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20 December 2019

Bruno Lemke  
110 Stafford Drive  
Ruby Bay  
Mapua 7005

by email:       bruno.lemke@xtra.co.nz  
copied to:      other landowners

Dear Bruno

### **Ruby Bay Drainage Issues**

Firstly my apologies for how long this response has taken to complete. The drainage situation in Ruby Bay is a complex subject with a complex history and we have sought the input of various staff members at Council in order to provide as complete a response as we can at this time.

Thank you for taking the time to organise a meeting with Council staff and other landowners to give this feedback to Council. This response is largely structured in line with the list of issues that Rob O'Grady put together following his site visit with you on 29 August 2019. We will be copying this to other landowners present on 29 August but please feel free to distribute this letter as appropriate.

#### **1. Construction of sea wall and inability of water behind the wall to drain back through the structure**

Comments from meeting: Attendees recounted that during Cyclone Fehi most of the flood water was generated by waves splashing up over the sea wall, as opposed to waves surging over the wall. The attendees further suggested that if the water splashing over the sea wall could have flowed back through the sea wall then flood waters would not have accumulated to the same extent. The seawall effectively acted as a dam.

Attendees suggested that, if the part of the sea wall that extends above the walkway was made of large rocks with voids between, then water could flow through the seawall back down to the beach.

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Attendees presented a drawing which showed the sea wall design as per below (Figure 1). Attendees were of the view that this was a cross section as per the resource consent for the sea wall. They suggested that if the wall was built as per this design then water could flow back through the wall via the voids between the rocks.

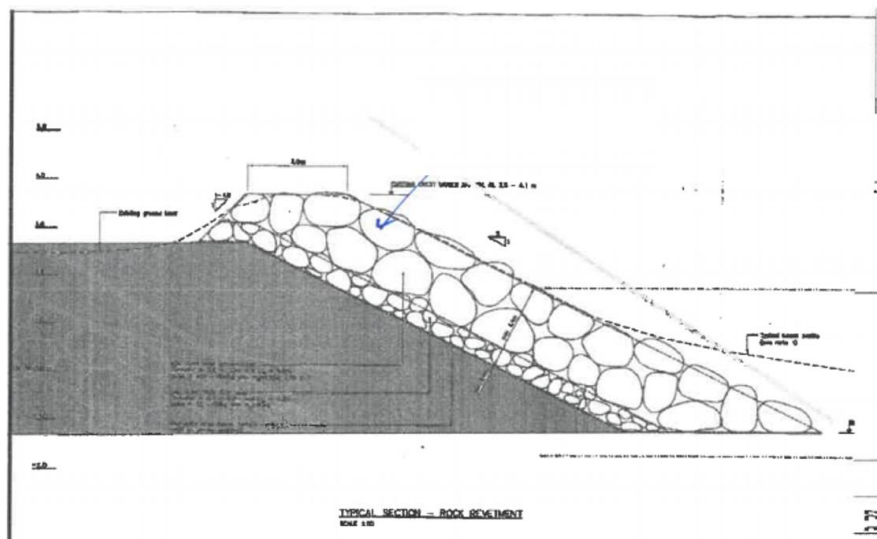


Figure 1

Attendees also presented another drawing (Figure 2 below) which more closely represents the current sea wall construction. They indicated that this was from the old resource consent which had expired. This shows a clay core wall with rock armour over.

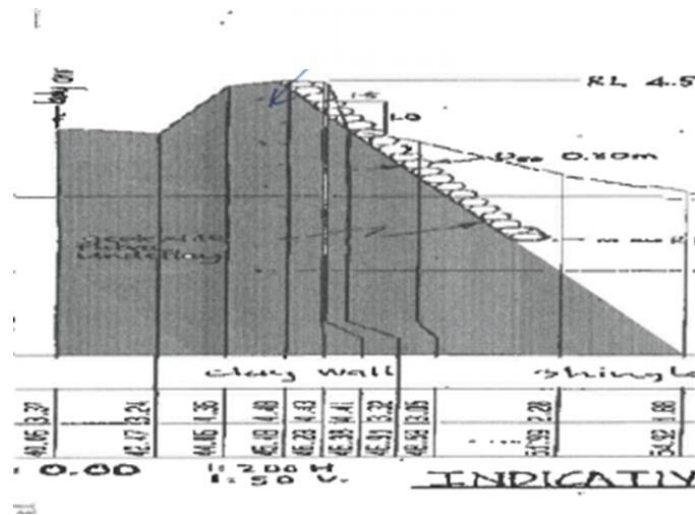


Figure 2

The attendees suggested that penetrations through the sea wall, or sections of wall reconstructed out of large rocks with voids between, could be installed at strategic locations to allow water to drain from behind the sea wall. One attendee suggestion was to locate these penetrations/ sections of large rock at the ends of the alleyways running from Broadsea Ave, and at the end of Tait St. They also suggested that the boat ramp in Chaytor Reserve was a potential location where water could drain away back out to sea if the top of the ramp was lowered and the reserve area regraded.

Council response: The existing wall is compliant with its resource consent as detailed in the Engineering Services Committee report dated 4 July 2019. (The existing wall is similar in construction to Figure 2.) No reconstruction or major changes to the existing clay core wall was envisaged or planned as part of the process for the current resource consent.

The Council's Coastal Scientist, and Rivers & Coastal Engineer, have assessed the proposal to introduce voids into the existing clay core. They are both of the opinion that in an event like ex-cyclone Fehi the ability for seawater behind the wall to drain back through any voids will be less than the quantity of water surging over the wall and through the voids. They consider it is likely that introducing voids would result in more seawater getting behind the wall during the event. Reconstructing the wall to introduce voids would involve significant work and expense. A thorough investigation would be required to evaluate this proposal in detail.

We have reviewed ground levels in Chaytor Reserve and will be making some changes near the ramp. We will look at lowering the ground approaching the concrete ramp to ensure ground levels in the reserve are not unnecessarily preventing surface water behind the wall from flowing towards and over the ramp.

Comment from meeting: An attendee suggested that additional stormwater drains could be laid down the two alleyways off Broadsea Ave to improve drainage off the street. (See Figure 3 and Figure 4.)



Figure 3 – Attendee-proposed location of additional stormwater drains



Figure 4 – Walkway between Broadsea Ave and sea wall

Council response: Additional stormwater drains cannot be installed in isolation. They would need to be properly investigated and designed as part of a wider assessment of coastal protection and drainage in the Ruby Bay area.

Comment from meeting: Attendees suggested that small rocks previously placed on the top of the sea wall were easily dislodged by waves and were ineffective and hazardous.



Council response: Some of the rock used in the original wall was too small for this environment. As new rock is being brought in to repair damage to the wall, we are using suitably-sized rock so this should not occur.

Comment from meeting: Attendees suggested that fences erected by residents facing the sea on Broadsea Ave act as a reasonable second line of defence to flooding caused by wave action (see Figure 5). Because there is nowhere for the water to go once it gets trapped behind the sea wall and fences it eventually builds up and floods back out onto Broadsea Ave, then flooding lower lying properties.



Figure 5 – Fences adjacent to sea wall

Attendees suggested that a small bund at the end of Tait St could be constructed to stop water flowing onto Tait St and Broadsea Ave from behind the wall. During Cyclone Fehi attendees recounted that this was the route that a lot of the flood water took onto Broadsea Ave (see Figure 6).



Figure 6 – Attendee-proposed bund location

Council response: A decision on these suggestions is linked with wider assessment of coastal protection and drainage management. Constructing a new bund, in isolation, may transfer the problem elsewhere. It needs to be part of the wider assessment.

Comment from meeting: Attendees reported that scruffy domes located at the end of Tait St and in Chaytor Reserve regularly become blocked which prevents water from draining away from the area of the walkway behind the sea wall. There were several attendees who said that they periodically helped to clear debris away from the scruffy domes. There were attendees who volunteered to help Council with preparation for storm events to clear any debris that might cause them to block.

Council response: We will be installing a larger grill at Tait Street and a new grill at the Chaytor Reserve within the next six months. These larger grills should reduce the likelihood and frequency of blocking. Any assistance with ensuring inlets are kept free of debris is appreciated. Our contractors do undertake pre-storm checks of key inlets and these scruffy domes are included. The amount of debris mobilised during storms is significant and it is not always possible to avoid temporary blockage of intakes during these storms. Decisions on other improvements are linked with determining the best sea inundation response and long term coastal strategy in this area.

## **2. Orientation of elbow at the end of the Tait St Outfall Pipe**

Comment from meeting: An attendee suggested that the elbow at the end of the Tait St outfall pipe could be rotated so that it faces down the beach towards Mapua, which is away from the prevailing direction of the incoming waves. They reported that the pipe points down towards the sand at present and there is a booming noise up Tait St as the tide washes in and out.

Council response: We were unaware of the booming noise until now. We are continually looking for suitable improvements to the coastal outlets and are investigating adding air relief holes in this pipe to reduce noise. The pipes are facing down to prevent gravels being washed up into the pipe as well as to avoid the noise of repetitive booming of floodgate outlets. The sea outlets are very vulnerable to the action of the sea and are often damaged. Placing the outlets on a slight angle can certainly be considered but it would be good to have some idea of how bad and how often the unacceptable booming is occurring.

## **3. Capacity of existing stormwater outfall pipes to convey stormwater and drain flood waters from tidal inundation events**

Comment from meeting: Attendees suggested that there was insufficient capacity to drain water through the existing stormwater outfall pipe at the end of Broadsea Ave.

An attendee reported that stormwater and ground water used to be able to drain out to sea via the "Senior Drain", previously located beyond the end of Broadsea Ave, which was permanently blocked when the sea wall was constructed. They reported that it had been filled in by a previous land owner, prior to the sea wall being constructed, to stop sea water flowing inland. Attendees suggested that Council had a legal obligation not to cause an adverse effect by permanently blocking the drain in terms of the sea wall resource consent.

Attendees presented a concept plan that Council have prepared for a second outfall pipe via 38 Broadsea Ave (see below). Rob O'Grady reported that it had been costed at \$350,000 by the design consultants, and would likely cost more once all costs (including resource consents) were factored in. Rob O'Grady reported that there wasn't funding for a second

outfall pipe and Council were not planning to construct a second outfall pipe at this stage. It was reported a catchment study was programmed for the area, which would better inform the situation with respect to flooding resilience. This would include assessing flow from Ruby Bay down to the estuary in a southerly direction during flooding. Rob reported that even if a second outfall pipe was constructed, the main issue was that the area was low lying and there was inadequate fall to effectively drain the area to sea via overland and piped drainage.



Figure 7 – Concept plan for second outfall pipe from 38 Broadsea Ave

Council response: This proposal would also need to be considered as part of the wider coastal protection assessment and drainage management for this area. The present design capacity of outfall pipes in relation to rainfall was looked at with project upgrades in 2010. We understand that the combination of outfall flow rates and detention, the flooding from rainfall is not above habitable floor levels but with sea levels high this could become the determining factor.

The option and funding of the 2nd outfall was dropped in favour of an alternative option of draining to the south. These two options have yet to be compared. In the meantime we have prioritised improving drainage capacity to the existing outfall pipe. We are finalising easements for the existing drains so that we can maintain them.

Comment from meeting: Concern was raised that if there was a plan to direct water to the south, down towards the estuary, that this would put more pressure on existing drainage out towards the estuary, which was already being pressured by intensification caused by development in Mapua.

Council response: We are presently modelling Mapua and Ruby Bay, with the initial results from the model expected in early 2020. This information will be used in developing a Catchment Management Plan for the Mapua and Ruby Bay area. This will determine where



and when improvements need to be done and whether it is appropriate to direct flows to the south.



Figure 8 – Intensification of flows towards the estuary as described by meeting attendees

#### 4. Improvements to drainage for properties on Stafford Drive

Comment from meeting: The improvements planned for the existing drainage through 32 Broadsea Ave and 10a Broadsea Ave were discussed. Rob O'Grady confirmed that this work was planned for this summer subject to final details being confirmed. Feedback was positive and the project was welcomed.

Council response: This work has been approved and is scheduled to commence in February 2020.

#### 5. Wastewater contamination of flood waters

Comment from meeting: Attendees reported that residents were not told about wastewater contamination of floodwaters in the aftermath of Cyclone Fehi. Several reported walking around in wastewater. They would have liked better information.

Attendees suggested that wastewater issues were linked with stormwater and tidal inundation issues. They accepted that the issues were caused by flooding but some emphasised that this resulted in a wastewater problem.

Council response: Whenever a private property is inundated by surface water and gully traps are submerged that there is a risk of contamination by wastewater. This event has highlighted a need to ensure that the gully traps within each property are set at appropriate



levels to minimise floodwater inundation and thereby reduce the risk of wastewater contamination.

## **6. Footpath flooding on Stafford Drive**

Comment from meeting: Attendees reported that there are frequently large puddles outside 70 Stafford Drive where there is a low spot in the footpath. They suggested this was a safety hazard, particularly for school children, who walk out onto the road to go around the puddles.

Council response: This is a localised low point which we are aware of. We assessing options on how to remedy this occurrence. It is not an easy fix and will probably require raising a section of footpath.

## **7. General feedback on submissions made to Council**

Comment from meeting: Attendees raised concerns that their submissions to Council were not being heard. Concern was raised that Councillors were relying on the advice of Council staff who have said that flooding is not an issue in the area, based on an assessment of stormwater issues alone.

Council response: All concerns received are treated seriously and responses prioritised. There are similar concerns across the district. Any changes must be considered in a wider context to ensure we do not transfer the problem elsewhere. Often this requires a much greater investment to mitigate other issues, not just the ones raised.

## **8. Surcharge of groundwater due to soakage of stormwater from subdivisions on the hill behind Ruby Bay**

Comment from meeting: Attendees complained about the soakage of stormwater into properties on the western side of Stafford Drive caused by flow off subdivisions on the hill. (See Figure 9.) In particular it was felt that Separable Portion 2 of a previous Council stormwater project, to collect and direct flows off Pomona Road and out into the Tait St outfall under pressure, should be completed. It was felt that an elevated groundwater table caused by soakage of stormwater was exacerbating surface flooding of properties in rainfall events.



Figure 9 – Ponding of water on western side of Stafford Drive

Council response: The Separable Portion 2 project objective was to divert flows from the detention area but insufficient funding was available. This work was a lower priority as the area is designed as a flood detention area and the risk of flooding habitable floors is low. The priority and effectiveness of the Separable Portion 2 will be assessed in the current modelling work. There may be an opportunity to deliver this work in the short term if the effectiveness is shown and funding allows.

### 9. The drain at the bottom of Pomona Rd is prone to blocking

Comment from meeting: Attendees reported that the drain at the bottom of Pomona Rd is often blocked and last time it was reported it took Downers 2 months to get to site to clear because other work was prioritised.



Figure 10 – Drain at the bottom of Pomona Rd



Council response: This inlet has been added to the stormwater contract schedule and will be checked and cleared more regularly.

**10. Other drainage on Stafford Drive does not appear to function as intended**

Comments from meeting: Attendees reported issues as per the marked up photo in Figure 11.



Figure 11 – Drainage issues on Stafford Drive

Council response:

- The soakpit opposite Pomona Road offered limited functionality and because of this an overflow was added in 2012. We have recently checked and cleaned this soakpit to improve capacity.
- Staff visited 118 Tait St and the open drain shown on plans appears to have been filled in. We will continue to investigate this further, but note that the outlet is prone to gravel blockage.

## Conclusion

I would like to take this opportunity to thank you for raising stormwater and coastal inundation issues in your area. We have investigated these and are proposing some stormwater and drainage improvements over the next six months. There are however some issues where there may not be feasible or affordable solutions, or where further investigation and consideration is required.

In summary there are a few issues worth summing up as follows:

- We are proceeding with drainage improvements for some properties on Stafford Drive



- We will also be improving the inlet grills and structures on Tait Street and Chaytor Reserve.
- We will be re-contouring the gravel next to the ramp on Chaytor Reserve to improve drainage from the reserve.
- Adding voids to the existing clay-core rock wall will most likely result in more seawater getting in behind the wall during events like Fehi, so we do not consider this a viable option.
- Adding outfalls to improve drainage behind the wall would require a detailed investigation and will be incorporated into the wider coastal protection assessment and drainage management in this area.
- Similarly other modifications such as lowering the Chaytor Ramp, or installing new bund across Tait Street, would need to be properly investigated and designed as they could just transfer a problem rather than resolve it.
- A proper investigation would need to be planned and budgeted for through the Council's Long Term Plan, including discussion with community regarding priority and costs.

A follow up meeting with concerned community members, and Council staff members, may be valuable to discuss the content of this letter and possible next steps.

Yours sincerely



**Richard Kirby**  
Engineering Services Manager

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