

MEMORANDUM

SWDC BRIDGE 94

14 December 2023

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Entity
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RECIPIENTS

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This memorandum responds to the request from Carterton District Council to carry out an urgent inspection of SWDC bridge 94 on Te Awaiti Road.

1 INSPECTION

John Mason of Egis carried out a visual inspection of the bridge on 14 December 2023, accompanied by Azam Khan of Carterton District Council. The inspection focussed on the damaged pier.

The inspection was carried out from ground level and from the bridge deck.

There is a wide vertical crack in the upstream edge of pier 3 (the western pier), on the east side of the pier centreline. The crack extends from the underside of the pile cap to approximately 1 m above current water level. The crack is widest at about two-thirds of its height. At a height of approximately 2 m above bed level the crack is approximately 20 mm wide at the surface. We could not determine the depth of the crack. No reinforcement was visible in the crack, so we could not determine whether the crack extends into the reinforced core of the pier or is just in the cover concrete.

There are visible cracks in the underside of the pier cap on both sides of the bridge, these cracks are widest on the same side of the pier as the vertical crack.

There is a minor longitudinal crack in the deck above the damaged pier, approximately 700 mm long crossing the expansion joint. We are not sure if this is related to the pier damage.

The following photographs were taken this morning, 14 December 2023.



2 PREVIOUS INSPECTIONS

We reviewed previous inspection reports by Calibre to assess whether the pier damage is changing.

The crack was not mentioned specifically in the May 2015 inspection report. No photographs show the upstream edge of this pier.

The May 2017 inspection report mentions only “cracking and minor spalls to piers”. No specific mention is made of a vertical crack in pier 3, no photograph shows the upstream edge of pier 3.

The February 2019 report notes a wide and long vertical crack in the upstream edge of pier 3 with the crack measuring 10mm wide (see photograph below). A photo taken at a similar position to today’s photo above shows that the crack has widened significantly since 2019.



Photographs from February 2019 inspection

3 CONCLUSIONS

We are not sure what has caused the crack as the width does not seem to be consistent with being caused solely by reinforcement corrosion.

According to SWDC records the bridge was constructed in 1950. The crack occurred, or widened sufficiently to become visible, between May 2017 and February 2019. Between 2019 and now the crack has widened significantly.

It is likely the axial load capacity of the pier has been compromised and further investigations will be needed to confirm the full extent of the damage before remedial options can be advanced.

We understand that WSP have recommended the following interim restrictions on use of the bridge and that the Council are implementing these recommendations:

- Use be restricted to light vehicles only (not more than 3,500 kg)
- A speed limit of 10 km/hr
- Local residents are notified of the restrictions.

Based on our visual inspection, in our opinion WSP's recommendations seem appropriate and reasonable.

As there appears to be on-going widening of the crack and the axial load capacity of the pier has likely been compromised, we strongly recommend proceeding with further investigation of the damage and remedial work as soon as practicable.