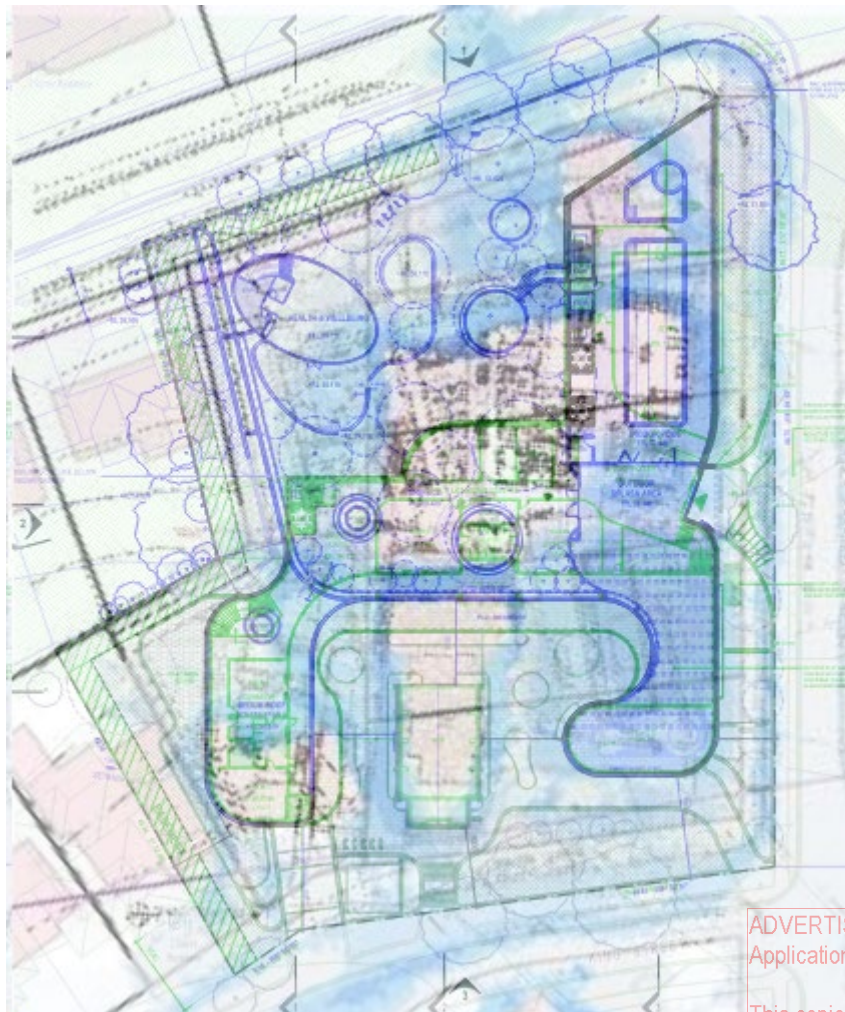


Figure 5 – Proposed Development Building Layout Overlaid with Existing Conditions Flood Depths

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The central garden terrace, rising up from Maltravers Road, will allow for building entries to be provided above the anticipated flood water depths as a result of water ponding above the stormwater inlets in Maltravers Road. The raised courtyard (and building) will also prevent overland flows from entering the site at the northern boundary, as modelled by Water Technology for the existing conditions.

Some overland flows could be routed around the east or west side of the building, however not without impacting flood water depths in Maltravers Road.

There is currently a Council drainage system (piped and overland) that collects water from Maltravers Road, runs along Lower Heidelberg Road, to the south side of the site. According to Council records, an existing Council drainage pit at the eastern end of Maltravers Road connects to a 375mm diameter pipe, and subsequently a 450mm diameter pipe running south along Lower Heidelberg Road, which wraps around the south of the site into King Street.

To ensure that adverse effects on roads and neighbouring properties are within acceptable tolerances, we suggest Council's underground drainage system is upsized and/or duplicated to convey some of the water that would have been allowed to flow through the existing site. We propose constructing an inlet structure (grated pits) in Maltravers Road that has a suitable inlet capacity, and upsize and/or duplicate the existing pipe system to accommodate this additional flow. A surcharge structure (grated pits) at the downstream end of the duplication would return the additional piped flow to overland flows at the south side of the site in King Street. Figure 6 illustrates the drainage measures proposed to allow for existing overland flows to be conveyed around the site in pipes.

Flood modelling will need to be carried out with the proposed development and proposed drainage measures incorporated to verify the design water level for the 1% AEP events.

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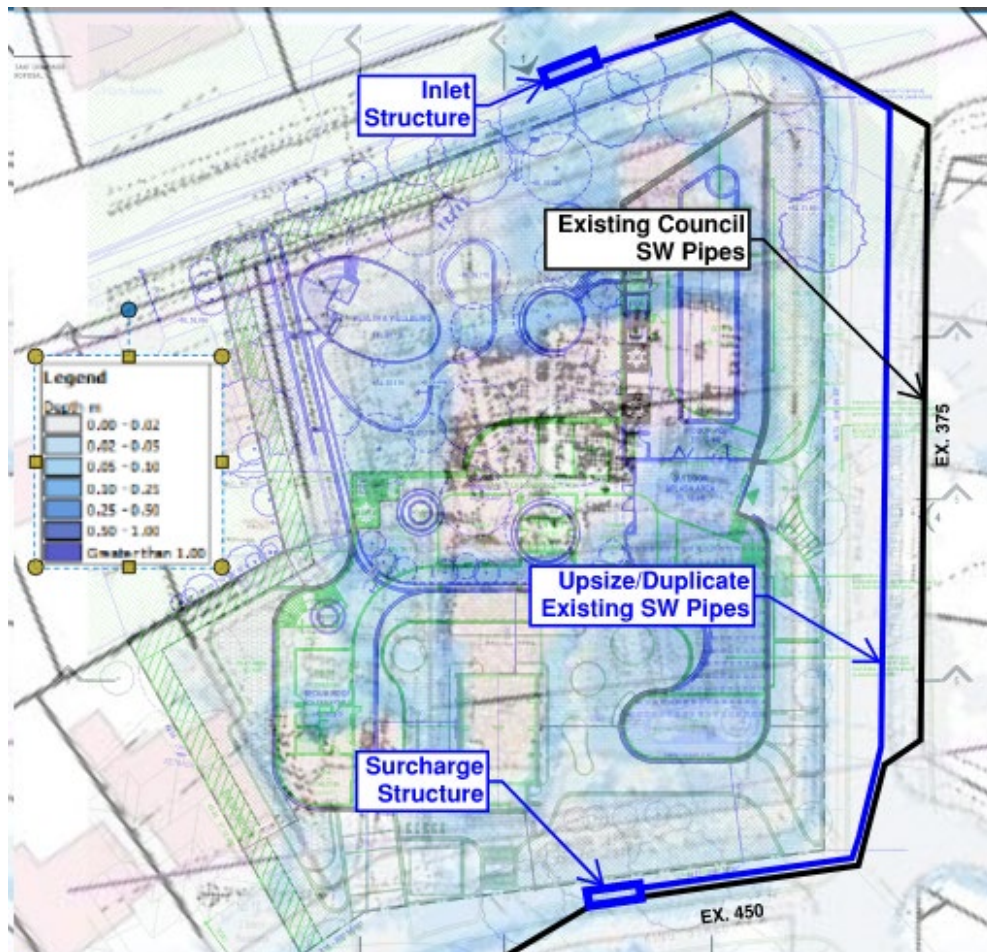


Figure 6 – Proposed Measures for External Overland Flows

Upsizing and/or duplication of the underground drainage system is intended to maintain the existing modelled flood water depths within Lower Heidelberg Road and the adjoining properties. At present, modelling suggests nominal ponding (less than 20mm) at the site's boundary along Lower Heidelberg Road. We note the proposed building entry levels along Lower Heidelberg Road are raised above the existing ground levels at the title boundary, approximately 700mm higher at the main entry from Lower Heidelberg Road. With the existing modelled flood water depths being maintained, the building entry is satisfactorily above the flood water level.

Within the site, overland flow paths and suitable freeboard to building entries will need to be provided around the perimeter of the building. Proposed overland flow considerations within the site are illustrated in Figure 7.

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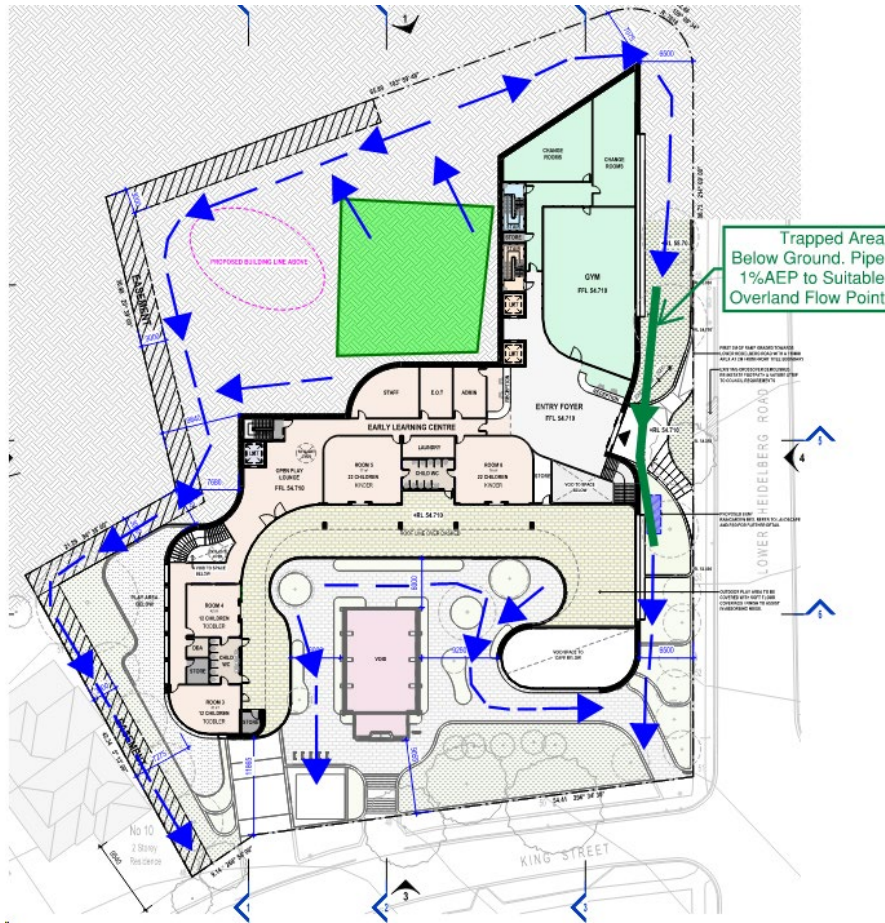


Figure 7 – Overland Flow Considerations Within the Site

The overland flow path on the western side of the site generally follows the natural fall of the existing ground surface along the existing easement. There is a pinch point at the kink in the boundary that will require particular attention as highlighted in Figure 8. We recommend upstand walls along the boundary and the edge of the outdoor play area to ensure overland flows do not affect neighbouring properties or the proposed building. The depth and flow velocity within this pinch point can be confirmed during detailed design, augmented by pits and pipes if needed.

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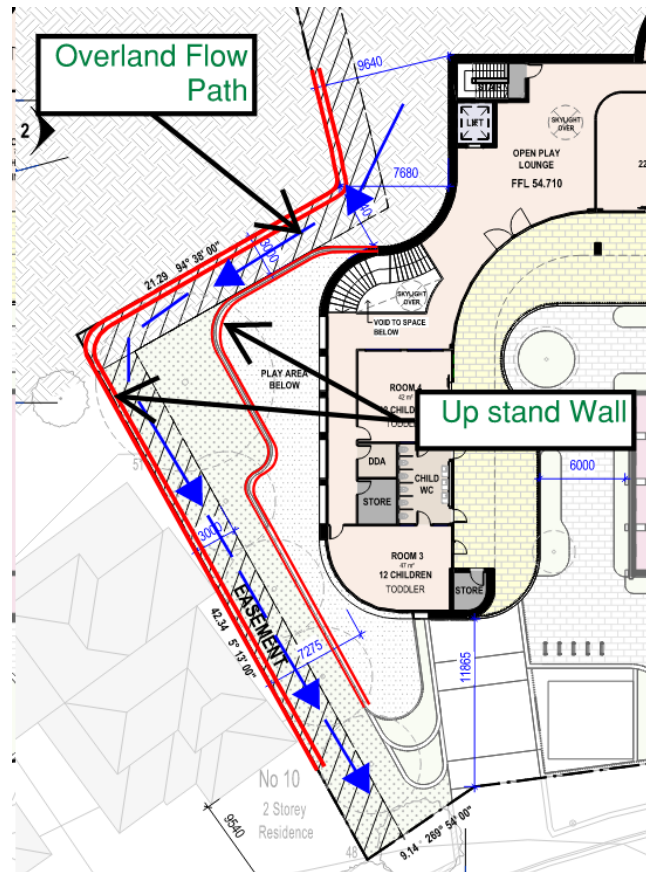


Figure 8 – Overland Flow Around West Side of Site

There will be a trapped low point on the eastern side of the site where the DDA compliant entry ramp is provided from Lower Heidelberg Road to the main entry as shown in Figure 9. This area will require a pipe under the entry ramp designed to accommodate flows such that water does not pond to excessive depths or overflow into Lower Heidelberg Road during minor rainfall events.

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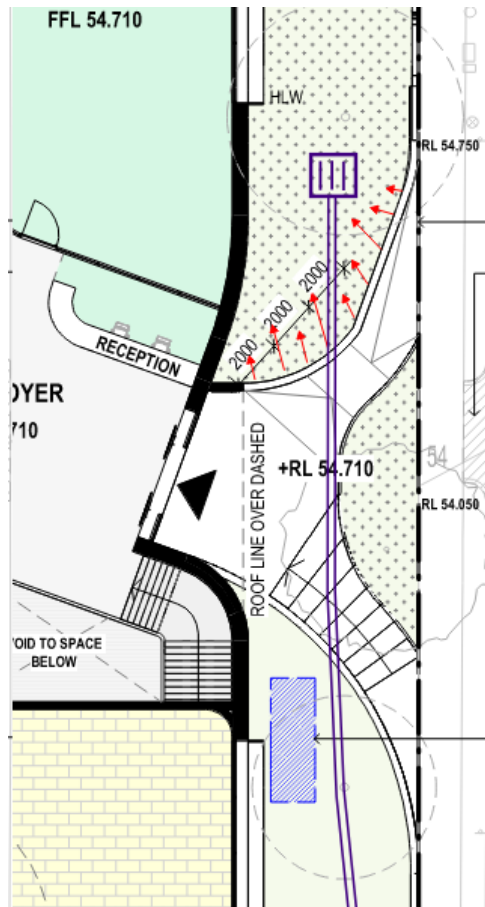


Figure 9 – Trapped Low Point on East Side of Site

Yarra Valley Water have an existing sanitary sewer running through the site. We understand the development layout has catered for new easements in favour of Yarra Valley Water around the edge of the site for diversion of this sanitary sewer.

The proposed building plans have generally been developed to allow for suitable drainage measures to be implemented that can mitigate the effects of impeding the existing overland flow path through the site and allow for suitable overland flow paths within the site, subject to the commentary provided herein.

Please contact us if you require further information.

Yours faithfully

ROBERT BIRD GROUP PTY LTD

Darryl Horan
Principal

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