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ARCHITECTURE HDT

AHDT MEMO ON FLOOD MITIGATIONS

PROJECT: Karori Community Hall (KCH)

DATE: 19 SEPTEMBER 2024

WCC have asked for input on possible flood mitigation measures which could be adopted to safeguard the KCH building due to the floor level being lower than ideal, according to Wellington Water Ltd (WWL) data which shows a potential ponding risk. WWL stormwater asset impact assessment document dated February 2023 notes a maximum flood depth of 400mm in a 1% AEP (1 in 100 years) + climate change event assuming 2.1 degC temperate increase.
A draft report has been provided by Tonkin and Taylor Ltd (T+T) dated 11 August 2023.
This memo considers the recommendations from T+T specific to the site and offers some site-specific architectural commentary.
For full descriptions and estimate of costs for flood mitigations please refer to the draft T+T report.

#	Item	Notes
1.	MANUALLY ASSEMBLED FLOOD BARRIERS	These would need to be purchased by WCC and kept at the facility (or nearby) for use when needed. This aspect would need to be managed as part of a flood event response. Storage and logistics are an issue. They would be used to address floodwaters which would otherwise threaten the gaps around and under the exterior doors. The first vulnerable door is the West egress door in blockwork, then the West double, (glazed) doors, then the North double, (glazed) entry doors.
2.	WATER POROOF MEMBRANE/ TANKING	This can successfully be applied as an enhanced waterproofing at the base of the continuous concrete block walls primarily to the East, South and part of the West facades. There are a wide range of options that could be specified for suitable coatings to be used on concrete and masonry, designed to be submerged (as would be used for holding water in a tank, pool or bund). Any making good to existing concrete blockwork or repointing mortar, installing CJ's etc would be done first. Note: If the over-cladding block wall weatherproofing option currently under consideration is to be adopted, we recommend the base of cladding be set to a level above the likely flood water RL (plus freeboard) to prevent any dirty/silty floodwaters entering the drained and vented cladding cavity from the base and blocking up or polluting the cavity.

3.	SEGMENTED BOX WALLS	We understand these are used in front of walls which are not waterproof (can't withstand ponded flood water). They are concrete and joined end-to-end. They would be required at the base of the Foyer 150mm structurally glazed suite which would leak & cannot stop any standing water for prolonged periods of time. During flooding manual barriers (described in item 1) would be added between them to protect the door openings. An alternative to these would be to construct a permanent continuous concrete nib wall to raise the sill of the glazing. If that was to be done it would be approx. 500mm high and would be above the RL162.0m recommended by WWL. Note: The glazing to North and West foyer walls needs to be removed and reinstalled as part of the fire design compliance which provides an opportunity to construct a raised concrete nib. That would only leave the door openings vulnerable to flood water ingress.
4.	PONDING RISK	Further to the WWL and T+T technical information, we share the opinion that the greatest ponding challenge is from potential overland flows coming down from the bank at the South side. Flooding would potentially form in a contained "moat" along the concrete pathways at the East and South walls whereby the flood water should be contained by the block wall of the building and the block retaining wall to the garden. Flood water would dissipate to the North down the avenue/walkway to Karori Rd and over the North boundary to the petrol station which steps down about one metre from our site. A more porous gate could be installed at the NE corner to allow floodwaters to easily pass through and prevent flood debris piling up against the gate and backing up. Similarly, from the SW corner flooding should dissipate along the West and at the North by the carpark/England Lane. However, some water could flow down England Lane flowing East towards the building. The deepest area of ponding is at the SW corner of the site by the rubbish area.
5.	OVERLAND CONTAINMENT	A potential option to deflect an overland flow from the hill to the South of the site is to construct a raised concrete nib barrier near the South and part of the East boundaries. Structural input is required to confirm suitable bearing and a foundation or piled support system. Ideally the current acoustic fence would not be modified.

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6.	SURVEY LEVELS REVIEW	Adamson Shaw have provided up-to-date site levels around the building perimeter, within the building footprint and at various points in the surrounding site. The WWL and T+T documents were working to an assumed building slab FFL of RL161.60m as per the construction drawings. However, the survey shows the floor slab is 161.50m in the foyer (which still requires a floor screed), but only 161.56m throughout the BOH areas. In other words, the building floor level is constructed 40mm lower than designed. WWL recommends a minimum floor level of 162.0m. Note: All levels noted are to the Wellington 1953 Vertical Datum. Due to building access issues and interior head heights, it is not feasible to raise the slab levels by over 400mm. We have investigated the levels around the site to see how the water may flow/pond around the edges of the building and how it will dissipate away from the building. This is also covered by T+T in their draft report. Obviously, flooding will only occur when there is a standing head of water from a ponding situation with additional safety factor to allow for flood surging, vehicle bow wave or a dynamic water event like an overland flow. Note: A separate AHDT document will be provided to WCC to investigate pavement levels and gradients around the North and West facades noted by the BCA inspector as requiring resolution for CCC compliance. This will include the current strip/ channel drains at the glazing sill and door thresholds.

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