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To: West Coast Regional Council
Attention: Ms. Chu Zhao -Planning Technician

MITRE 10 GREYMOUTH SUMISSION FOR THE TE TAI O POUTINI PLAN – REMOVAL OF THE COASTAL HAZARD ALERT OVERLAY FROM THE MITRE 10 SITE

Offshore & Coastal Engineering Ltd., (OCEL) has been engaged by Mitre 10 Greymouth to assist with their submission to remove the Coastal Hazard Alert overlay from their site at 41 -112 Water Walk Road. To that end we have reviewed the Te Tai o Poutini Plan (TTPP) showing the Coastal Hazard Alert (CHA) Overlay - CHA shown as blue horizontal lines - for the area around the Mitre 10 site, excerpt shown in figure no.1 and reproduced in greater detail on the OCEL drawing.no. DR-250205-001 Rev. 2. Data gathered by an OCEL survey drone was added to, overlaid on, a Google Maps plot of the location. The aerial survey was complemented/supported by a Total station survey to establish ground control points for the drone survey and determine floor levels relative to a LINZ benchmark, code EVHV(5) on Water Walk Road. Spot heights and contours are shown on the OCEL drawing.

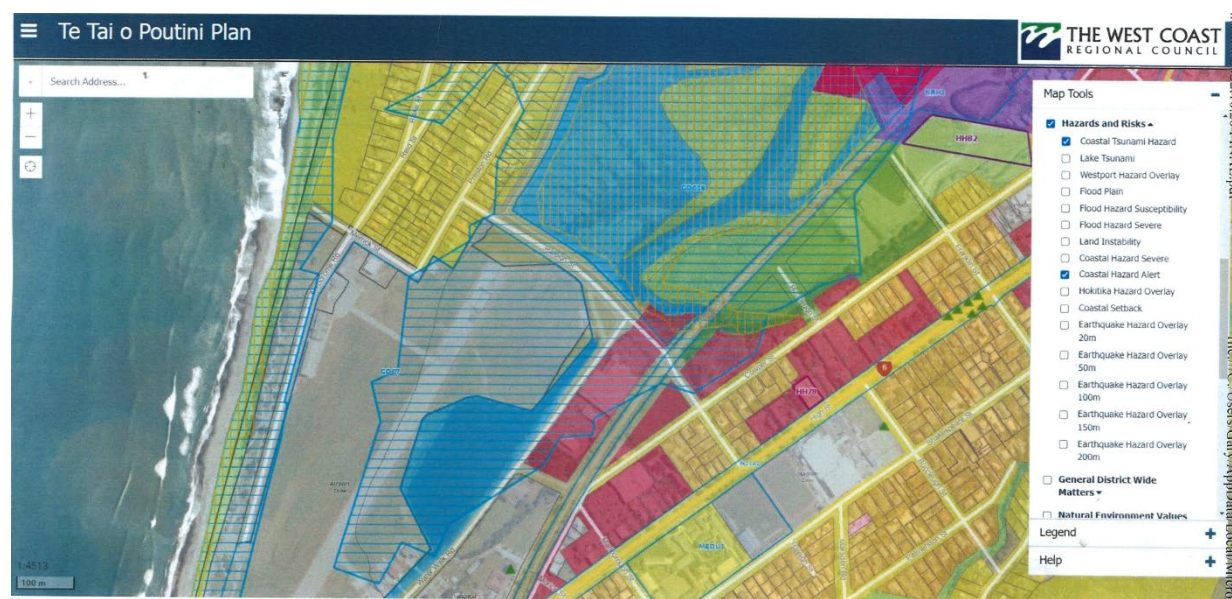


Figure no.1

The CHA overlay represents the area that would be subject to coastal inundation from storm surge coupled with Sea Level Rise (SLR) or tsunami. The inundation level is taken as constant over the area, in accordance with the 'bath tub' analogy. Logic then would dictate that the borders of the inundated area would be determined by the contours of the site and would follow a contour corresponding to the inundation level. The line as drawn does not follow site contours and there are clear anomalies. Buildings southwest of the Mitre 10 site are outside the CHA overlay whereas parts of the Mitre 10 are included inside it despite being higher than the levels at buildings to the southwest. It appears that the CHA boundary roughly corresponds to a 3 m (above MSL) height. The Mitre 10 floor levels at 3.5 m above MSL (3.35 NZVD 2016)

are above the inundation level yet the entire shop area is included in the CHA. The minimum yard level at the Mitre 10 site is 2.945 m (NZVD 2016). The CHA boundary should pass around the north west side of the Mitre 10 property.



Photograph no.1

An oblique aerial view of the site is shown in photograph no.1. The Greymouth flood protection wall is evident on the left side of the photograph. The height of the top of the flood wall is 4.50 m (NZVD 2016) yet the full length of the wall is included in the CHA. The horizontal blue lines pass over the top. The flood wall would form an island in an inundation event assuming the water can get past the barrier represented by the flood wall. It would be a good place to park a car in the event of a forecast coastal inundation.

The TTPP shows that the coastal hazard originates from the Blaketown lagoon, not from the coastline in front of, nearest to, the site. The flood wall would not be overtopped the only way the water can get past the barrier is along the railway line or through the culvert under Raleigh Street. Both openings have flood gates that can be closed. Any major event will be forecast and not happen instantaneously. In any event a component of the water level rise will be tidal which means the peak will be the crest of a long period wave and it would be unlikely that the whole area would be flooded even if the flood gates were not in place given the flow constraints/restrictions represented by the openings.

The separate TTPP Coastal Hazard overlay does not extend past the flood wall, recognizing the barrier effect of the wall against elevated water levels in the Blaketown Lagoon. This would be correct but is not consistent with the CHA overlay and indicative, along with the low spot levels for areas outside the CHA compared with the levels at the Mitre 10 site the bulk of which is covered by the CHA overlay, of some arbitrariness with the assignment of the overlay boundaries and faulty logic.

Yours faithfully,

Gary Teear – CPEng.

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