BEFORE THE HEARING PANEL APPOINTED BY KAIPARA DISTRICT COUNCIL

Under the	Resource Management Act 1991
In the matter	Private Plan Change 85 (Mangawahi East) to the Kaipara District Plan

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EVIDENCE OF JAMES CRISPIN BLACKBURN ON BEHALF OF KAIPARA DISTRICT COUNCIL

Coastal Hazards

1 December 2025

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1. INTRODUCTION

1.1 My full name is James Crispin Blackburn. I am a Chartered Civil Engineer at Hawthorn Geddes Engineers & Architects Limited, where I lead the civil and environmental engineering team, and am one of three company directors.

1.2 I graduated from The University of Southampton (UK) with a Bachelor of Engineering (Honours) degree in civil engineering in 1993. I have worked in roles associated with land development, hydrology and flood control, and general civil engineering design since graduating. I am a Chartered Professional Engineer (CPEng) and a Chartered Member of Engineering New Zealand in the fields of civil and environmental engineering.

1.3 I have over 30 years' experience working as a civil engineer, with the last 20 years being in Northland, New Zealand. I have experience in general civil engineering, including rainfall and hydrology and natural hazards (coastal and fluvial).

1.4 I have been engaged by Kaipara District Council (**Council**) to provide evidence to this Hearing Panel regarding the coastal hazards associated with proposed Private Plan Change 85 (**PC 85**).

1.5 While I acknowledge that this is not an Environment Court hearing, I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and confirm that I have complied with the Code of Conduct in preparing this evidence and agree to follow it when presenting evidence to the Court.

1.6 I confirm that this evidence is within my area of expertise, except where stated that I have relied upon the advice of others.

1.7 I have identified in this evidence the information, facts, and assumptions that I considered in forming my opinion. I state the reasons for the opinions I have expressed. I have not omitted to consider material facts known to me that might alter or detract from the opinions I have expressed. I have specified the material used or relied on in support of the opinions that I have expressed.

1.8 I am authorised to make this statement on behalf of the Council. I understand that this statement will be attached to the report under section 42 of the Resource Management Act 1991 (**RMA**) that is being prepared by Jonathan Clease.

2. SCOPE OF EVIDENCE

2.1 In this evidence I will assess the suitability of the Coastal Processes and Hazard Assessment Report prepared by Davis Coastal dated June 2025 in relation to the coastal hazards.

2.2 In preparing this evidence I have reviewed the following documents:

(a) Coastal Processes and Hazard Assessment Report prepared by Davis Coastal for Mangawhai East Private Plan Change dated June 2025 (**Coastal Hazard Assessment**);
(b) Submissions on PC 85 raising issues relating to coastal hazards;
(c) Coastal Inundation by Storm Tides and Waves in the Auckland Region 2013 (NIWA);
(d) Updated Coastal-storm Exposure at Parakai and re-mapping of East-Coast Estuaries 2016 (NIWA); and
(e) Coastal Flood Hazard Assessment for Northland Region 2019-2020 (Tonkin & Taylor), resultant data and mapping.

3. SUMMARY

3.1 The evidence presented evaluates the coastal hazards risk associated with the land proposed for rezoning under PC85 in Managwhai East. The applicant report reviewed is the Coastal Processes and Hazard Assessment Report prepared by Davis Coastal for Mangawhai East Private Plan Change dated June 2025. Submissions have also been reviewed, with relevant content addressed.

3.2 The parameters used in the applicant's Coastal Hazard Assessment are appropriate and I agree with the methodology used and the conclusions reached.

3.3 The surface runoff associated with any development within the plan change area should be directed towards the tidally influenced areas to ensure effective drainage and flood management.

3.4 The proposed coastal erosion hazard overlay, set 30 m from MHWS outside the Black Swamp Road causeway and 10 m from MHWS upstream provides a prudent and appropriate approach for managing potential future coastal erosion hazards.

4. REPORT REVIEW OUTLINE

4.1 The following provides a summary of the key coastal processes considered in the applicant's Coastal Hazard Assessment, along with my review comments.

Storm Tide Level

4.2 The storm tide level for a 1% Annual Exceedance Probability (AEP)[1] event at Mangawhai Estuary is reported as 1.51 m NZVD[2] (New Zealand Vertical Datum) in the NIWA report (a report prepared by NIWA in 2016, using hydrodynamic models calibrated against tide-gauge and wave buoy measurements to calculate storm tides), compared with 1.6 m NZVD from Tonkin and Taylor modelling undertaken on behalf of Northern Regional Council (NRC) for the Mangawhai Estuary. Since the NIWA model output location is immediately offshore from the site, a storm tide level of 1.51 m NZVD is adopted in the reviewed report.

4.3 Based on my review of the original (underlying) 2013 NIWA report, and it's 2016 update, it is evident that the referenced storm tide level of 1.51 m NZVD is the most appropriate data for the subject site (within the Mangawhai estuary), being a higher elevation than the storm tide level for Mangawhai open coast (1.76 m AVD, equivalent to 1.46 m NZVD). In my professional opinion, applying an appropriately conservative assessment, a storm tide level of 1.6 m NZVD, consistent with the Tonkin & Taylor (NRC) modelling for Mangawhai Estuary, should be adopted for the purposes of this evaluation. This will ensure regionally consistent application of coastal inundation risk, and one that is suited to an undefined timeline for detailed development on the subject land.

Sea Level Rise

4.4 The reviewed report adopts a sea-level rise projection of 2.2 m over 100 years (to 2130), based on NZSeaRise data. This represents a high projection scenario (SSP5-

[1]AEP- the probability of exceedance of a storm event within a period of one year.

[2] NZVD- Official vertical datum used in New Zealand (move to footnote).

8.5)[3] with medium confidence including vertical land movement, corresponding to the 83rd percentile probability (p83)[4].

4.5 While SSP5-8.5 is appropriate, it is clear that the MfE guidelines (Coastal Hazards and Climate Change Guidance – 2024) require the upper bound p83 condition to be considered, but it is not a prescribed design standard. More typically, a sea-level rise projection SSP5-8.5 of 1.57 m (p50, high projection scenario with medium confidence) would be applied for a detailed subdivision-level assessment, where development timelines are relatively defined. However, since this assessment relates to a plan change, a more conservative approach is appropriate given the uncertainty in development timing. Accordingly, adoption of the 2.23m (p83) sea-level rise (SLR) projection including vertical land movement (VLM)[5] is considered appropriate and suitably precautionary in this context. On this basis, it is recommended that the minimum building platform level within the plan change area be set at no less than 3.85m NZVD, corresponding to the 1.6m NZVD storm tide level plus an allowance of 2.23m for sea-level rise, including vertical land movement.

4.6 I note that in the event that compressible soils are not removed from site prior to any fill activities (to address the coastal flooding hazard), or further investigation identifies that the fill will result in further consolidation of the underlying soils, this additional settlement potential will need to be accommodated additional to the

[3] The 'Fossil-fuelled development' scenario, SSP5-8.5, represents the high end of the range of future scenarios. It assumes that the world places increasing faith in competitive markets, innovation, and participatory societies to produce rapid technological progress and development of human capital as the path to sustainable development, with warming of more than 4˚C by 2100.

[4] The 83rd percentile is the value below which 83% of all model projections or observations fall, and above which 17% lie. In the context of sea-level rise projections, it represents the upper bound of the “likely range” (between the 17th and 83rd percentiles). This percentile indicates a relatively higher-end projection of possible sea-level rise outcomes, though still within the range considered likely.

[5] VLM- Vertical land movement (motion), which is the rate in mm/yr of the local land mass. It is influenced by tectonics, sediment-basin compaction, localised subsidence of historic reclamations or groundwater pumping, and glacial isostatic adjustment (the ongoing crustal adjustment to the past ice-sheet advance and retreat).

SLR/VLM provision. This can be conditioned accordingly as part of future subdivision consent processes.

Coastal Erosion

4.7 The applicant's coastal report adopts coastal erosion hazard risk information from NRC's *Coastal Erosion Hazard Assessment for Selected Sites (2019–2020)*. While no site-specific data is available for the subject site, reference is made to data from the residential area of Mangawhai Heads, which is more exposed to the predominant south-westerly conditions. In that area, the 100-year future erosion hazard zone is located approximately 15 m landward of the existing coastal edge, corresponding to an estimated erosion rate of 0.15 m/year.

4.8 In the absence of site-specific data for costal erosion within the estuary, I consider the adopted erosion rate at 0.15 m/year average is appropriately conservative, particularly in consideration of the prevailing wind (and wave) direction and associated available fetch.

4.9 Coastal Flooding Mitigation- Given that the flooding is coastal in nature, the effect of filling within the flood zone is considered negligible, as coastal flood is of near infinite volume i.e. there is minimal risk of filling resulting in displacement of coastal waters onto adjacent land.

4.10 I agree with this conclusion, though note that relevant provisions for surface flow (inland drainage) will need to be made to ensure natural drainage rights are maintained for adjacent property.

Future Coastal Erosion Hazard

4.11 A coastal erosion hazard management overlay is proposed 30m offset from MHWS outside Black Swamp Road causeway and 10m offset from MHWS upstream from Black Swamp Road causeway. If any development is proposed within this overlay, site-specific assessment will be required at the time of subdivision application to

ensure any development will not exacerbate or be adversely affected by coastal hazards.

4.12 I agree with the proposed overlay approach at this Private plan change stage, as it represents a prudent and appropriate method for managing potential future coastal erosion hazards and ensuring that future development remains resilient.

5. SUBMISSIONS REVIEW

5.1 A total of 87 initial submissions and 11 further submissions were reviewed. Submissions 10, 42, 65, 72, 76, and 77 raised concerns that the proposed development could exacerbate flooding.

5.2 As the identified flooding risk is generated through coastal inundation, provided that the development site's flood risk is fully mitigated through filling, to a level above the identified flood level (with relevant allowance for sea level rise, natural vertical land movement and fill induced settlement), any coastal flooding effect on adjacent properties is immeasurable.

5.3 Submission 43, made by Northland Regional Council, emphasises the need to avoid inappropriate development within coastal hazard areas. It notes that any new development should align with the objectives and policies of the Regional Policy Statement (RPS); specifically, land identified as susceptible to flooding should not be rezoned for intensive residential development.

5.4 The proposed plan change addresses the coastal hazard by proposing a Coastal Hazard overlay (erosion), and where any development or earthworks is subsequently proposed within this overlay zone, site-specific assessment will be required at the time of the relevant resource consent application to ensure any development will not exacerbate or be adversely affected by coastal erosion.

5.5 For any filling or earthworks proposed within the costal erosion overlay zone, a site-specific assessment will be required at the time of the development to ensure that the works do not exacerbate coastal erosion hazards.

5.6 In the matter of coastal flooding hazard identified on the land, subject to the filling of the land to the identified levels, the land will not be subject to flooding. The provisions of the RPS will therefore have been met. The specifics of this can be ensured through a suitable condition.

6. CONCLUSION

6.1 The parameters used in the applicant's Coastal Hazard Assessment are appropriate and conservative in terms of the anticipated storm tide level and return period, the level of sea level rise, and the inland extent of the proposed coastal hazard overlay. I agree with the methodology used and the conclusions reached.

6.2 As the flooding is coastal inundation, provided that the development site's flood risk is fully mitigated through filling, to a level above the identified flood level (with VLM provision), any impact on adjacent properties is negligible, provided relevant provisions for surface flow are made to ensure natural drainage rights are maintained. The surface runoff associated with any development within the plan change area should be directed towards the tidally influenced areas to ensure effective drainage and flood management.

6.3 The proposed coastal erosion hazard overlay, set 30 m from MHWS outside the Black Swamp Road causeway and 10 m from MHWS upstream provides a prudent and appropriate approach for managing potential future coastal erosion hazards. Requiring site-specific assessments for any development within this overlay at the subdivision stage will help ensure that future development is resilient and not adversely affected by coastal processes.

Evidence prepared by James Crispin Blackburn

1 December 2025