Independent Review of the 2006/2007 Draft Whangamatā Catchment Management Plan

Review date: 19 November 2026

Prepared using the independent research prompt associated with the original report. This review distinguishes findings in the source from later research, interpretation and matters not yet established.

Original report: Julie Beaufill, Environment Waikato, Draft Whangamata Catchment Management Plan, prepared 21 November 2006; Internal Series 2007/13; document 1194680. The accessible PDF contains 38 pages, including preliminary pages and appendices. Original document: https://www.bnet.nz/FUNCTION/Cache.php?BNF=Download&CacheID=265360&CacheType=Document

Executive assessment

By 2006–07 Environment Waikato recognised the connected problems of historical catchment disturbance, river-bank erosion, stream-channel sedimentation, reduced hydraulic capacity, flooding and harbour infilling. The draft proposed integrated work across the Wentworth, Waikiekie, Te Weiti and Otuwhete catchments, with a reported programme estimate of $670,000 and recommendations for repeat channel surveys.

The report documents an established problem and proposals for action. It does not itself establish the completion, expenditure or measured effectiveness of those actions. Later Waikato Regional Council material indicates stakeholder agreement on harbour and catchment plans in 2009, except for the disputed extent of mangrove management [4].

1. Document status, purpose and method

The report was intended to guide catchment interventions alongside harbour management planning. It relies on field inspection, existing land-use and soil information, stakeholder discussions, earlier studies and a separate flood-modelling assessment. Its preparation date is 21 November 2006, but references to April 2007 inspections show that the accessible text contains later material; its exact final compilation date is not established [1].

The investigation was concentrated on river channels and adjacent land. It was not a complete sediment budget, historic seabed survey or measurement of total sediment stored within the estuary.

2. Catchment characteristics and historical disturbance

The draft describes a catchment of approximately 5,376 hectares and 81 kilometres of streams; more than 40% plantation forestry, 36% indigenous forest or scrub and approximately 10% pastoral land. These are historical land-use figures, not present-day measurements [1, pp. 6–7].

The author identifies continuing effects of earlier tree felling, gold mining and land clearance; erosion-prone soils and unstable hillsides; and the heightened erosion risk following plantation-forest harvesting. This supports an enduring influence from historic land disturbance, but does not quantify historic sediment stored in valley floors or terraces.

3. Findings by sub-catchment

Area	Findings documented	Proposed measures
Wentworth River	Severe middle-reach bank erosion, livestock access, channel sedimentation and flood restrictions	Fencing, planting, bank protection, blockage management, repeated surveys
Waikiekie Stream	Channel obstruction, sediment accumulation and floodplain concerns	Channel and erosion management, riparian protection
Te Weiti Stream	Channel and sediment-trap maintenance, forestry runoff and vegetation issues	Trap maintenance, fencing and channel management
Otuwhete Stream	Gravel deposition and reduced local channel capacity	Gravel management, fencing, planting and wetland investigation

3.1 Wentworth River

The draft identifies the Wentworth River as the priority. It describes a severely degraded reach of approximately 1.5 kilometres upstream of the old quarry, with eroding banks, inadequate vegetation and livestock access, and judges this reach probably the largest sediment contributor in the catchment [1, p. 14]. This is professional assessment rather than a measured sediment-load ranking.

The author records that fenced and planted sections reportedly experienced less erosion during a severe 2006 rainfall event than unfenced or poorly vegetated sections. This is useful qualitative support for riparian protection, but not a quantified reduction in sediment reaching the harbour.

3.2 Other watercourses

The draft describes apparent floodplain build-up in Waikiekie and stream-bed accumulation elsewhere. Appendix 1 estimates approximately 100 m^3 of gravel below Julian Drive in Otuwhete. These observations demonstrate storage of sediment within the catchment channels and floodplains; they do not establish a whole-catchment sediment volume [1, appendix 1].

4. Moanaanuanu, causeway and golf course

Printed page 13 identifies sediment accumulation in Moanaanuanu, likely reduction in river and estuary hydraulic capacity, silting of the lower Wentworth channel, a damming effect associated with the Hetherington Road causeway, flooding towards the golf course, and unauthorised stopbank or infilling activity [1, p. 13].

The report summarises three scenarios from the separate Wentworth River Flood Hazard Assessment (Environment Waikato Technical Report 2007/16): existing conditions; future conditions with mangroves retained; and future conditions with mangroves removed. Flooding could persist under both future scenarios, with greater potential extent where mangroves were retained. Those are reported model outputs, not proof that vegetation removal eliminates flooding. The primary modelling report requires separate examination before relying on detailed numerical predictions.

The report recommends channel surveys approximately every five years, acknowledging the shortage of historic measurements from which to evaluate change.

5. Historical and legacy sediment

The draft recognises an interconnected sequence: disturbance of hillsides and vegetation; river-bank erosion; deposition in channels and floodplains; redistribution during high flows; and downstream accumulation in the estuary. It documents elements of that sequence but does not provide a dated, quantified sediment budget identifying historic deposits, their ages, residence times or present-day remobilisation rates.

This distinction is important: preventing new erosion is not the same as removing sediment already stored in river corridors or the harbour. How much material remains in the Wentworth valley, what proportion is transported during floods and how much has accumulated in each harbour arm remain open research questions.

6. Tidal storage, sedimentation and coastal implications

The draft recognises that infilling and vegetation expansion can affect channel capacity, but does not calculate the historical or present tidal prism of Moanaanuanu, the Upper Harbour (Wentworth Reach), the full harbour or the harbour entrance. Nor does it quantify effects on the Whangamatā Bar, surf break, beach sand or dunes.

The previously discussed figures of 1.4 million and 3 million m^3 of sediment in Moanaanuanu have not been verified against their original source reports and must not be attributed to this draft. Deposited sediment volume is not automatically an equal loss of tidal prism: this depends on deposited elevation relative to low and high tides, tidal connection and hydraulic conditions.

7. Proposed programme, funding and implementation

Programme category	Draft estimate
Land management protection	$139,200
Riparian enhancement	$222,000
River and flood management	$169,000
Surveys and design	$39,000
Supervision and liaison	$100,000
Reported programme total	$670,000

The categories sum to $669,200 rather than the reported rounded $670,000. The programme envisaged 24,000 metres of riparian fencing, 14,500 native plants and a range of bank, channel, pest and floodway measures. Implementation was contemplated over approximately ten years, subject to agreements and funding; ongoing maintenance was excluded [1, pp. 19–24]. The draft budget is not evidence of contracts, expenditure or works completed.

8. Assessment of practical interventions

Intervention	What the evidence supports or leaves unresolved
Fencing and riparian planting	Supported as local erosion controls; harbour-wide sediment reduction not measured in the draft.
Forestry harvesting controls	Respond to identified erosion risks; performance must be monitored.

Bank stabilisation	Relevant at documented erosion sites; requires site-specific design.
Channel obstruction removal	May improve local conveyance; requires hydraulic and ecological assessment.
Wetland or floodplain restoration	Potential storage and ecological benefits; hydraulic results not calculated.
Sediment traps	Possible interception measure; capture efficiency and maintenance not verified.
Sediment excavation	Requires deposit surveys, contaminant assessment, consents and modelling.
Mangrove removal	Does not itself demonstrate sediment removal or restoration of tidal storage.

9. Later independent evidence

The following publications are separate studies and must not be represented as findings made by Beaufill in 2006–07.

- Sheffield, Healy and McGlone (1995) report dated sediment-core evidence of substantially increased estuary accumulation following human land disturbance. Rates reported for different periods are site-specific interpretations, not uniform accumulation over the whole estuary [2].
- Jones (2008) reviews regional coastal sedimentation knowledge and significant gaps, including sediment sources, storage and differences between catchment-yield estimates and core-derived deposition estimates [3].
- O'Donnell and Greenslade (2009) document subsequent harbour and catchment planning and stakeholder agreement, while mangrove management remained disputed [4].
- Stokes (2009) investigated conditions after mangrove clearance, including persistence of muddy sediment at monitored cleared sites. Vegetation removal and sediment removal must not be conflated [5].
- Hunt (2019) reviews historical estuarine sedimentation baselines; it does not constitute a complete historical volume reconstruction for Moanaanuanu or Wentworth Reach [6].

10. Outstanding records and investigations

Record or evidence	**Question to resolve**
Wentworth River Flood Hazard Assessment 2007/16	Model inputs, water levels, calibration and scenario results
Five-yearly river/channel surveys	Whether bed elevations and cross-sections were actually monitored
2009 agreed plan and revisions	Which proposals were adopted and prioritised
Works, contracts and expenditure	Which interventions were completed, when and at what cost
Sediment cores and historical bathymetry	Thickness, age and spatial extent of deposited sediment
Causeway and golf-course drainage records	Effects on tidal connections, floodwater storage and flow restrictions
Harbour-entrance and coastal surveys	Evidence for changes in entrance scour, surf break and sand exchange

The status of these records is not reconciled in this review. Their absence from the material inspected is not evidence that they do not exist.

11. Overall evidence assessment

Proposition	Status
Historical catchment disturbance and erosion were recognised	Established in original report
River-bank erosion and some channel accumulation were observed	Established qualitatively; locally quantified in limited cases
Moanaanuanu sedimentation and causeway-related flood concerns were recognised	Established in original report
Historical valley-wide sediment reservoirs are quantified	Not established
Whole-harbour accumulated sediment volume is quantified	Not established by this report
Changes to tidal prism and surf-break sand supply are quantified	Not established by this report
All proposed works were undertaken and were effective	Not established; later implementation records required

Conclusion

The Draft Whangamata Catchment Management Plan is significant historical evidence that Environment Waikato understood the connections between land disturbance, stream erosion, sediment storage, flooding and harbour infilling by 2006–07. Its central limitation is not failure to recognise these issues, but lack of the longer-term measurements needed to determine what subsequently happened to the sediment, channels, floodplain and harbour.

The most useful follow-up is to reconcile proposed interventions with completed works and repeat measurements, and to reconstruct historic and present sediment storage and tidal hydraulics using original surveys and dated observations. The report does not, by itself, establish the scale of total historic infilling or its effects on the surf break and coastal sand supply.

References

[1] Beaufill, J. (2006/07). Draft Whangamata Catchment Management Plan. Environment Waikato Internal Series 2007/13. https://www.bnet.nz/FUNCTION/Cache.php?BNF=Download&CacheID=265360&CacheType=Document

[2] Sheffield, Healy & McGlone (1995). Whangamatā estuary sedimentation study. Research record: https://www.waikatocoastaldatabase.org.nz/CoastalDataSet/Details/279

[3] Jones, H. (2008). Coastal Sedimentation: What We Know and the Information Gaps. Environment Waikato Technical Report 2008/12. https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/tr0812.pdf

[4] O'Donnell, E. & Greenslade, I. (2009). Harbour and Catchment Management Plans. Environment Waikato Technical Report 2009/27. https://www.waikatoregion.govt.nz/services/publications/tr200927/

[5] Stokes (2009). Assessment of Physical Changes after Mangrove Removal. Environment Waikato Technical Report 2009/13. Research record: https://www.waikatocoastaldatabase.org.nz/CoastalDataSet/Details/355

[6] Hunt, S. (2019). Historical Estuarine Sedimentation Baselines. Waikato Regional Council Technical Report 2019/08. https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/TR201908.pdf