

**BEFORE A HEARING PANEL  
APPOINTED BY TASMAN REGIONAL COUNCIL**

**IN THE MATTER**

of the Resource Management Act 1991

**AND**

**IN THE MATTER**

of an application by Māpua Community Boat Ramp Trust for the construction and operation of a new boat ramp and associated facilities

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**EVIDENCE OF JENNY EASTON FOR FRIENDS OF MĀPUA WATERFRONT**

**14 November 2024**

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**SALLY GEPP**  
BARRISTER

## **EVIDENCE OF JENNY EASTON**

### **Executive Summary**

1. My name is Jenny Easton. My evidence provides an assessment of the effects of the proposal on the FCC site, the contamination risks, and the effect on the adjacent beach.

### **Qualifications and Experience**

2. I graduated from Victoria University with a BSC in zoology, ecology, genetics and biochemistry and later obtained a research degree MPhil at Sussex University.
3. In 1987, with a post graduate diploma, I worked as a Government Health Protection officer in Wellington for 8 years, focussing on Toxic Substances Regs and environmental issues. In 1994 I obtained a Diploma in Resource Management at Victoria and my project was a study of the Public Health Effects of Closed Landfills under the supervision of the Wellington Regional Council officer specialised in contaminated sites. My research included locating methane leaking at dangerous levels under houses, rubbish surfacing on playing fields and landfill gas and leachate into streams and beaches.
4. I was employed by TDC as a Resource Scientist from 1995 to 2012. During this time I was closely involved with the remediation of the Fruitgrowers Chemical Company (**FCC**) site (the application site). This involved assessing reports and draft consent conditions, undertaking fieldwork with contaminated site experts, attending the Peer Review Panel meetings, liaising weekly with the consent holders and the Site Management team, consulting organochlorine experts, monitoring the estuary mud and snails and checking compliance against the consent conditions. As a result, I have a very good understanding of the nature of the site, the steps taken to remediate it, and the site closure conditions.

### **Code of Conduct**

5. Although this is not an Environment Court hearing, I confirm that I have read the code of conduct for expert witnesses contained in the Environment Court Practice Note 2023. I have complied with the code in preparing this statement of evidence.
6. Unless I state that I am relying on the evidence of another witness, my evidence is within my knowledge and expertise. The data, information, facts and assumptions I have considered in forming my opinions are set out in my evidence below, along with the reasons for the opinions expressed. Where relevant, I have stated why alternative interpretations of data are not supported. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express. I specify the material

that I have relied on in support of my opinions. I have complied with the code in preparing this statement of evidence.

7. I am a submitter in opposition to this application (#124). I am also part of the group Friends of Māpua Waterfront, a group of submitters who have joined together for the purpose of engaging an expert witness (Jenn Benden) and for legal representation. As a result, I acknowledge that I have an interest in the outcome of the application, and to that extent I am not a fully independent witness. However, my evidence is focussed solely on the issue of the contaminated site and effects, and does not address wider issues associated with the proposal. I have sought to provide an objective assessment on this topic, independent of my personal views on the proposal.
8. By way of additional context, I have lived in Mapua for almost half my life. During my childhood I lived beside the channel at 39 Tahī St. During my childhood the FCC factory was operating and manufacturing organochlorides and organophosphates. I left Mapua in 1963. The factory was closed in 1988 after a concerted campaign by the community, including my father.
9. After I left Mapua as a young adult, I remained in contact with Mapua, returning home myself and later with my children for holidays.
10. In 1995 I came back to live with my mother in the family home while I worked at Tasman District Council remediating a variety of contaminated sites, including the FCC site. I retired from TDC in 2012 and now live in Stoke.

### **Scope of my Evidence**

11. My evidence covers the following topics:
  - a. Remediation of the FCC site
  - b. Risks Associated with the FCC site
  - c. Risks associated with the Proposal

### **Remediation of the FCC site**

12. The FCC operated between approximately 1932 to 1988. An early image of the factory operating in the 1940s is shown below. The white pond between the buildings is where they tipped their waste.



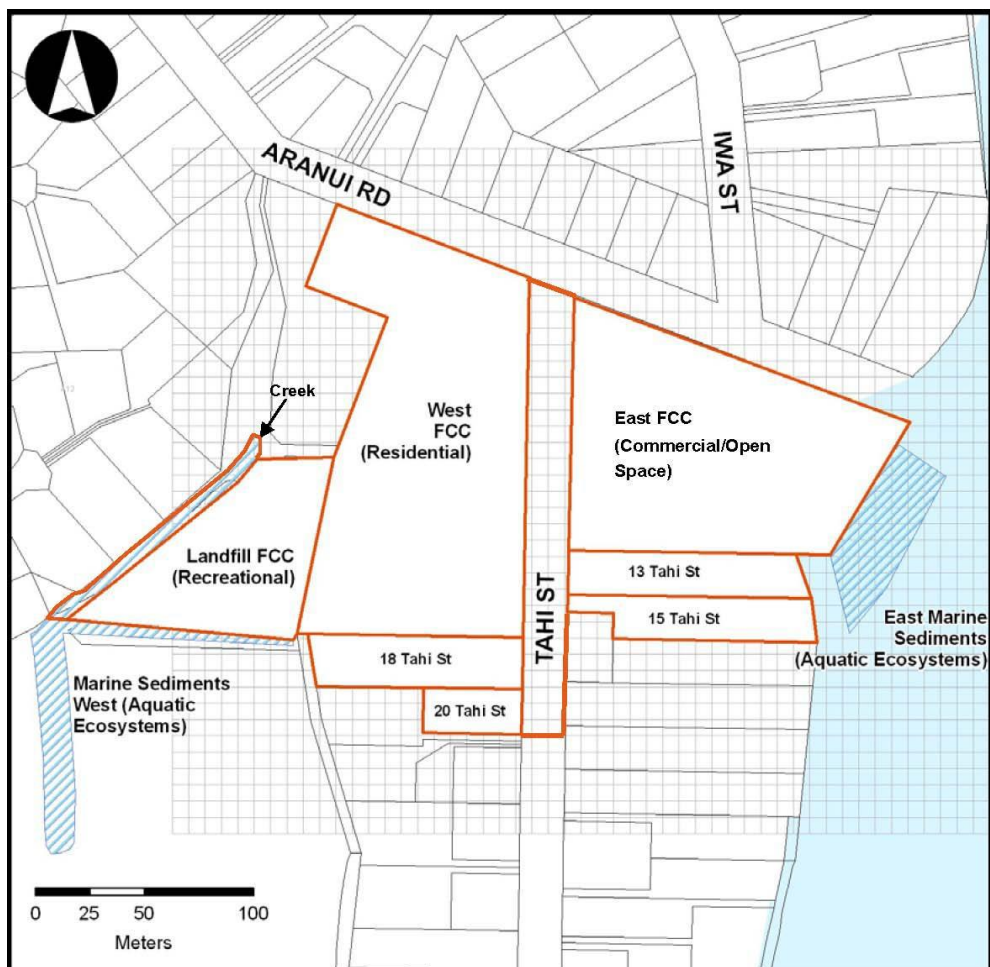
13. During its operation, it manufactured lime sulphur, arsenicals, mercuric sprays, organochloride pesticides (DDT, dieldrin, lindane, aldrin etc), organophosphates, and hormone herbicides. <sup>1</sup>
14. Later the factory expanded across the road to FCC West as shown in the image below.



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<sup>1</sup> Ministry for the Environment 2011 Cleaning up Mapua: The story of the Fruitgrowers' Chemical Company Site.

15. The image below is the Site Location Plan from page 20 of the FCC Site Management Plan (**SMP**). As can be seen, the application site is within the FCC site.



16. Following estuary and groundwater tests which showed organochlorine contamination, some remediation of the site (capping of landfill, construction of a subterranean bund) occurred in 1992. Between 1992 and 1996, contamination was mapped in soils, groundwater, estuary sediments, house dust and tidal waters<sup>2</sup>.
17. In 1996 I prepared the manifest and arranged for the removal of the 30 tonnes of drums of hazardous chemicals from the Dangerous Goods store. These drums were to remain the responsibility of the previous land owners, while TDC took over responsibility of the whole site. Then I supervised the removal of all the buildings, after which in 2001 the bare land was gridded and each 15m<sup>2</sup> given a unique identifier (letter and number) and pot hole sampled at 0.5m depths. This gave us a rough idea of the extent of buried contamination.

<sup>2</sup> as above



18. A wide range of insecticides had been manufactured onsite and the most persistent Organochlorines had been finely ground, dyed pink or green and remained buried in the soil, along with abandoned sumps, pipes and packaging waste. For a long time there was no proven way to break down insecticides like DDX<sup>3</sup> and dieldrin<sup>4</sup> to suitable concentrations, particularly in clay soils. It wasn't until 2002 that a NZ method of MechanoChemical Dehalogenation was selected and showed in a proof of performance using FCC soils that it could break down DDX from ~1000 ppm<sup>5</sup> to 100-180 ppm. The commercial site acceptance criteria (SAC<sup>6</sup>) at that time for DDX was 200 ppm and the remediation was based on this. A concentration under 200 ppm was achieved for 10,500m<sup>3</sup> of material at the site. 30,000m<sup>3</sup> of material did not require treatment as it was already under DDX 200 ppm.<sup>7</sup> Early calculations showed that the FCC East (the area that is now the Waterfront Park) could hold all the material that exceeded the residential SAC and was under the commercial SAC.

19. Paragraph 14 of Gareth Oddy's Statement is incorrect where he says that some of the contaminated fine material went off site for disposal. For clarification, the only material disposed of offsite was pure product of DDT and dieldrin prills that went to France for high temperature incineration

<sup>3</sup> **DDX** is the sum of both isomers of DDT, DDD and DDE.

<sup>4</sup> **Dieldrin** is the breakdown product from Aldrin and is used here to mean both aldrin and dieldrin.

<sup>5</sup> Parts per million

<sup>6</sup> **SAC** are the specific Site Acceptance Criteria of the different pesticide residues for the proposed scenarios of this HAIL site and adjacent estuary.

<sup>7</sup> Data provided by The Site Manager Sept 2023 to J Easton

along with other sacks of DDT collected from around the country. Mr Oddy's statement (para 15) that the 50cm cap is "all topsoil" is incorrect if it is intended to mean uncontaminated material. To clarify, it was composed of 35mm of subsoil with residential SAC of 4ppm DDX and covered with 15mm of imported topsoil for the grass sward.

#### *FCC East – Waterfront Park*

20. The decision for FCC East to be the Waterfront Park was made by the Mapua community and Ministry for the Environment in early 2004, and it did not include adding a boat ramp. The engineered containment strategy included a clay bund to protect the estuary and a "French Drain" system of 50m<sup>2</sup> cells with crushed concrete on the 4 sides and underneath the 3-4 m deep cells to channel the groundwater away from the pesticide residue. This "French Drain" system was considered Best Practice at the time, however the groundwater level has changed to include areas of contaminated material, and the groundwater monitoring shows continuing contamination. The Site Auditor did not consider it is creating an unacceptable risk<sup>8</sup>. The cells were heavily compacted, and the site cambered to encourage stormwater runoff into the swale. The half metre cap of subsoil and topsoil was placed over the cells.
21. The image below shows topsoiling and grassing after remediation. The MechanoChemical Dehalogenation plant is in the background, on FCC West.



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<sup>8</sup> PDP 2009 Audit of the Remediation of the former Fruitgrowers Chemical Company Site. Exec Summary

22. The as built plans for the site are provided in the 2008 Sinclair Knight Merz Validation Report and record the type of material used in every layer of each subgrade cell. The Applicant's Appendix 7 (2022) shows that subgrades SG14 and SG 15, where the mature trees are on the Waterfront Park, has the most contaminated soil, which is commercial SAC up to 200 ppm DDX right under the cap, placed there to keep it away from the ground water.

#### *FCC West or Kite Park*

23. The FCC West was remediated to residential SAC to be suitable for housing. This was part of the commitment made by the Council when it agreed to contribute \$2m towards the remediation work. The sale of that land would enable the loan funded by the Mapua Rehabilitation Rate to be paid off.

#### *Marine Sediments*

24. DDX and dieldrin are extremely toxic to marine ecosystems, with a SAC of 0.01ppm. The challenge in remediating the FCC site was to engineer a containment system to secure the remaining pesticide residue up to 200 ppm DDX so it could not escape into the estuary. Monitoring shows the marine sediment SAC has been exceeded on the East beach (2009 DDX 0.3-0.013ppm). However, the Site Auditor Sec 6.2 (PDP 2009) considered the beach to be remediated to the "extent practicable" which is a subjective test, assessed under specific criteria.
25. This SAC for the marine sediments was calculated by Egis 2001 to be 0.01mg/kg DDX and 0.01mg/kg dieldrin based on the acceptable concentration in seafood for human consumption, and to be protective for recreational users such as children on the foreshore. The west estuary side of FCC has extensive mudflats and edible mud snails *Amphibola crenata* that are the bio-indicator for this site, with a bioconcentration factor of 10. The FCC East beach no longer has many mud snails, and it may be appropriate for TDC to adjust the SAC using total organic carbon.

#### **Risks associated with the proposal**

26. The removal of the boat shed building, the associated trenching for service ducts, and the removal of a SW pipe under the accessway and SW treatment device beside the beach have significantly reduced the amount of contaminated soil that will need to be excavated. However, risks remain, as set out below.

#### ***On land***

27. To preserve the integrity of the site it is critical that a cap remains in place. Some of the pesticide residues in the contaminated soil below the cap may have migrated up into the subsoil. FO1 shows that the construction of a



concrete accessway over the site will involve removing areas of the subsoil, and replacing the cap with concrete. Extreme care will need to be taken not to expose the contaminated soil in the subsoil or below the 500mm cap where it could be washed or blown as dust off site.

28. The access way extends across an area of SG 14 and 15 where mature vegetation which is growing in highly contaminated soil beneath the cap. This soil has not been tested recently, relying on the As Built information in the 2008 SKM Validation Report. This has serious implications for the proposal to remove the mature trees as the root balls will very likely be in this highly contaminated soil. This soil poses a risk to the personnel undertaking this task, and a higher risk to the estuary should the soil be unintentionally released into the marine environment.
29. Gareth Oddy's evidence at para 42 (pg 9) includes a suggestion to spray the vegetation with herbicide to reduce the amount of root removal, and leave the deeper roots in-situ. If that is satisfactory for the stability of the access way that should be achievable with minimal risk. If not practicable, another option is to dry brush the contaminated soil back into the hole and replace the cap.
30. Officers report sec 19.8 ( pg 91) requests design detail of the swales to meet 1% AEP storm event. It is possible the shape of the swale will be altered to meet this requirement, but there is no discussion by the applicant of the possibility of altering its shape or removing some of the vegetation inside it. The swale close to the beach is over SG 14 and 15 with very contaminated soil under the cap, and soil testing should be required.

### ***Disposal of contaminated soil***

31. The Applicant FO1 and Oddy's evidence para 42 indicates they are intending to excavate 5m<sup>3</sup> of contaminated soil for two culverts, through SG 8 which contains treated fines probably containing 100 to 180 ppm DDX. The local landfills cannot accept this contaminated soil unless it meets the leachate test of 0.02mg/L. If it cannot be replaced on site Gareth Oddy's evidence para 44 mentions the possibility of HSNO notice 2023 from the EPA which, if active, would allow sealed containment inside a landfill of less than 50 mg/kg DDX. I do not know the likelihood of this notice being enacted. The SMP Nov 23 has a fallback option of disposal to the Burwood landfill in Christchurch.
32. Transport and disposal of soil taken off a HAIL site is one of NESCS matters in Sec 10 (3) (e) and this is also an important issue for the FCC SMP. Testing SG8 before the trenches are dug would provide useful information for the Applicant and TDC. A plan should have been provided as part of the

application to clarify what is proposed for the disposal ( or reuse) of contaminated soil excavated from a HAIL site.

### **Boat Ramp**

33. Gareth Oddy's evidence at para 42 (pg 8) includes a phrase under Concrete ramp "*removal of ex Boulders/bank- 50m3.*" I have not seen an engineering proposal to remove the boulders and 50m3 of material protecting the sea wall but I consider this has significant risks for mobilisation of contaminants. My understanding when this was constructed was that the boulders are integral to protecting the clay bund, and I had assumed the ramp would be built over the top of the current sea wall. I made enquiries with the retired FCC Site Manager John Roosen (currently in Australia) who has advised by email that "...removing the rock wall and excavating into the surrounding soils and the clay wall would be disruptive to the site..... it could also jeopardize the wall's integrity". ( Ref: personal comm with Jenny Easton 10 Nov).
34. The sampling done in 2022 for the Detailed Site Inspection sec 6.1 records that the topsoil layer is missing in the area of sample S04 above the current walkway, on the edge of the estuary and the exposed clay bund is contaminated, with 3.5 and 4.8ppm of DDX which could be washed off into the estuary. The ramp would be constructed over this area which would contain this contaminated clay, however the baseline survey recommended in the next section will need to see how far this contamination has spread.

### **On the beach**

35. The marine sediments on the FCC East beachfront have not been tested since 2018. If consent is granted, I recommend that TDC carry out a baseline survey of the marine sediments before the ramp is built and the marine gravels are disturbed. As well as the beach in general, I recommend testing for hot potential spots such as the swale, SW discharge area, area below the rocks from the sloping walkway, old surge chamber location and the seep on the beach.
36. The Applicant is silent on whether they will be testing the 155m3 of marine gravels they remove during the construction of the coastal ramp and reno mattress, two spare sewer pipes, and H5 SED poles.
37. The officer's report is critical of this lack of information, and in sec 17.17 notes that "*Ongoing monitoring will be required and possible further remediation. Site Management plan will need to address the marine sediment issue*". I agree that a detailed Site Management Plan is required to be able to address the marine sediment issue.
38. These sediments should be tested **before** they are spread out on the beach, and a decision made by TDC whether that is appropriate or an alternative

location is required. TDC may decide to adjust the SAC and this will influence this decision and assist in meeting NESCS sec 10(3)(c)(i).

### **Conclusion and recommendations**

39. In my view the Applicant has not provided adequate engineering detail in the application to enable the potential effects on this contaminated site to be understood, and this is not acceptable for construction on a HAIL site. The NESCS also requires detailed information for a restricted discretionary activity. The specific FCC Site Management Plan is mandatory and all work under the NESCS must adhere to it.
40. The NESCS consent should not be granted without more detailed information which includes Sec10 (3) (c) (i) human health risks from the contaminated marine sediments, and the requirement for and conditions of a financial bond under Sec 10 (3) (f).
41. Several aspects of the application (leaving root balls in situ, removing boulders, disturbance of cap material, altering the swales, excavation of 5m<sup>3</sup> of treated fines for SW culverts, and disturbing the marine sediments) create significant risks of mobilisation of contaminants. Based on the information provided by the applicant to date, I consider that those risks have not been adequately assessed or mitigated.
42. In summary, I recommend that:
  - a. The Applicant should provide **all** the information required by NESCS Sec 10 for a restricted discretionary activity.
  - b. The detailed site inspection and Site Management Plan should include the beach where the marine gravels will be disturbed, and these marine sediments must be tested before they are relocated or taken offsite.
  - c. NESCS sec 10 (3) (e) requires information on offsite disposal. Prior soil testing in the proposed culvert area will indicate what options there are.
  - d. The rocks on the seawall must not be removed unless it can be demonstrated that this carries no risk to the integrity of the bund.
  - e. The detailed site inspection should include the swale if there is an intention to modify the shape or vegetation.
43. Regardless of whether consent is granted, in my opinion it would be appropriate for TDC to:
  - a. Revise the FCC SMP to include the East beach, and the West landfill beach.

- b. Carry out a survey of the contamination in the marine sediments on FCC East beach, including potential hot spots. As well as the beach in general, I recommend testing for hot potential spots such as the swale, SW discharge area, area below the rocks from the sloping walkway, old surge chamber location and the seep on the beach.
- c. Consider adjusting the marine sediment SAC for the FCC East now the mud snails are not dominant.

Jenny Easton

14 November 2024