

Penny Hargreaves Presentation to ECAN Hearing NO CRC 190445 November 2018;

Good afternoon. I am Penny Hargreaves and from 1992 I have owned 64 acres at Lower Styx Rd and my northern boundary is approx 1 kilometre of the Styx river. Within a month of my owning the farm the 1992 storms resulted in the highest rainfall in the last 30 years but there was NO significant flooding at my farm as the Styx had been very well looked after by the Drainage Board and was able to fast evacuate when the gates were open.

My evidence will show the Council guardianship of the Styx from 1993 on has created a mud filled, tree obstructed disaster and Styx water cannot fast flow to exit at the gates. .

After I presented my submission I was phoned by an ECAN senior enforcement officer who asked me to record indepth details & photos of the Styx issues. Today I delivered that rather hefty document to ECAN offices which has also been sent to the Government and I am sure will be available to you if you want

I will attempt to explain as briefly as possible increasing flood risk to Ch.Ch. East from both the Styx & Waimakariri and Councils' know this can be reduced with proper management.

The Styx river evidence shows ECAN & ChCh Council decisions from 1998 onwards have *magnified* flood and health risk by instead of adopting the 1994 suggested solutions which corresponds with NIWA scientists 1993 advice, both Councils have adopted a 'DO Nothing' option which has allowed Christchurch to increasingly revert back into unhealthy swamp.

The 2013 ECAN Consent permitted Council to discharge increasing contaminants and stormwater to the Styx and the residents evidence presented here identifies the Council and ECAN have NOT ensured the Styx is mitigated and complies with RMA rules.

Regional & ChCh City Council 1994 report page p7 says [1] *'Like Whenau before them the early European settlers found the floodplains good places to settle'* Ngai Tahu Elder the late Rikki Tau told me when the settlers arrived Maori did not live permanently in ChCh wet lands but used it for food gathering and in particular the Brooklands area which is adjacent to the Waimak estuary. He also told me the Styx used to be shingle based with fresh water crayfish and teaming with fish. Now it is a mud filled, tree obstructed, ecological disaster whose quake collapsed banks and narrowing of the river increasingly obstructs free flow and causes increased back up of water over the whole Catchment. [2][3][4] [5] [6][7]

Photos show Ch.Ch. Council has failed to CCC with The Resource Management Act

- 1) To Provide for the preservation of natural character of river and their margins.
- 2) Increased flooding and pollution does not enhance public access along rivers, *and*
- 3) Is not an efficient use of natural and physical resources, *and*
- 4) Does not maintain and enhance amenity values, *and*
- 5) Does not maintain and enhance the quality of the environment.

[8] The ECAN, 2013 Stormwater Discharge Consent says:-

6.1.62. *That the proposal is premised on protecting present and future health safety and investment in the Styx Catchment notwithstanding accomodating significant development within the SMP area. It offers reasonable certainty as to long term outcomes and seeks to improve on current (minimal) mitigation of flooding and water quality issues.*

6.9.3 *The District Health Board submission raised concerns regarding the new proposals had potential to create mosquito & biting midge breeding habitat.*

Pakeha decision to make Christchurch a City was based on utilising ChCh. rivers for travel but the priority was to drain the unhealthy swampland via the 3 rivers.

[9] Extracts from a book identifies early ChCh decisions were made to ensure the rivers drained fast and the water table remained low in order for Christchurch not to return to swamp – Dr Chesson was District health office explains what remains true today ' the subsoil in ChCh must not be waterlogged as will return to unhealthy swamp *and* he was determined that health was much more important than river beautification or entertainment He knew high water tables in ChCh increased risk of water borne diseases such as diphtheria, typhoid, malaria. I do not think Dr Chesson would agree with the new policies.

[10] Shows Council doing away with good flowing boxed drains and now plants obstruct flow returning ChCh to wetland and increasing risk of disease with global warming.

[11] Why has ChCh not adopted ECAN policy for Halswell area drains whose tussocks allow free flow but give cover for birds, insects etc. Different ECAN rules for Selwyn??

ECAN knows their 2013 decision failed to ensure Styx Mitigation before allowing increasing stormwater and has increased flood risk to the whole Catchment.

[12] In 2015 Ms Beaumont said the new 3 Water policies would fix ChCh flood problems.

ChCh rivers & Well Heads have deteriorated further under 3 years of Ms Beaumont's 'Three Waters Strategy' which has raised the water tables and resulted in the controversial chlorination of our pristine water. The 2018 Styx evidence shows the 3 year 'Do Nothing Policy' has increased flood risk to people, houses, farms and investment including demise of the Korean Golf Course project and now threatens Radio Network Ouruhia operations.

[13] Shows the huge area which drains to the Styx from the airport to Brooklands gates

[14]. These floodgates are closed for approx 2 hours each side of high tide by weight of water and the Styx if it is full has nowhere to go except to back up river. to when tides and or Waimak is high they are closed for much longer than the approx 12 hours a day.

[15] [16][17] Mr Harrington gave his 1 in 50 year flood predictions to the 2013 hearing which were soon shown to be flawed as 2013 & 2014 flooding in only 1 in 8 year rain events exceeded his predictions;- as you can see flooding nearly caused fatality when 2 people drove off the road into the Styx.

[18] Page from Regional & Ch, Ch Council 1994 report explains the Styx most severe flooding was in August 1992 & 1986 when high tides co-incident with river floods causing ponding behind closed tidal floodgates. 2018 Solution; Styx diverted higher up lagoon.

[19] ECAN 1992 & 2014 aerial maps shows ECAN knew the 2013 & 2014 only 1 in 8 year rain events exceeded flooding when much higher rainfall in 1992 and in **2014 water was not reaching the floodgates** due to a MUD PLUG at Brooklands near Kainga drain exit. The flooding was not caused by malfunctioning floodgates but by Mr Harringtons refusal to remove mud and trees obstructing the Styx flow in particular near the Brooklands wellhead

[20] Mr Harrington's 2012 Styx report identified quake sunken land obstructed Styx flow close to Kainga and Spencerville drain exit to the Styx river. The question is WHY was the Styx not dredged there at the same time as the Spencerville area was dredged in 2013. Engineers know the area close to the gates must be able to free flow or water cannot exit.

[21] Opus 2016 report has colluded with Council in concealing the CCC engineers for many years have failed to keep the Kainga & Spencerville drain exit close to the Mudplug clear which causes water to back up over a large area including Winters & Wakelins land.

[22] Craig Wakelins recent interview with a local rag identifies for more than 15 years Council failed to remove the Brooklands 'Mud Plug' which made his farm and the Korean proposed new golf course land into unusable wetland even when there was NO rain. Craig farmed the Korean land and saw it increasingly became unusable swamp. Commissioner Cartwell will remember this was not the case when local farmers used him as their lawyer to unsuccessfully stop their land being designated by ECAN and Council as Variation 48.

[23] Variation 48 meant farm land would only be used as floodponding in major floods however photos show the land has been increasingly flooded when there has been NO significant rainfall and drains like Shepherds at Richards farm are unable to empty to the Styx, and water backs upstream for several ks destroying plantings & threatening homes.

[24] Example of when the obstructed Styx cannot free flow and even when there is no rain causes Styx overflow & drains from Brooklands to Redwood are unable to exit and water has nowhere to go except backs up the catchment. What happens in high rainfall events?

[25] Photo of the Styx at Marshlands Bridge when there had been NO rain.

[26] Photo of the same location after the Brooklands mud plug was removed. Is it just a coincidence that the Brooklands MUD plug was suddenly removed in June 2018 and the Styx went down more than a metre overnight in some places ONLY after the Korean golf course plans were aborted after now being made by Council into swampland and after Council engineers had done cross sectional readings on the deliberately flooded Styx & Kaputone. Council can now falsely claim that land must be designated ponding which has never previously flooded until engineers refused to removed the obstructing mudplug.

[27] After spending millions Thomas Nga is unfairly threatened with prison by the OIO and to help him get Justice I have sent a copy of the hefty information I gave to ECAN today.

[28] **What has \$30 million allocated to the Styx in 2010 been spent on?** The At Risk from flooding angry residents have attended many meetings from 2013 to try and get the Styx mitigated including farcical expensive workshops and 'Fix the Styx' meetings with engineers. Angry residents were continually fobbed off by Council engineers & Councillors

[29] **Solution to fix flooding is remove all obstructions as advised by NIWA in 1993.** Mr Harrington blames the Styx gates however his 2012 report shows he knows the MUD PLUG obstructs Styx flow exiting at the gates. **WHY** has ECAN not insisted new storm water could not be released to the Styx until the river was mitigated in particular after the 2014 flood map shows the Styx is breaking its banks wherever the Council unmitigated trees and quake collapsed banks obstruct free flow. ECAN & ChCh Councils knew the worst flooding was in the obstructed area next to Brooklands well heads which supply drinking water to Brooklands, Kainga, & Spencerville.

[30] This hearing shows ECAN & Council are continuing to fail to look at flood solutions which were advised by NIWA scientists in 1993 and identified in the 1994 report, including;

- 1) Maximise Styx channel conveyance, *and*
- 2) Increase channel dredging program, reduce trees and other vegetation on banks and berms, widen channels where possible. Construct stopbanks, encourage rapid filling of the floodplain., *and*
- 3) Require stormwater discharge to soakage, divert headwater tributaries out of the catchment increase stormwater storage in natural basins like Styx Mill.

[31] Instead of creating stormwater basins in Styx Mill the Council failed to ensure Northwood development contained its own stormwater and also opened up new aquifers without Resource consent which have doubled the Styx flow at Styx mill basin.

[32] The 1999 storm caused increased release of stormwater into the increasingly neglected Styx and caused flooding for the first time over most of the Ouruhia tower land

[33] In 1997 Regional Council advised Council to keep water away from the tower base Question is **WHY?** was nothing done to remove Styx obstructions to allow water to fast flow in this area which would avoid flooding the radiotower and Korean new golfcourse.

[34] In 2004 Council opened up a Northwood Boulevard new aquifer which pumps millions of gallons of pristine water into the already overflowing Kaputone and Styx

[35] In the 2010 quakes the Radio Network tower rocked tilted & sank into the new very high water table and continued to transmit FM & AM now under as well as over ground.

[36] In Feb 22nd 2011 quake the 358ft unusually powerful transmission tower sunk further into the high water table until rising waters caused a dangerous Short Out

[37] Ex US Military Colonel Beardon advises tower Short Outs can cause an under ground HUGE electro- gravitational wave. Ouruhia EG wave would focus to Port Hills gravitational Volcanic rock which was the 2011 epi centre. Question is which was first? Tower Short Out or the quakes? Seismic experts say the ChCh quakes were very unusual.

[38] 1990 to 1999 radiotower power records show Feb 2011 power records would identify what time the Ouruhia radiotower Shorted Out. Was it prior to or during the quakes?

[39] The 2013 1 in 8 year event showed ECAN & Mr Harrington his 1 in 50 year flood predictions were wrong at the Ouruhia tower *and* both knew the flood threat is increasing in this location as obstructions are mostly where Styx loops the tower.

[40] Mr Harrington claims the Styx monitoring gauges show no difference in water levels after ECAN 2013 consent allowed increased discharge to the Styx. Both ECAN & CCC know the locations of the 3 gauges does not monitor Styx highest water levels.

[41] Mr Harrington deliberately deceives by claiming Radcliffe Gauge shows no change in water levels. He knows 'Styx Source to the Sea' Radcliffe Rd development diverted water from the Styx at Radcliffe Rd bridge into the Kaputone which enters the Styx at Marshlands Rd bridge where the monitoring gauge shows upriver Styx true water levels Mr Harrington knew Marshlands Rd is the only gauge recording Styx accurate upriver levels.

[42] Mr Harrington knows the Richards gauge does not record peak of water levels as can be seen between Marshlands Rd and Brooklands the Styx when it reaches certain levels and even when it is not in flood the water goes 'walk about' flooding trees and farmland. The ECAN 1992 & 2014 maps confirm increased flooding due to increased stormwater.

[43] Photo & ECAN flood maps show the peak flow is not reaching Brooklands Gauge s

[44] Mr Harrington in March 2018 again tried to deceive residents at a Styx river meeting when he admitted the Styx was overflowing when there was no rain and he claimed the increasing developments were not to blame as stormwater is only released when it rains. 2018 Photos of increased water and sediment pumped from Northern Arteral land showed Council knew Styx overflow was new roading and new upriver developments dewatering.

Flood solution;- divert all Styx and Cranford St water away from the floodgate controlled Brooklands exit into a newly constructed canal north of the work in progress Northern arterial which can then flow directly to the Waimak . Note;- make 1000 of acres flood free for ever and allow ChCh to develop safely in the Styx Catchment. .

[45] Photos of continuing Styx overflow saturates land threatening homes & businesses.

[46] In Dec 2017 the CCC engineers said 'they would do what residents wanted and dredge the Styx at Spencerville'. The engineers knew the residents ONLY wanted Spencerville quake collapsed East bank removed and also wanted the Brooklands mud plug removed to allow Styx to free flow and exit at the gates instead of backing upriver.

[47] * **Attached pendrive of photos** we took of the \$1million Spencerville dredging show the quake collapsed bank obstructing the Styx flow downriver was not removed only the bank opposite and now even when there has been NO rain the Styx at Spencerville now overflows out across Winters & Wakelins land.

[48] Council reports identified the previous dredging at Spencerville was not successful and the 1993 NIWA report identifies that the lower Styx needed dredging **first** to allow the upriver sediment to flush out. Council knew leaving the Brooklands mud plug created a continuing dam which built up increasing sediment over the 15 years of neglect.

[49] Photos show in early 2018 when there was NO significant rainfall the obstructed Styx adjacent to the radiotower continually overflowed across the Korean proposed golf course raising the whole water table and making it impossible to develop.

[50] Council knew they failed to comply with Policy 5.2.5 when a) increasing the Styx known stormwater hazard by increasing release of stormwater when the evidence shows the Styx is at flood capacity due to the floodgates stopping water exiting. and b) by allowing the Styx river bed to remain obstructed and allowing it to narrow with trees and mud they have forced the Styx water to find new avenues to flow and thereby *Transferred* responsibility for the Stormwater Hazard to others including homeowners, farmers, the Korean Golfcourse owners and the US owners of the flood threatened Ouruhia radiotower

[51] The Stormwater flood hazard will be increased in the next storm as many upriver developments are now and are planned in the future to release increasing storm water into the unmitigated Styx whose flow is obstructed by mud and trees. **Flood Solution.** Belfast stormwater should all be diverted to the Waimak through the Silver Ferns old effluent pipe

[52] February 2018 ECAN engineer, Tony Boyle spent several hours with me looking at the Styx and Brookland lagoon flood problems and gave me the ECAN completion draft of the Halswell river mitigation. He told me the Lincoln subdivisions were not permitted until ECAN mitigated the Halswell and Liffey rivers. **Floodng Solution, Mitigate the Styx**

[53] This identifies Halswell river & drains cost 2 million to mitigate;-Mr Harrington claims it will cost \$100 million to Fix the Styx which is shorter? WHY is the Styx so expensive?

[54] The Council has allocated more than \$3million to 'save' the lamphreys spawning ground which they now know is NOT limited to Marshlands bridge;- it would seem much more constructive for Council to use this money to dredge the Styx as Lamphreys do not like mud and Professor Hardy advises mud removal would allow fish and ecology to thrive.

[55] Extract from the Banks of the Avon shows in the 1800s Avonhead resident Mr Bray predicted and was correct when he said the Waimak would disastrously flood ChCh ;-

Although I spent my childhood at the same Avonhead farm I did not know of Mr Bray until I was received this book at the same time as I received the overwhelming evidence which shows IF Brooklands lagoon is NOT stopbanked the Waimak will disastrously flood Ch.Ch.

[56] 2017 Earlham St flooding from the lagoon when 2.7tides and only 68 cumics in the Waimak – in early 2018 high tides again forced water down the quake sunken Brooklands lagoon to flood Spencerpark when less than 42 cumics in the Waimak.

[57] In 2017 CCC engineer gave me an Orange Map which shows where the Waimak will flood

down into Styx catchment as high up as the radiotower and down to ChCh via Parklands. This was compiled before quakes sank the lagoon as noted by Mr Harrington.

[58] 2018 Mr Boyle came to see me and gave me the 2007 McPhersons map which shows 72 kilometres of the Waimak is double stop banked but the Brooklands lagoon is an open mouth waiting to receive flooding when high tides stop the Waimak exiting at the mouth.

[59] The recent Waimak high water bank to bank at 1400 cumics did not co-incide with high tides but is a warning of the Waimak power when flooding via Brooklands lagoon.

[60] In 2009 \$34million allocated to stopbank the Waimak **WHY?** was Brooklands lagoon not done at the same time as it is the most vulnerable area to flood ChCh?.

[61] Waimak Council looks after Kaiapoi which would not be liveable if it had not been stopbanked. **WHY** is Lower Styx catchment not stopbank protected by ChCh Council. .

May 2017 I presented evidence to the Christchurch Long Term Plan showing the ECAN & Christchurch engineers know it is a VERY HIGH Probability when high tides correspond with the Waimak in flood and water will have nowhere to go except down the Brooklands unstopbanked known to be quake sunken lagoon into Ch.Ch. and out via the estuary.

Engineers Mr Boyle and Mr Harrington admit this flooding could be next week or 5 years time but with increasing high tides there seems no doubt it will happen and destroy most of the storm water and beautification currently being discussed at this hearing as the Styx, Avon and Heathcote will back up due to Waimak changing its course. Because of quake caused sinking toward the Port Hills once the Waimak alters course to the estuary it will be very difficult to persuade it back to its current exit. The 2009 predicted damages costs was **\$8billion;** -inflation will increase flood damage costs.

Information on this is included in today's 'bundle' given to ECAN Office and is also being sent to Lloyds of London who are the insurers who still carry most of Ch.Ch. risk.

Thank you for your patience in listening to me and I hope will help in Fixing the Styx.

Sincerely

Penny Hargreaves;- 119 Lower Styx Rd. Bottlelake. Christchurch.