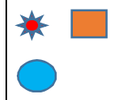
OPTION A SUBMISSIONS

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
3	A	4	4	4	5	5	3	Option C will have a greater impact to residents in an area that Dudley Creek has no effect on. It will also cost the most which in a time of increased rates the council staff should have considered before now. Option B will also have a greater effect on residents and rates. Option A is a must as it follows natural contours should be the most cost effective and have we not realised that altering what nature puts into effect is bad for everyone.	Thank you for your submission. Option C will have construction impacts on some residents including residents away from the creek. Option A and C are expected to have similar costs, Option B is likely to be more expensive.	
27	A	5	5	4	5	4	5	Option D. Another option and the one I feel would solve the flooding in the low lying areas around the Flockton Basin (*and at a later date, Richardson Tce area) Build a small set of flood gates at the banks Ave River Rd bridge where the Dudley Creek enters the Avon River. This would be coupled with a pump to move water from Dudley Creek into the Avon at times of heavy rain coinciding with a high tide. Tides are the main reason water builds up along the lower lying area. This could be a trial for future flood gates at the Bridge St bridge and *Ferrymead bridge. Cheers.	The team considered a flood gate and pump station on Dudley Creek at the Avon River. Hydraulic modelling showed this option provided benefits to lower Dudley Creek, but the benefits did extend far enough upstream to achieve the required flood reduction at the Flockton Street area.	
28	A	3	4	5	2	2	5	As a resident of the Flockton Basin subject to the flooding, we still are very uneasy when it rains heavily. We know the solution has not been completed and live with the threat of more flooding. We urge the council to decide on an option and proceed with urgency. We are afraid that this process is going to stagnate and that we will remain at risk of flooding.	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	
29	A	4	4	5	4	4	3	1/ First choice option A (second choice option B) 2/ The trees in Warden Street are not attractive and should be improved. (Visitors comment as well as my own) 3/ Would prefer an open stream down Warden Street with closed section mid-way, single land, passing bays. If not feasible-improved landscaping to enhance. [redacted]	An open channel option was considered at a high level but was discounted due to the depth of excavation required, potential stagnation of flood water in the base of the channel and impacts on the road corridor and existing utilities.	
95	A	5	5	5	5	5	4	I prefer Option A because: 1. This appears to have the least engineered-hard surface solutions eg less piping, and, disruption to private land. 2. Makes best use of waterways and already low lying and red zoned land as a flood plain. 3. Greater opportunity to enhance waterways and for public use - recreational and visual. 4. However I would like to see greater enhancement of the stream alongside Stapletons Road as well, to enhance the waterway and flood plain capabilities where possible eg where the retirement home stood near Dudley Street. 5. Location of current works on stream at Shirley Rd-Emmett Street -former church and EPH - use the vacant land as flood plain too otherwise development will again encroach into the waterway. 6. Land acquisition of the above mentioned sites may cost more upfront however it would be cost effective in the longer term. Achieve, ongoing enhancement-prohibit development within water ways /esplanade setbacks.	Thank you for your submission.	

THEMES

- Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity
- Concerns relation to impact of the works on Banks Avenue
- Moving the flooding problem from one community to another
- Increased flow of water into the Avon River
- Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
127	A	4	5	5	3	2	2	Dudley Creek Options for downstream, long term flood remediation Preferred Option - Option A Looking at the report, I see the project objectives in the main Report Document dated 12th June 2015 item 1.2 states return the Flockton area to pre EQ levels of flood risk but would question if this same courtesy is being afforded to the other communities in the downstream area, in particular where the outflow of any of these options increases the flood risk of the Avon. At the first drop in session I asked if flood modelling where the proposed outlets would meet the Avon had been looked at and was told that this had not been done. Due to the drop in our street (Woodchester Avenue) of between .5m to .75m and subsequently most of Woodchester Avenue now being in the 50 year flood plain which it was not in before the earthquakes, and the agreement from the Council Officers that the total flow volume of the Avon would be increased without taking into account storm surge or high tides I feel that this would significantly increase the risk or vulnerability to our home and the rest of our community. In the Consultation Document on page 21, Decision Making, Paragraph 2 The Council needs to be sure the downstream works, wherever they are carried out, provide a well-balanced and well-designed option for improved flood defence for the community. With this in mind, I feel that I must ask that the City Council communicates with the vulnerable communities around the Avon, and works collaboratively with ECAN and Central Government to provide robust outcomes to ensure that flood protection is provided to our community and all those affected, not just in the Dudley Downstream Remediation. Of the 3 options, I would consider option A to be my preferred option. Increasing the volume of the existing part of the Dudley Creek would be a strategic way to mitigate flood risk, whilst still having the ability to improve the amenity value along the waterway, as stated in the Downstream Options Report as a Secondary Project Target. Currently on the Banks Avenue section of the Dudley Creek, properties from 96 Banks Avenue to where the creek junction meets the river which are in the residential red zone, will often flood at times of heavy rainfall in the catchment area. If option A is the chosen option, this area?" which is currently boggy, and in parts swampy, could have the potential to return to a native wetlands style area. I see that option B and C are heavy manmade structures and are being proposed for areas that underwent huge lateral spread and undulations which caused significant impact to underground services, so much that gravity systems for wastewater are unable to be fully reinstated. I would oppose the spending of so much money in these areas on this type of structures which could be vulnerable in future events. Banks Avenue is a pre-existing waterway and I feel that installing new waterways where there were none before, especially close to areas of global and localised lateral spread would be further undue risk to Council Assets.	The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	

THEMES

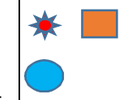

Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity


Concerns relation to impact of the works on Banks Avenue


Moving the flooding problem from one community to another


Increased flow of water into the Avon River


Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
128	A	4	5	5	2	2	2	Dudley Creek Options for downstream, long term flood remediation Preferred Option " Option A Looking at this report, I see the project objectives in the main Report Document dated 12th June 2015 item 1.2 states return the Flockton area to pre EQ levels of flood risk but would question if this same courtesy is being afforded to the other communities in the downstream area, in particular where the outflow of any of these options increases the flood risk of the Avon. At the first drop in session my husband asked if flood modelling where the proposed outlets would meet the Avon had been looked at and was told that this had not been done. Due to the drop in our street (Woodchester Avenue) of between .5m to .75m and subsequently most of Woodchester Avenue now being in the 50 year flood plain which it was not in before the earthquakes, and the agreement from the Council Officers that the total flow volume of the Avon would be increased without taking into account storm surge or high tides I feel that this would significantly increase the risk or vulnerability to our home and the rest of our community. In the Consultation Document on page 21, Decision Making, Paragraph 2 The Council needs to be sure the downstream works, wherever they are carried out, provide a well-balanced and well-designed option for improved flood defence for the community. With this in mind, I feel that I must ask that the City Council communicates with the vulnerable communities around the Avon, and works collaboratively with ECAN and Central Government to provide robust outcomes to ensure that flood protection is provided to our community and all those affected, not just in the Dudley Downstream Remediation. Of the 3 options, I would consider option A to be my preferred option. Increasing the volume of the existing part of the Dudley Creek would be a strategic way to mitigate flood risk, whilst still having the ability to improve the amenity value along the waterway, as stated in the Downstream Options Report as a Secondary Project Target. Currently on the Banks Avenue section of the Dudley Creek, properties from 96 Banks Avenue to where the creek junction meets the river which are in the residential red zone, will often flood at times of heavy rainfall in the catchment area. If option A is the chosen option, this area which is currently boggy, and in parts swampy, could have the potential to return to a native wetlands style area. I see that option B and C are heavy manmade structures and are being proposed for areas that underwent huge lateral spread and undulations which caused significant impact to underground services, so much that gravity systems for wastewater are unable to be fully reinstated. I would oppose the spending of so much money in these areas on this type of structures which could be vulnerable in future events. Banks Avenue is a pre-existing waterway and I feel that installing new waterways where there were none before, especially close to areas of global and localised lateral spread would be further undue risk to Council Assets.	The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	
129	A	4	4	5	6	6	3		Thank you for your submission.	
130	A	5	4	4	3	3	3		Thank you for your submission.	
135	A	4	3	5	4	3	4	If A is the preferred option…Could you also give an indication as to what remediation both creek and bank work will be done for the area between lower part of Stapletons Rd, Petrie St, Chrystal St, North parade up to Banks Ave and in what time frame. A reply to this question @ the postal address given would be appreciated.	If Option A is preferred the bypass alleviates the need for major works in this area, however continued maintenance work will be required as part of the waterway maintenance contract.	
154	A							St John Ambulance would prefer Option A, cross section B as this gives us easy access to the creek in the event of an emergency. It would also cause us the least disruption to access in this area during repairs.	Thank you for your submission.	

THEMES


Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity


Concerns relation to impact of the works on Banks Avenue


Moving the flooding problem from one community to another


Increased flow of water into the Avon River


Getting the works done as soon as possible

OPTION B SUBMISSIONS

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
5	B	5	5	5	4	5	2	Given the amount of disruption to residents in the Dudley Creek area if using the red zone will minimize any more it would be the best option.	Construction impacts are being considered as part of the MCA process. Note that the use of RRZ land is not currently approved by CERA and there may be delays associated with this approval.	
7	B	4	5	5	4	5	2		Thank you for your submission.	
10	B	4	4	5	4	2	4	Option C appeals the most as creek is very narrow at this point and it will improve the ecology and appearance along this stretch of river, the widening of the banks is along the straightest stretch of water so should be easiest to undertake. The pipe is only located along the road, allowing easier manholes and future access. Short term impacts on affected residents shouldn't be of concern as it is their properties that will most benefit from it and their house values should go up. Planting should not be grass as the Council already spend a huge amount of money on mowing parks. Option B does have merits as it provides a secondary route, however the additional length of pipe adds more risk of eq damage and more maintenance means increased ongoing costs which actually mean higher rates again! The most important thing is to make a decision and to just get on with it, as a directly affected resident of Carrick street, we can't have another four years of worrying if we will get flooded every time the sky threatens to rain while we watch the Council twiddling its thumbs delaying the project because they are indecisive, although they probably won't be the ones getting their feet wet, so what does it matter.	Thank you for your submission. The project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	
11	B	4	4	5	4	2	4	Option B, Piped. I'm a former resident of Warden Street, and held a Drain Layers Licence for 40 years. Remember, it's possible to PIPE under Dudley Creek, (start piping well NORTH of Flockton), also pipe under the relevant roads and School Properties etc. The creek will flow with water, but the pipe UNDERNEATH, will carry the heavier flows. Step 1. Collect the water from the lowest parts of the Flockton Basin. Step 2. Filter sand and sediment out. Use St Albans Park for building underground filters. Pipe along Edward Ave, then via Hills Rd to Warden Street. Pipe East, across the Shirley Intermediate School grounds to Marion College etc. Step 3 Build 3 Pumping Stations. The first to be North of Flockton. The second at St Albans Park, and the third next to the bridge on the Warden St/Stapleton's Rd intersection.	Thank you for your submission. There are a number of different ways of achieving the Council's stated project objective.	
13	B	3	4	5	2	3	5		Thank you for your submission.	
15	B	5	5	5	1	1	4	It would be nice to be able not to worry when it rains. And to live again without flooding threats continually.	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	
16	B	6	5	4	3	5	4	Will you be any something Dudley creek by the Shirley shopping centre it needs to clean up there lot rubbish in this part of the creek maybe to put something in the creek to the rubbish can't move down the creek.	Thank you for your submission. Your concerns are noted.	

THEMES

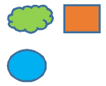

Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity


Concerns relation to impact of the works on Banks Avenue


Moving the flooding problem from one community to another


Increased flow of water into the Avon River


Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
17	B	4	5	5	3	4	3	I like option B as it seems to get water from the Dudley Creek out to the river most directly and quickly. All the options require piped section at some stage. I like option C least because it pipes the water then it is back into the stream. B, A, C would be my order but action is needed so you should get on with it. All the schemes cost a lot but are within a similar range so that should not be the determining factor. Which scheme will work best? I don't know. That's what we have engineering experts to decide.	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station. All three options achieve the required flood reductions.	
21	B		5	5				In so far as the present consultation relates land that is not in private ownership, I do have one recommendation, which is: that Stapletons Rd be closed off either side of the Dudley Creek where it passes under Stapletons Rd; and that Dudley Creek be reverted to an open stream bed, as has been done at Chancellor St. This would provide continuity of natural stream banks, and given that CCC has indicated the need to replace the under road culvert, may allow some cost savings, as this replacement would not then be necessary. Choosing this option may also open up opportunities in relation to St Albans Stream connection into Dudley Creek.	Thank you for your submission. We will consider removing culverts where they require replacement and where this fits in the context of the wider roading network, including consultation as required.	
25	B							Proposal: THAT OPTION B is chosen in preference to OPTION C and that OPTION A is not taken up under any circumstances. Reasons in support of the above proposal: A) BACKGROUND a) I am a long term resident of North Parade having lived with my wife [redacted] at our current address since mid 1993 and have had plenty of time to see how the Dudley Creek operates in supposedly good and bad times. Prior to the 22nd February 2011 earthquake and even since that time, unless a crisis has occurred in the Dudley Creek the Christchurch City Council (hereinafter CCC) has neglected its duty of the care and maintenance of the Dudley Creek and this is still very obvious today. REGARDLESS OF WHAT OPTION is chosen to upgrade the downstream part of the Dudley creek, the CCC needs to get on and urgently clean out all the rubbish that is still in the Dudley Creek at present and needs to restore the creek base to a level that shows that at all times it is well below the levels of all pipes and bridges so that any rubbish that has built up in pipes can be scoured out by the natural force of water. b) Dead trees: It is also of importance that ALL dead and dying trees alongside the Dudley Creek are cleared away forthwith. Regardless of people's desires to see trees remain, dead trees are useless and there are plenty of examples of this in the Dudley Creek today. Get rid of the rubbish thereby increasing the cubic metre capacity of what is already there. c) Bridge Specifications: Changes to bridge specifications are a must and should a property owner desire to replace a bridge or upgrade it, the bridge needs to be flat-in at road level height. Currently, bridges that cross the Dudley Creek along North Parade and Banks Avenue in many instances drop down and effectively create dams to the capacity of the Dudley Creek. The Marian College Bridge on North Parade and the First Bridge on Banks Avenue are good examples of flat-in Bridges and Bridges such as 152 North Parade and 20 Banks Avenue are good examples of problem bridges in the Dudley Creek. B) CHOICE OF OPTIONS: Discussed in alphabetic order. a) OPTION A: OPTION A is not acceptable under any circumstances as it will put an unacceptable increase in capacity on the Dudley Creek at a crucial intersection of the City's Bus system and by having the pipe discharge point at the intersection of Banks Avenue and North Parade would mean that the Dudley Creek would need to be straightened to allow the Dudley Creek to flow more efficiently. Consideration needs to be given regardless of what option is chosen as to whether or not the Bridge at River Road is large enough to carry the storm water capacity of the creek. The Answer is NO and it would need to be rebuilt with increased capacity for effective discharge into the Avon River. b) OPTION B: OPTION B is my preferred option as it has the opportunity for it to have a second catchment point for overflow water. Making the presumption that the overflow pipe is in operation; storm conditions are making life very difficult and extra water needs to be collected a second catchment point can be joined in at the Marian College Grounds. This would mean that the Pipes downstream from Marian College would need to be larger than currently proposed. Also with the fact that the Shirley Boys High School is in the process of re-locating sites, there is the opportunity to realign the pipe on a far straighter line across the Shirley	Thank you for your submission. Your comments and suggestions regarding maintenance are noted. Your comments regarding the options are also noted and will be taken on board when the Council considers the options through the multi criteria analysis process. The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	

THEMES

Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity

Concerns relation to impact of the works on Banks Avenue

Moving the flooding problem from one community to another

Increased flow of water into the Avon River

Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
								Intermediate School, Shirley Boys High School Sports Ground so that the 90o bend at North Parade is removed and connected on a far straighter alignment. Also as part of this work in Option B the undergrounding of all other services such as Electricity, Telephone etc would be expected on Warden Street, Cargill Place and any other street affected by Option B. I do not believe that the alternative proposed route for the pipe via Richmond park and Medway street is acceptable. The straighter the pipe line the better. c) OPTION C: OPTION C looks a simple job, but involves the potential damage and disturbance to a lot of people's private connections especially those provided underground and the extra work involved in making sure that they are not damaged or broken at any time. Also the roads and footpaths would have to be re-built as part of this as there is no-way that the CCC could go along and install this type of piping system and not re-build completely all footpaths and pedestrian crossings along the entire length of Stapletons Rd, Randall St, Medway St affected by the works and that part of North Parade affected as well. I would not be happy with any damage being done to the Weeping Elm Tree that is at the intersection of Medway Street and North Parade. Also (as stated in option B above) as part of this work in Option C the undergrounding of all other services such as Electricity, Telephone etc would be expected on Stapletons Road, Randall Street, Medway Street and any other street affected by Option C. Unlike Option B there is no way that any second connection can be made to this pipeline and The CCC has to put up with its pipe size and capacity forever. C) CONCLUSION The CCC needs to learn a very simple lesson from this consultation process, which is that it must keep ALL ITS RIVERS, STREAMS, DRAINS AND PIPES CLEAR AT ALL TIMES!! A lot of work was put in by me at the time of the March 2014 floods going around the Dallington area keeping drains and sumps clear and what was very obvious to me was the Sub-Standard level of maintenance that allowed huge backups of water to occur due to the huge amount of rubbish that was in council pipes some of it many years old. The DUDLEY CREEK will benefit best I believe from OPTION B as it is the only option available that you can make a second catchment point to the proposed pipeline work successfully if necessary.		
30	B	4	5	4	4	4	4	I prefer option "B" - although initially more expensive, long term benefits it offers worth it. Reduced maintenance costs less environmental impact. This option also may be quicker to complete.	Thank you for submission. The cost, maintenance costs and environmental impacts of each option will be considered as part of the MCA process.	
31	B	4	5	5	4	4	5	I prefer option B as it has less environmental impact and it will drop the flood level in the Mairehau drain considerably thus reducing flood risk in the area. After speaking to the people at the drop in sessions I think option B via Warden St, Shirley Intermediate, Marian College, Richmond Park & Residential Red Zone is the best option - not going down Medway Street.	All the options achieve the same drop in water levels in Mairehau Drain. All the pros and cons of the various options and the communities' views will be considered in making the final decision.	
32	B	5	4	5	4	4	5	The trees along Stapletons Road are as important and as beautiful as the ones along Banks Ave and deserve the same consideration. - However a combo of B and the opening of the creek along Stapletons Road makes sense to me. Just as clearing and improving the catchment along North Avon Road made sense (thanks!). If the stream area along Stapletons Road was replanted and improved as per Option C as well as the pipes in Option B, this would serve to enhance Option B by adding an additional safeguard and maintaining the aesthetic. - Option C possibly includes a pump house at 65 Petrie St which will not improve the appearance of Petrie Street. That wee green bit looks pretty good at the moment. Just another thing to get vandalised around here. What is that building on Stapletons Road near the intersection with Averill St? - Only thing with Option B is that the water is removed into the Avon quite far from where the creek emerges into the river at Banks Ave. Is this optimal? PLEASE NOTE: WE ROCKED UP TO SHIRLEY BOYS HIGH LIBRARY A LITTLE AFTER 1.30PM YESTERDAY JUNE 27 AND THERE WAS NO ONE THERE FROM THE CCC TO TALK TO ABOUT THIS? WHAT HAPPENED THERE?	Thank you for your submission. Hydraulic modelling shows that the Stapletons Rd section of the creek would not need substantive widening if Option B goes ahead, however your comments are noted. Current calculations show that the different Avon River discharge location and increased flow has a negligible impact on the Avon River levels. Had contact with resident regarding the drop-in session.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
34	B	5	4	5	4	5	3	We are concerned that this project needs co-ordination with the work on the Avon. We have witnessed severe flooding in the Banks Ave part of Dudley Creek and are concerned that the bypass does not back up and increase the problem there.	The Council will be considering the project interaction with the Avon River as it moves forward and will endeavour to coordinate various work programmes where possible.	
35	B	5	1	4	2	2	3	I like "B" because the water goes directly in to the Avon without mutilating the streams/creeks. Also it has minimum street disruption.	The construction impacts are being considered as part of the MCA process.	
36	B	5	5	4	3	5	3	Still not convinced any of the three options will actually do much about flooding	The Council is confident that the options proposed, along with upstream creek works, will return the Flockton Street area to its pre-earthquake flood risk.	
39	B	4	3	5	4	4	5	Why is this all happening again because a few residents in one street complained? Delays mean more flooding & increase in costs to repair whatever is chosen.	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	
47	B	4	5	5	4	4	4	Option B Council has great difficulty cleaning and maintaining open drains. This has been my observation for the past 28 years. Discussions with the Council to get maintenance done falls on deaf ears. Pumps and a pipeline would be out of public view. Hopefully maintenance would be cheaper than open drains. Whatever the Council decides, the option will be gratefully received by the residences that have been flooded.	Irrespective of which option proceeds the Council will still continue to maintain Dudley Creek. Additional below ground pipework will also need to be maintained. The overall maintenance requirements are being considered when the Council makes the final decisions.	
48	B	5	5	4	3	4	4	I am concerned that fixing the Flockton Basin problem does not result in the creation of downstream problems elsewhere. I have chosen Option B as it appears to impact the least on other residential owners and creates least disturbance to other communities.	All the options require works downstream of Flockton Street, and this will affect some residents. The effects are being considered when the Council makes its final decisions.	
49	B	5	5	5	4	5	5	Option B. This option has the least impact on all residential property in the area and to the environment. It uses land that is government/Council owned without interfering with private land. It has minimal impact on the section of Dudley Creek through the Banks Avenue area. This area has special significance to Christchurch in its tree plantings and past history of the street. To change that for the sake of a very large storm water pipe would take away that special significance, when there are alternate routes for the pipe which will have little or no impact. While being Banks Ave residents we do not want to hinder the flood redemption work for the Flockton basin, but also do not want the problem shifted to another suburb of Christchurch. There needs to be a bigger picture view of the situation and a solution that fits with all suburbs and residents. This is something that is not coming through at all the consultation meetings. Areas are being dealt with individually in a divide and conquer mentality from council staff. Our preference is for Option B as it has the least amount of impact to private residences.	The Council is consulting with the community in an open manner and the impacts on property, environment and landscape will be considered as part of the MCA process.	
51	B	5	5	5	3	4	4		Thank you for your submission.	
53	B	4	4	5	3	3	4		Thank you for your submission.	

THEMES


Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity


Concerns relation to impact of the works on Banks Avenue


Moving the flooding problem from one community to another


Increased flow of water into the Avon River


Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
55	B	5	5	5	4	4	4	I am referring to all three options which will add an extra input of water that is flood water into the Avon river at roughly the same location. I have a number of questions. Will flood waters be released into the Avon as a sudden, large input of water or will it be controlled and released in smaller quantities over a longer period of time? What changes to the Avon river ecosystem could result from this extra input of flood water which would contain a variety of urban contaminants as well as sediments? What will be the social, economic and environmental results of this input? Who would be responsible for any change or damage that could result from this and therefore open themselves up to legal action and compensation? Is it possible to make changes in one part of the river system without affecting other parts?	The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	
60	B	5	4	4	3	3	3	We own [redacted] and lived there from 2006 up until October 2014 so know the section of Dudley Creek along Stapletons Rd, and St Albans Stream which borders our property, very well, before, during and after the earthquakes. We do not support C as we are concerned it may not be enough to mitigate the flooding. If it is inadequate the flooding problem may simply be shifted from Flockton/Aylesford to Stapletons. Either A or B is preferable over C though we believe B offers lesser impacts on residents and the environment. We would like to see some of the enhancement work outlined in C happen along the section of Dudley Creek adjacent to Stapletons Rd. This section of creek has changed quite a lot since the quakes with noticeably less flow and damage to/loss of vegetation.	Hydraulic modelling shows that all the options achieve the flood risk reduction in the Flockton Area while not increasing flood risk in other areas. The Council will be carefully designing any works to provide the required capacity, to limit the risk of bypass pipe inlets blocking and considering overflow paths. All the options aim would have the general effect of lowering flood water levels in the creek beside your property.	
63	B	5	5	4	2	3	2	I particularly do not want to see the amenity values of Banks Avenue affected negatively by any proposed plan. Very much prefer option B for this reason.	The impacts on amenity value of the area are being considered as part of the MCA process.	
83	B	5	5	4	5	5	5		Thank you for your submission.	
85	B	5	5	5	4	4	4	I support either A or B:- BUT insist that Dudley along Stapletons gets cleaned up regardless to give the whole solution more redundancy. Option A or B could still struggle during an extreme event, which would impact on Dudley along Stapletons Road. I would like to see the Stapleton's area of Dudley widened and refurbished regardless. Our protected environment is IMPORTANT.	If Option A or B are preferred the bypass alleviates the need for major works in this area, however continued maintenance work will be required as part of the waterway maintenance contract.	

THEMES


Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity


Concerns relation to impact of the works on Banks Avenue


Moving the flooding problem from one community to another


Increased flow of water into the Avon River


Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
86	B	5	5	5	4	5	5	Option B looks to me as if it will cause less disruption to residents and motorists as much of it goes through Marion College (unused at present), park and red zone land. Also its piped so, once covered up, should have minimal impact on environment. I am against any further disruption to Banks Ave (option A) if there are other viable alternatives. Banks Ave is one of the very few remaining areas in this EQ ravaged suburb that is still pleasant to walk around, due to the lovely trees and walkable footpaths. Please leave it alone - sometimes in extreme flooding, it's been our only way out of this suburb (River Rd, Gayhurst roundabout under water, Dallington Terrace closed and the bridge closed) so we need it to be open to use at all times. I imagine if option A was chosen then Banks Ave would be closed for many months while the work was being undertaken. This suburb and its people have been under huge stress over the past 4 years with all the red zoning and its impacts, house demolitions, road works, flooding, Please choose the option that will cause least disruption to our everyday lives - the folk in Flockton Basin have had enough - but so have we. Many thanks.	Thank you for your submission.	
87	B	5	5	4	4	4	4		Thank you for your submission.	
88	B	5	5	5	3	3	3	Option A and C: opportunities for long- term enhancement of the waterway and landscape are put forward as advantages of these options. I would like to point out that choosing option B does not preclude enhancements being made to the Dudley Creek environment. Putting this "opportunity" forward as an advantage for these two options is not a genuine argument. Option C, and alternative route for Option B: Putting forward the fact that neither of these options require agreement for use of the residential red zone is not a genuine advantage. The government could not conceivably have an objection to publically owned land being used for flood mitigation.	Enhancement of the creek will not be included in the project if Option B is taken forward, however with Options A and C there is an opportunity to enhance the waterway whilst undertaking the widening works at little additional cost. CERA have not yet made decisions about the use of red zone land at this time and hence these options have the potential to cause significant delays to the project.	
89	B	5	5	5	2	4	4	Having lived in Banks Avenue for 20 years until the earthquake, we are concerned about the removal of trees and plants and consider Option B to be the most effective means of alleviating the flooding without destroying the landscape along the creek which has been a beautiful part of the Dallington/Shirley area for many years.	Thank you for your submission.	
90	B	5	5	4	2	5	4	Thanks to the elected officials for listening to the residents of Banks Avenue and undertaking more work. By choosing option B it has the least impact on private properties and our environment. To proceed with either option A or C would see ongoing impacts for us during the construction and post with our neighbourhoods being left even more damaged. I am still not convinced that the downstream effects will not result in flooding for us as this is not built for the events that flooded Flockton. At the council meeting councillors said this would not be a decision based on cost alone - let that be true. The CCC has had to spend more money than it should have to get this result as the previous "consultation" process and the work undertaken by professional consultants was not balanced and did not consider the wider and united community. Please let us get on with other more pressing matters like having warm and repaired homes as most of us haven't. Please work with CERA to ensure a good outcome as it could be amazing if we could turn part of the red zone into a reserve.	Thank you for your submission.	
91	B	4	5	5	4	5	4	I prefer Option B as it will have less effect on households in this area, especially in terms of construction impacts, as the piped bypass mostly follows land that is non-residential (schools and the Red Zone). It also means that the need for ongoing maintenance/repairs/replacement will have minimal impact and disruption on residents in the future. Maintenance work could be scheduled for times that would have the least effect on the two schools and Richmond Park, such as, during the school holidays.	Thank you for your submission.	
92	B	4	5	5	4	4	4		Thank you for your submission.	

THEMES

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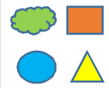
Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
93	B							Dear Ann, My thanks for arranging a meeting at my house on Thursday July 2nd at 12.30pm to discuss flooding issues for Dudley Creek and the Avon. Present was Ann Campbell CCC, Tom Parsons Engineer and myself. I found this a helpful meeting in clarifying the current thinking from the engineering perspective especially after reading the following statements on page 12 Option A of the Dudley Creek options for downstream long term flood remediation. "There will be no increase in flood depth along Banks Ave in extreme events i.e. as in 1 in 50 year storm event" This appears illogical considering current conditions and events. I include a photo of Dudley Creek in flood in March 2014 to add to other photos already supplied to CCC via Tara King. I could not imagine flood height remaining constant if option A is adopted. Please note a stainless steel flood height mark on my property at 22 Banks Ave of the March 2014 event resulted in a CCC survey measure of 12.01m RL. This is a serious flooding height which exists now without doubling the water volume of Dudley Creek Banks Ave to 9.5 cubic meters per second should option A be adopted "the water will move slowly in an extreme event, the widening work is sized to take account of the increase inflow from the Flockton Street area" - an astounding statement to make. The Avon with its heightened banks already fully backs up its tributaries such as Dudley Creek in peak flood conditions. This is causing severe flooding in Banks Ave now, without the extra water load from Flockton should option A be adopted. This meeting seemed to echo previous contact with the CCC with bogged down discussion on theoretical modelling solutions from the engineer. I am not saying he was not sincere but.... let's say theoretical modelling without a healthy dose of referral to real evidence is a worry. Common sense and current conditions dictate that option A would be a costly exercise in futility. This can only achieve a shift of a flooding nightmare from one area to another. Option B would at least achieve a delivery of flood water into the Avon without worsening the existing Banks Ave Dudley Creek flooding. It is my hope that an overloaded Avon will be able to break out into future well managed flood areas such as red zone areas and other designated areas where water can be stored waiting for the Avon river height to drop enough for conveyance out to sea. Option B is my choice. The most valuable part of this meeting was near the end when I asked the question 'what is the basic formula with regard to flooding' Answer. INPUT + OUTPUT = STORAGE very explanatory. So if in flood conditions input exceeds output, the flood water has to be stored until such time the overloaded Avon drops its height to convey water in the right direction again. So I guess storage = management. My concerns regarding management include: Insufficient time and ability by the CCC to co-ordinate a macro approach to flooding solutions. Reason as follows. It appears that CERA has control over the red zone land and is not moving at the pace that the CCC needs to provide macro flooding solutions. I fear that this divided body approach will procrastinate and slow the process of finding the shortest path to the best overall solution. Ultimately, it seems to me that Christchurch does not have a choice as flooding is a reality. We all want the same thing, the least amount of damage to our assets and the safety of our homes. Thank you Ann for your assurance that this form of submission is acceptable.	Thank you for meeting with the project team to discuss your concerns. There is a complex interaction between rainfall, run off, flooding and the potential tidal influences between the Avon River and Dudley Creek catchments. Considerable effort has been placed in understanding these interactions which have informed the design. The proposed widening works in the downstream reaches is designed to prevent increases in water level resulting from the increases in flows. This approach has been adopted across all three proposed options.	
96	B	5	5	4	2	4	4	Option B seems an obvious choice as it has very little impact on private property and the environment. Taking into account that the Dudley Stream, along Banks Avenue, has already been widened (under emergency measures) to take extra water in an extreme event, Option B would be providing an extra channel for flood waters which can only be a good thing and would hopefully lessen the risk of flooding in Banks Avenue. Option B could also provide an attractive addition if it was designed as an open stream with suitable plantings where it transverses the Red Zone. It would be difficult to imagine CERA refusing to allow the use of the Red Zone for this project.	Thank you for your submission.	

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98	B							I am completing this joint submission on behalf of fifty-two (52) members of the Dudley Stream Group. (names and addresses etc. available) The group has made it clear that it is opposed to Option A as per its previous joint submission of 24 November 2014, plus in a joint 'Declaration' involving five other local groups which was forwarded to Mr John Mackie in April, 2015. Option B has been indicated as our preferred option. Many members will also be forwarding individual submissions.	Thank you for your submission.	
99	B	5	5	5	2	5	5	Option B as it has no negative impact on private property or the environment. It will also act as an extra conduit for flood water in addition to that provided by the Banks Ave section of the Dudley Stream which has already been widened.	Thank you for your submission.	
100	B	3	5	5	3	2	4		Thank you for your submission.	
101	B	5	4	5	4	2	4		Thank you for your submission.	
102	B	4	4	5	2	2	4		Thank you for your submission.	
103	B	4	4	5	3	3	4		Thank you for your submission.	
107	B							Hi I am [redacted] owner of [redacted] Banks Ave ChCh. I would like to record that I am in favour of option B for the flood mitigation along the Dudley creek as outlined in the CCC booklet sent to me. Thank you	Thank you for your submission.	
111	B	5	5	5	3	4	3	Having lived on Banks Avenue and witnessed flooding of Dudley creek in addition to the usual fluctuations of the tide as the moon has her influence I see no logic at all in placing an increased flow via the downstream portion of Dudley Creek. What is needed is increased capacity in times of flood so to me the construction of an accessory channel which becomes active in times of flooding seems appropriate. The other option of creating holding lakes for flood water within the red-zone or elsewhere also has merit. Could this be incorporated into planning for the Dallington Rowing Lake" or possibly the "Eden Project" plans. http://www.stuff.co.nz/the-press/news/67018529/Red-zone-lake-for-water-sports-game-changer http://www.avonotakaronetwork.co.nz/f/3967cd8ea51bd802.pdf The environment of the lower Dudley creek is special and worthy of conservation. The tree lined avenue makes for desirable property and is one of the few remaining green assets of our city. It is used for recreation and has ecological value. It would be a tragedy to see this area destroyed or scarred with concrete. Of the options presented Option B with an underground pipe via Marion College would seem the least disruptive to both residents and the ecology of the lower Dudley Creek with normal flows maintained through the existing natural waterway. An additional point I would like to make is that during the earthquake tons and tons of liquefaction silt must have entered the Dudley creek so it is no surprise that the waterway was choked and causing upstream flooding issues. Just yesterday our storm water drains were water blasted extracting yet more silt and I suspect that over the next few years the Dudley Creek will require regular dredging to remove this steady release of silt. So my point is are we spending a huge amount of money on new drainage plan before doing the basics - aggressive silt extraction in all portions of the Dudley catchment on both public and private waterways and storm water.	Thank you for your submission.	
114	B	4	4	4	6	4	3		Thank you for your submission.	
117	B	5	5	5	3	4	4		Thank you for your submission.	

THEMES

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Concerns relation to impact of the works on Banks Avenue

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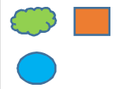
Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
119	B	5	4	4	1	5	1	I am for reducing the flood effects in the Flockton but that does not mean I am for wrecking other communities environment to achieve this. Both options A and C wreck the environment. Especially in Banks Ave we have been through a lot during/since the earthquakes including losing half our residents by the red zoning of half of Banks Ave and with that we lost between 20 to 25% on the value of our properties when revalued in 2013. Option A will just increase the loss of value with our properties. Option B will be underground and not interfering with the environment or private property (other than Marion). I think taking the outlet through the park and out on to Medway Street is a good option if access to red zone land is not an option. Interesting CCC need access to red zone land in option A also. Another issue is that CCC cannot give a guarantee that residents in Stapletons Rd or Banks Ave will not be flooded with double water arriving. Option B the water flows separately from the main flow of water.	Thank you for your submission. The Council considers the channel widening options could be done in such a way as to enhance the environment in the long term. The design philosophy is to achieve the flood risk benefits upstream while not increasing water levels downstream, and this is achieved through detailed hydraulic design.	
120	B	5	5	5	4	4	3		Thank you for your submission.	
122	B	5	4	4	3	4	5		Thank you for your submission.	
123	B	5	5	5	3	4	3	Ref Option B I chose this option because the pumped/pipe system ensures the discharged floodwater is injected directly, under pressure, into the Avon River without flooding or inconvenience to the residents or to the environment of the lower reaches of the Dudley Creek. The current flood levels in the Banks Avenue section of the Dudley Creek cause more than enough problems since the earthquake without pushing the volumes further. I do not believe this section of the creek should be used as storage for flood waters especially during the high tides.	Thank you for your submission. The design philosophy is to achieve the flood risk benefits upstream while not increasing water levels downstream, and this is achieved through detailed hydraulic design.	
125	B							The selection of options is complicated by the work being done in the "dotted" zone as per your document below. This work has a significant culvert under Shirley Rd with remediation to the North. Remediation to Dudley Creek and St Albans creek is reported to be returning those areas to pre quake levels and no doubt has some improvement. The length of Dudley Creek from Warden St South to the Stapletons Rd Culvert is proposed as being left at post-quake status. This means that significantly more water will be flowing into a damaged waterway that already floods. So based upon that we submit that a level of remediation should be done to that section of Dudley Creek should option A or B be selected. This has the advantage of adding resilience to both those options for a fairly low cost. We have significant reservations regarding option C based upon the fact that if it fails as a system then severe flooding will result in our area. We therefore propose option B with the caveat that Dudley Creek South of Warden is remediated. Concerns have been raised that the flow into the Avon, which already floods where your outlet is proposed, is not adequately resilient. One has to hope that this has been adequately considered. The over-riding fear is that you are conveniently shifting the "Flockton problem" to become a NW Richmond one. Unlike in the past, whichever option is chosen, all the waterways require ongoing regular maintenance.	Thank you for your submission. If Options A or B are preferred, the increased flows from upstream areas will flow into the bypass and the section of waterway between Warden Street to the Stapletons Road culvert will be returned to pre-quake water levels. Note also that if either of these options are taken forward, although the bypass alleviates the need for major works in this area, continued maintenance work will be required as part of the waterway maintenance contract. The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	
133	B	5	5	5	2	3	3	I strongly disagree with the view put forward that Option A will not increase the existing flood levels in Dudley Creek. More water pumped in without an ability to flow out at the same rate will obviously raise water levels. Option A appears to be based on using privately owned land (unfairly zoned TC3 when it should have been red zoned) as an overflow area for high flood events. My property at [redacted] Banks Avenue is more prone to flooding since the earthquakes than it ever was previously as the ground level dropped. It should be pre-quake flood levels you compare to not current post quake flooding levels, which are already unacceptable due to the lowered land levels along the creek front properties as a result of the quakes. Option A would be a very low blow, particularly as those of us whose properties are considered to now be at increased	Thank you for your submission. Considerable effort was put into refining the proposed works along Banks Avenue following the last round of consultation. This was done in response to residents' concerns about works on private property and the impact on the local environment. The proposed rocks along the public bank is for ecological benefit, not for erosion protection. Erosive forces are considered to be very low in this waterway given the flat grade.	

THEMES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Moving the flooding problem from one community to another


Increased flow of water into the Avon River


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								vulnerability to flooding still await any action from EQC on remediation of the land or compensation for the inability to sell. I personally object to the proposal to use my property as a pooling area for water the council intends pumping onto it during high weather events. Why would a rational decision move the flooding problem downstream from the Flockton Basin to exacerbate an existing flooding vulnerability in Banks Avenue? I had to abandon my sewerage contaminated flood and quake damaged home in Banks Avenue five years ago and my insurer assessed demolition as the only viable solution. I find it outrageous that Option A proposes rock work to protect the publicly owned side of Dudley Creek and nothing to protect my low lying privately owned side of the creek! Clearly the intention is for flood water to spread across my property and erode into the bank on my side of the creek rather than onto a publicly owned walkway! Yet in the same proposal it is noted that no land is to be purchased from private landowners. And I continue to pay rates! I have also supported the Banks Avenue group submission and my earlier submission on the original proposal last year stands. I am opposed to the destruction of so many trees in Banks Avenue in order to pursue a flawed Option. I support Option B		
136	B	5	4	3	1	4	3	The CCC have not been able to promise that Stapletons Rd or Banks Ave will not have flooded private properties when all the water from Flockton flows down. Having option B there is no chance of downstream flowing. Plus the Stapletons Rd/Banks Ave landscape/environment will remain unchanged.	Thank you for the submission. The design philosophy is to achieve the flood risk benefits upstream while not increasing water levels downstream, and this is achieved through detailed hydraulic design.	
138	B	5	5	5	4	5	4	I am very frustrated that the CCC refuses to consider option "D". No discussion, no cost analysis and requests by citizens about it are ignored. Option D is dredging the river, like it was for decades, and removing the thousands of tons of liquefaction causing the past 5 years of floods/ Dudley Creek is not the issue; the Avon is. Secondly, the flood catchment area should be the estuary. It is the only area large enough capable of dealing with the heavy rains, high tides, and an overwhelmed sewer system. And it would cost less than options A-C.	Flood levels downstream of the Dudley Creek in the Avon River are dominated by tide levels for most of the length. Dredging works are unlikely to have a significant benefit in tidal areas or be cost effective as they are dependent on disposal costs. Council is considering flood management options in the Avon River and dredging may be considered in more detail during these investigations. Dredging the Avon River alone will not address post quake flood risk in the Flockton Street area.	
149	B	4	4	5	3	3	3	Option B Preference My home & residential property is in the upper part of the Dudley Creek catchment & remediation area. Woodville St has been heavily flooded on five occasions since the Sept 2010 Earthquake. I am most interested in Option B for the following reasons: 1) Its ability to get rid of exceptional flooding rainfall through a totally piped/pumped scheme that bypasses slow sections of Dudley Ck. 2) Its ability to maintain normal flows on the Stapletons Rd & Banks Ave sections of the Dudley Creek without major site works & also lower loss of trees. 3) Option B is potentially up to 10% more expensive, but for me the lower Environmental impacts and the ability to expedite this urgent work with fewer access agreements needed are major advantages & well worth the extra cost. PS. Current remedial work on the Shirley Stream on the south side of Shirley Rd shows major tree cutting.	Thank you for your submission. All three options achieve the required flood reductions. Note that Options A and C do not raise flood levels on Banks Ave or Stapletons Rd, respectively. Environmental impacts will be considered as part of the MCA process.	

THEMES


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Increased flow of water into the Avon River


Getting the works done as soon as possible

OPTION C SUBMISSIONS

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
1	C	5	5	5	4	5	5	It would appear on the small amount of information I have, that option (C) of the Dudley Creek project would be the most cost effective and less invasive to the community as a whole of the three options, and possibly the shortest time wise.	Thank you for your submission.	▲
2	C	4	5	5	4	1	4	Option C: Please advise if you are going to widen or take any land away from our property. Many thanks	This property is outside of the scope for the downstream portion of works. The property is in the upstream works area, where the design is still being developed. The Council will be in contact with affected residents when the concept design is sufficiently developed and property requirements are defined.	
8	C	5	4	5	3	4	4	The ecology of the area is where fish spawn and birds nest. I would like to see a bird corridor from inland Canterbury to the Port Hills developed. The cats in the area would need to be addressed.	Thank you for your submission. Where any channel widening is proposed, the works will include re-landscaping the area, and ecology will be considered in the design.	✸
9	C	5	4	5	1	3	6	Now that River Rd does not continue through to McBratneys Rd, and contingent on Otakaro/Avon River flood banks moved back into the red zone, I think I'd like to see option C, (piped storm water) to run out into red Zone land at corner of Flesher and Medway Street. This would allow the storm water to be filtered and slowly released in the main river at peak flood times..... at the same time, I would also like to see Dudley Creek flow not restricted by Option C and be restored to a healthy state. Dudley Creek outlet, into the Otakaro/Avon, should also be opened into red zone land so the storm water it carries can be filtered and stored, during peak flood times, before seeping into the river. My thoughts are based on developing a large bio-diversity area that will help with Flockton basin flood issues and at the same time work can proceed with limited cost to work towards reducing climate change coastal flood issues.	The Council considered a range of options, including creating storage areas, however these options were not preferred for various reasons including significant land purchase. The future of the Red Zone is currently being considered and the public will be consulted as part of this process.	✸ ⬬
12	C	4	4	5	4	2	4		Thank you for your submission.	
14	C	4	5	4	2	4	1	Medway St needs fixing anyway (Marginal) legal issues with option C	Thank you for your submission.	
18	C	5	4	4	2	3	3		Thank you for your submission.	
19	C	4	3	5	4	4	4	Option C will give visual & water quality improvement to Dudley Creek along Stapletons Rd.	Thank you for your submission.	✸
22	C	1	3	5	4	1	5	I have listed Environment and Construction Impacts as unimportant as I believe that this work is vital in comparison to any temporary impact on residents or to any impact on the landscape which can be rectified over time. I prefer Option C because it doesn't involve any possible complications with required use of Residential Red Zone land, it is the cheaper option and it may have some (very limited) benefit for those of us living alongside the St. Albans Creek whose flood protection work can't be undertaken until a later stage.	Thank you for your submission.	
23	C	4	4	5	5	2	3	I believe that Option C presents the best overall solution whilst also minimising whole of life costs. Option A is also an acceptable solution should Option C not be preferred. Option B is by far the worst option as it will be time consuming and difficult to build, will not result in any ecological / environmental benefits and will be expensive to maintain.	Whole of life costs, the constructability of the option, and maintenance requirements are being considered as part of the MCA process.	✸
24	C	2	4	5	3	2	5	Concentration needs to be centred on the critical issues - people's homes and properties are flooding and this needs to be repaired asap. Concentration by some on issues which are temporary, e.g. landscaping, construction impacts, time to complete, trees which can be replaced, etc. are mere side tracks. The work needs to move on - please just get on with it.	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	▲

THEMES

✸ Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity

Concerns relation to impact of the works on Banks Avenue

Moving the flooding problem from one community to another

⬬ Increased flow of water into the Avon River

▲ Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
26	C	3	4	5	5	5	5		Thank you for your submission.	
33	C	4	4	5	4	2	2		Thank you for your submission.	
37	C	5	5	5	5	5		C. Because it looks very good and will make a great walkway	Thank you for your submission.	
38	C	5	5	4	2	3	1	I can't believe anyone in their right mind would want option A.TO TAKE OUT ALL THOSE TREES WOULD BE A DISASTER TO THE BIRD LIFE. I've been working my ass off to get the bell bird back into this area and now we have it, we could lose it!!!!!!!!!!!!!!!!! and the wood pigeon and king fisher which have been seen in Banks Ave.	Thank you for your submission. Your concern about birdlife is noted. Where any channel widening and tree removal is proposed, the works will include re-landscaping the area, and ecology will be considered in the design.	
40	C	3	4	5	2	3	2		Thank you for your submission.	
41	C	4	4	5	4	4	4	We own a property at [redacted] Stapletons Rd. We have settled with our insurance co & have been able to purchase another home, but to do this have had to use money from [redacted], money we were going to use for other purposes, as the ins co have/would only pay out for repair, even though we flood up to 500 mm through the house. Until the remedial work is complete we have a property that has little or no market value & we are unable to sell to fully move on.	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	
42	C	3	4	4	4	3	5	I would prefer option B but there are too many unknowns still to be sorted. It is the most direct option but I have chosen option C as there are less bridges & a more direct route to the Avon to manage water flows in heavy rain period. I was red zoned from Harvey Terrace Richmond where I used to walk along the Avon. It is distressing to do so now as there is no life. There is a raft of rotting vegetation and dieback on the banks from the toxic water. Please resume dredging and get rid of the toxic silt. It is appalling that Kerrs reach cannot be used by rowers-it is a good facility going to waste-dredging would help and get the rowers back on the water.	Thank you for your submission. Your concerns regarding silt and maintenance are noted. The Council is considering a raft of issues on the Avon as part of its wider land drainage programme.	
43	C	5	5	5	4	5	4	Option C. This option appears to have less impact on established mature trees, leaves the park & tennis club intact and uses the route along streets which are in poor condition and awaiting repair.	Thank you for your submission. Where any channel widening is proposed, the works will include re-landscaping the area, including replacement planting for all trees which require removal to undertake the works.	
44	C	4	4	5	2	2	2		Thank you for your submission.	
46	C	5	4	4	4	4	3	On option C It is the most efficient straight forward route to the river with the least disruption. It has the best chance of success with the flow to the river and sustainable long term	Thank you for your submission.	
50	C	5	4	5	4	3	3	I see the longer term benefits of Option C as being that the downstream section of Stapletons Rd will be enhanced and become a better community facility. Very few of the trees to be removed will last very long and are due to be replaced. This is an opportunity to enhance this section along with providing flooding relief upstream.	Thank you for your submission.	
52	C	4	5	4	4	3	3	Great document, thank you for all the work that was put into it. My lack of opinion around cost and time impacts on residents is neutral because I understand that things sometimes do cost more and that it is better to get it right and if that takes a bit longer then so be it. My community has had nonstop road works, demolitions, pipes and rebuilds since the EQ. One day we will have peace and no flooding (fingers crossed) and our lives will be kick started again.	Thank you for your submission.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
54	C	1	4	5	1	1	5	I live between Warden St and Stapletons Rd. We have about 1.5 mm of water height that goes onto our property as we live next door to the creek, I feel that the bridge on Warden St should be disestablished between Warden St and Stapletons Rd and turn Warden St into a cul-de-sac. Taking the bridge out completely would save a lot of money, as the road is not that busy. You can widen that area more, and have a small foot bridge over the creek. This really makes sense to do this it would be like they have done with Chancellor St. Ring me glad to talk	Thank you for your submission. Currently the Warden Street culvert is scheduled for replacement due to earthquake damage. However we will consider removing culverts where they require replacement and where this fits in the context of the wider roading network, including consultation as required.	
58	C	5	5	5	4	4	5	Option C appears to be the best fit in terms of retaining and enhancing the character and ecology and health of the current waterway. It also is the cheapest.	Thank you for your submission.	
62	C	4	4	5	4	2	3	Having spent a lot of time looking at all the options & talking to various residents in the area, the obvious choice is Option C. I would also like to mention that where possible please keep as many native trees as you can, as this is what brought most people to the area in the first instance and not a new subdivision.	Thank you for your submission. The design seeks to retain as many trees as possible while still achieving the project objectives of flood mitigation. The resultant landscape impacts are being assessed as part of the MCA process.	
84	C							To whom it may concern, After extensive review of all three options for the Dudley Creek Flood remediation works, we believe C2 pumped would be the best option. C2 pumped appears to beautify and widen creek culverts, has (slightly) lower maintenance costs due to water velocity flowing through the pipes, and there are no government owned properties to purchase or obtain consent for as with A or B. We realise this would have temporary (disruptive) impact on residents in Medway and Randall Streets, however it still appears to have the most positive impact on flooding and its environs. Option C2 also has minimal disruption to schools compared to option A and B, plus represents the cheapest pumped option with maximum impact. Thank you very much for your consideration. Kind regards	Thank you for your submission.	
94	C	1	2	5	1	5	5	I have selected option 3, because it seems to flow more naturally. I definitely think the option of a pump is needed. (if only as a backup).	Thank you for your submission.	
97	C							Hello, I would like to support option “C” for the Dudley Creek flood remediation.	Thank you for your submission.	
105	C							As residents in the area referred to as Flockton Basin, the key issues for us with this project are: Level of service: It is assumed that all options will meet the design level of service. However the selection criteria should also consider the extent of flooding for events larger than the design event and any advantage one has over the others Resilience: All three options involve various degrees of piping. While this has obvious advantages in minimising disturbance from the works, design selection must also consider protection and maintenance of overland flow paths for flows in excess of the pipe capacity. Speed of Construction: This is likely to be dominated by time to procure access rights through private and government held property. From the plan provided, option C is our preferred route on the basis that it appears to provide overland flow paths along the road ways and has the shortest pipe route. Land access appears to be relatively achievable with this route. We consider Option B to be the least preferred with potential for land access issues through the red zone and difficulty in maintaining the secondary flow path.	Thank you for your submission.	
106	C	5	5	5	4	4	4	Option C appears to longer term benefits for Stapletons Rd - rather than short term fix. With careful plantings Stapletons Rd will soon be the picturesque street it always has been.	Thank you for your submission.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
109	C	5	5	5	5	5	5	Option C is our choice preferably using plastic piping and preferably pumped from the outset. Reasons: 1 Seems to make the most sense as it is an uncomplicated route that is under the control of the Christchurch City Council, while the other options require agreement from some or all of the Ministry of Education, CERA and the Christchurch Catholic Diocese - all of which could be problematical and cause time delays 2 It provides 2 paths for the water to reach the Avon and at lot more reservoir capacity 3 The cost of Option C seems the most economic although it is not clear if ongoing maintenance costs are being factored into any of the options. Low capital cost but high maintenance vs high capital cost but low maintenance? Avoid short-term false economy! 4 Plastic piping better allows for land movement but will require anchoring or being left filled with water to minimize uplift from surrounding liquefaction during a severe earthquake 5 A pumped option ensures the water enters the Avon, despite extreme high tides, at a rate required to negate a build-up of water in the Flockton Basin beyond the design limits. Leaving the pump as an added option may lead to the Flockton residents being caught unnecessarily if a gravity feed proves insufficient. However: While we are in favour of Option C for altruistic reasons, its construction will have a major impact on us as residents of [redacted] Medway Street right on the triangle at the beginning of the street. If this route was chosen we would want the following issues taken into consideration: 1 At least 6 week's notice of the time frame of work going past our place. This is particularly important as we are on a layby and have to drive in from Medway Street across the council land that runs across the whole frontage of our property. Trenching and other works, including tree removal and services relocation, would disrupt our access for a considerable time. Good communication in advance would give us time to perhaps book a holiday and get away from the worst of the disruption. We think at least 6 week's notice is a minimum along with a reasonable estimate of how many days our access and services will be cut off. 2 Past road works and pre- and post-quake work have seen the grassed triangle area used as a contractor's yard, including site buildings, the storing of heavy machinery, sheet piles, pipes and the dumping of large piles of shingle etc. The remediation of the grass has been minimal. If the area is used again it would be great to have the remediation of the grass and driveway done to a good standard and watered while growing. 3 Good warning if any services power, phone, cable, water, sewerage are to be disrupted. It would be good to check with Enable as well. The north side of Medway St has had the fibre optic cabling done. The south side is shown as fibre available before July 2016. It would be great if they could work in with you to minimize disruption twice over. 4 Road remediated to a high standard after the work is finished. We were told at a meeting that it would be to the same standard as Kensington Avenue. This seems fine to us. 5 The Option C plan suggests that up to 6 trees will be removed from the intersection outside our place. What kind of landscaping will take their place? Originally field grown trees were planted there when the west entrance to Medway Street was closed off. The plans have lots of pretty drawings for Stapletons Road and Banks Avenue but nothing for the Medway-Randall-North Parade corners that would be affected. 6 We are concerned about the pipe inlet to the river and at the Stapletons Road end. It would need to be secure to prevent unauthorized and accidental access. There is also the question of fish and eels accessing the pipe at either end. Whichever option is chosen, the comments about the standard of remediation, and plenty of warning apply and it is also important that there is ongoing maintenance on the streams and the Avon River including silt and weed removal and bank remediation. This last comment will probably invoke ghostly laughter from many quarters, but EQC should contribute to the cost of these works. It is, after all, their decisions on flood levels that have contributed to the scope of these works. Also, if CERA becomes involved because of choosing a red zone option for the pipe, it would help if they could recognize the impact on people and not delay the process.	Thank you for your submission. The points you raise regarding construction are noted. Any street trees removed would be replaced with appropriate planting from Councils approved list of street trees. Throughout construction residents will be kept up to date on progress and work programme.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
110	C	4	4	5	5	4	5	I believe option C is the better choice and cost is an important consideration. I am agreeable to the creek bank on my property being altered to help with any option. Regardless of which option is chosen please 'get on with it'. I struggle to see any further consultation would offer up any better solutions.	Thank you for your submission, your concerns have been noted and the Council appreciates the willingness for you to work with the Project Team. Council has already begun works on the wider scheme with the Tay Street Drain Pump Station and Shirley Road culvert construction. The project completion date is programmed for mid 2017.	
113	C	4	5	5	4	5	4	Had a well-informed meeting with Project Team. I would prefer Option C	Thank you for your submission.	
115	C	5	5	4	3	4	4	Option C works more with the natural flow of the creek	Thank you for your submission.	
121	C							Feedback on Public Consultation for the Options for Downstream Long Term Flood Remediation To: Dudley Creek Flood Remediation Public Information and Participation Unit Christchurch City Council Full name of submitter: Ministry of Education The Ministry of Education ("the Ministry") wishes to provide feedback on the Christchurch City Council's (CCC) Dudley Creek options for downstream long term flood remediation "the options". The Ministry submitted in November 2014 regarding the preferred option for Dudley Creek long-term flood remediation. This option proposed widening and deepening Dudley Creek along Banks Avenue between the Avon River and North Parade to increase capacity of the waterway so floodwater can more effectively by-pass through the Avon River. The Ministry understands that CCC are now seeking views from residents and stakeholders on three proposed downstream options. The options are proposed to reduce the flooding of homes in the Dudley Creek catchment. The Ministry understands the proposed options are: Option A: Warden Street, Shirley Intermediate School piped bypass and localised Banks Avenue channel works Option B: Warden Street, Shirley Intermediate School, Marian College, Richmond Park and Residential Red Zone (or Medway Street) piped bypass Option C: Localised Stapleton's Road channel works and piped bypass in Petrie Street, Randall Street and Medway Street. 1. This feedback specifically relates to the following proposed work areas: · Option A: Warden Street, Shirley Intermediate School piped bypass and localised Banks Avenue channel works · Option B: Warden Street, Shirley Intermediate School, Marian College, Richmond Park and Residential Red Zone (or Medway Street) piped bypass 2. The Ministry's feedback is: i. The Ministry agrees in principle with the need to implement a solution which will reduce flooding in the Flockton area, however further dialogue with the CCC is requested in order to address potential adverse effects of both Option A and Option B on schools. The reasons for the Ministry's submission are: Strategic Priorities for the Ministry ii. The Ministry is a key stakeholder in the community and exercises its role in the education sector to facilitate achievement of the government's education goals. Quality education services are important for children's social development. Education plays a significant role in the long term wellbeing, cohesion and prosperity of the community, and is central to the development and maintenance of human and social capital. This understanding is promoted in the Ministry's post-earthquake 'Education Renewal Plan'. iii. Schools and the schools network are a physical resource in terms of the definition of "natural and physical resources" in Section 2 of the RMA, and as such, must be sustainably managed. iv. The Ministry needs to deliver quality education services in a cost-effective manner that meets the changing demands of the Christchurch community. Strategic planning and careful management of school facilities is of critical importance for the delivery of quality educational resources. Options A and B for downstream long term flood remediation in Dudley Creek may have adverse implications for several of the Ministry's properties. Option A: Warden Street, Shirley Intermediate School Piped Bypass and Localised Banks Avenue Channel Works v. The Ministry understands CCC proposes to widen the narrow sections of the waterway using public land	Thank you for your detailed and informative submission. Your feedback was considered as part of the MCA process.	

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								and road reserves in seven locations, some of which are opposite Banks Avenue School. Undertake targeted tree and shrub removals of an estimated 122 trees along Warden Street, Shirley Intermediate School and Banks Avenue, construct a new underground pipe beneath Warden Street and across the Shirley Intermediate School grounds. Inlets and outlets to the pipe will be engineered structures with grills / gates. vi. This solution will allow CCC to avoid widening on private residential land, although access would be required for undertake bridge and culvert replacement. There are however important implications for operations and future development at Banks Avenue School, Shirley Intermediate School (and potentially for the adjacent Shirley Boys High School). vii. The Ministry understands that the widening of Dudley Creek will affect the section of creek on the opposite side of Banks Ave to Banks Ave School. viii. Construction work opposite Banks Avenue School may have an impact on operations at Banks Ave School, and the Ministry requests further information and consultation on the timing of work and management of potential adverse effects such as area affected by construction activities, storage of construction materials, construction noise, dust, safety, construction hours and duration, contact person for construction related concerns, and effects on traffic and pedestrian access in order to minimise any adverse effects on school operations. ix. The exact route of the proposed pipeline and any associated easement may have an impact on the future development potential of Shirley Intermediate and Shirley Boys High School sites. The Ministry has not yet received information from CCC on the exact route proposed across the school grounds. Further dialogue with CCC on the proposed route is requested, to ensure the pipeline does not restrict existing activities or future development which may be necessary in response to changing educational demands. x. The pipeline also has considerable potential to affect school operations during the construction phase. The Ministry requests that construction work is scheduled outside of school terms to minimise disruption. Construction activity and noise during school terms is likely to impact on teaching and learning. Loss of access to playing fields would also restrict access to play and recreation areas, and may have financial implications should the school need access to alternate recreation facilities. xi. The removal of trees on the Shirley Intermediate School site has the potential to reduce the amenity of the school when viewed from North Parade. The Ministry would request that replacement tree plantings are undertaken in the vicinity to mitigate any loss of trees from the school site. xii. The Ministry requests detailed discussion with CCC to develop an adequate site management plan to address concerns such as pipeline route, area affected by construction activities, construction noise, traffic, access, safety, lighting, dust suppression, storage of construction materials, construction hours and duration, security, site reinstatement, and contact person for construction related concerns. Option B: Warden Street, Shirley Intermediate School, Marian College, Richmond Park and Residential Red Zone (or Medway Street) Piped Bypass i. The Ministry understands that this option will involve an underground piped bypass which passes through Council-owned land and Crown owned Residential Red Zoned land. It also passes through Shirley Intermediate School land owned by the Ministry of Education, under or through Dudley Creek at North Parade and through either Marian College land owned by the Catholic Diocese. The proposal includes the removal of trees on Shirley Intermediate School. ii. There is uncertainty regarding the exact route of the proposed pipeline and any associated easement may have an impact on the future development potential of Shirley Intermediate and Shirley Boys High School sites. To date, the Ministry has not received any detailed information from CCC on the exact route proposed across the school grounds. Further discussions with CCC on the proposed route is requested to ensure the pipeline does not restrict existing activities or future development which may be necessary in response to changing educational demands. iii. The pipeline through Shirley Intermediate School has potential to considerably affect school operations during the construction phase. The Ministry requests that construction work is scheduled outside of school terms to minimise disruption. Construction activity and noise during school terms is likely to impact on teaching and learning. Loss of access to playing fields would also restrict access to play and recreation		

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								areas, and may have financial implications should the school need access to alternate recreation facilities. iv. Tree removals are proposed on the Shirley Intermediate School site. This has the potential to reduce the amenity of the school. The Ministry would request that replacement tree plantings are undertaken in the vicinity to mitigate any loss of trees from the school site. v. The Ministry requests detailed discussion with CCC to develop an adequate site management plan to address concerns such as pipeline route, area affected by construction activities, construction noise, traffic, access, safety, lighting, dust suppression, storage of construction materials, construction hours and duration, security, site reinstatement, and contact person for construction related concerns. Option C: Localised Stapletons Road Channel Works and Piped Bypass in Petrie Street, Randall Street and Medway Street i. This option involves localised widening of Dudley Creek between Warden and Petrie Street and replacement of several private bridges to increase the capacity for floodwater. There are an estimated 70 tree removals along Stapletons Road, Randall Street and Medway Street. An intake structure is proposed to be constructed at Petrie Street. ii. This option does not run through any Ministry of Education property and therefore does not have any impact upon Ministry property interests. Therefore this is the Ministry's preferred option. Summary i. The Ministry recognises the need for CCC to implement a solution for downstream long term flood remediation in the Flockton area, and welcomes the opportunity to provide comment. ii. As a key stakeholder in the community, the Ministry needs to ensure sustainable management of school properties in order to deliver quality education services now and in the future. Both Options A & B have impacts on Shirley Intermediate, Shirley Boys High and Banks Ave Schools. The Ministry has not yet received detailed information on the route of the proposed pipeline or the timing and management of construction work. These factors may affect school operations such as teaching and learning outcomes, recreation facilities, accessibility and safety, as well as the long term development potential of school properties. iii. The Ministry's preferred option is Option C. iv. The Ministry looks forward to detailed discussion with CCC to address these concerns, and to develop a solution which will meet the long term needs of the community. v. Please do not hesitate to contact the Ministry should you need further information or clarification on any points raised in the Ministry's feedback.		
126	C	4	3	5	4	4	4		Thank you for your submission.	
132	C	5	5	4	5	4	3	Advantages for Option C - lowest cost - able to be started more quickly? No need to negotiate with CERA or Catholic Church. - Improvements to roading for residents of Medway St, Randall St and Stapleton Road - enhancement of Dudley Creek landscape along Stapletons Road. Presently this part of Dudley Creek is less attractive than the section of Dudley Creek along Banks Avenue - no disruption to park or school spaces - potential to also address flooding issues from St Albans Creek - follows existing water course for significant part of proposed route Advantages for Option A -water discharged further downstream. River unlikely to flood onto residential land - bank on true left of river is high. Potential flooding problems caused if water discharged via either options B or C? Flooding across River Road between Medway Street and Banks Avenue frequently occurs already - will this be exacerbated by additional discharge? - follows existing water course for significant part of proposed route	Thank you for your submission.	





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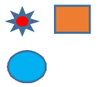
134	C							On behalf of Anglican Living I would like to submit our preferred option for the Dudley Creek flood mitigation works: Option C This option would afford us the most successful outcome in terms of reducing flood propensity on our property which we consider extremely important.	Thank you for your submission and the time you took to engage with the Council team during consultation.	
137	C	4	3	5	3	4	4	I have opted for option C as it goes through Council owned land and could have the positive effect of improving the creek in Stapletons Road with the landscaping work proposed. Although option B has less impact on the people it has the problem of the Red Zone. Option A will change the characteristics of the Banks Avenue area however sensitively it was done. I would like to express my appreciation of the way the consultation process has been done. My questions were answered by experts who were involved in the scheme which made a difference. Thank you.	Thank you for your submission.	
139	C	4	5	4	4	4	4	Option C should ensure that the roading is brought up to a reasonable standard as part of these works. It's also important that the residents are worked with (for any option really) to get the best outcome for their environment and community. Also it should not be the case that one section/area of the community is made worse off as a result of these works. Either option C or B will introduce much more water to the Avon therefore either of these options need to consider this impact and also consider the introduction of stop banks, else this community will be worse off (see above). Option C (and Option A) provide an opportunity to enhance the water environment and are also cost and maintenance wise a viable alternative. Option C also seems to be constructed mostly on roading. Finally, option B proposes to go via an area that does not have a water course through it. It seems to me that there is ample opportunity over the past 1000s of years for the creek to cut across this land if that's what nature intended but it doesn't for whatever reason in fact it takes an almost 90 degree turn at north parade and skirts around this area as does the Avon it also takes a turn away just past Medway. If we have learned anything in these past few years it's that perhaps we should not put something man made where nature didn't intend it to go.	Thank you for your submission which is noted. The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	
142	C	5	5	5	4	4	4	Prefer options which follow existing water course to some extent (Options A & C) rather than create completely new water course (Option B) and like the opportunity Options A & C provide to enhance stretches of Dudley Creek Fewer trees are lost with Option C than Option A. Option C is also cheaper and avoids need to get agreement to cross residential red zone (which may hold up the project?) Option C also provides an opportunity to repair and improve the road surface in Stapletons Rd, Randall St and Medway St, all of which are badly damaged.	Thank you for your submission.	
144	C	4	5	5	4	4	5	Please ensure that any work you undertake addresses the flooding issues at the bottom end of Francis Avenue.	In December the Council resolved to consider flood risk in Francis Avenue. This work is programmed within the coming months.	

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145	C	4	5	5	4	2	4	I am writing to make a submission on the 'Dudley Creek options for downstream, long-term flood remediation' consultation. We live at [redacted] Slater Street. Our property is 10m from Dudley Creek (we share a driveway alongside Dudley Creek with [redacted] and [redacted] Slater Street). We have spent many days trapped in the house due to flooding over the past few years, all post-quake, and are keen to see progress on long-term flood remediation works. We have been lucky and have not had flooding inside our house (due to it being on a natural rise), but have flooded under our house and most of our immediate neighbours have had flooding inside their homes, which has been very upsetting. We support option C. Based on our preferred option, we rank the criteria with the following values: Environment - 4 Community health and wellbeing - 5 Flood risk reduction - 5 Cost - 4 Construction impacts - 2 Time to complete - 4 Thank you for the chance to submit.	Thank you for your submission.	
150	C	5	4	5	4	4	5		Thank you for your submission.	

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DON'T KNOW

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
108	DK	5	5	5	4	5	5	I do not agree with Option A, B or C, as it fails to fix all of Dudley creek and is potentially moving the Flockton Basin and St Albans flooding to Richmond with Option C. I am concerned that using several currently vacant areas (Shirley Community Centre and Churchill Courts) is not seriously being considered for flood mitigation using detention ponds while potentially moving the Flockton Basin and St Albans flooding problems further downstream. Dudley Creek requires further upgrading along its entire length not just parts of depending on which option is selected in conjunction with improving the ecology of the whole stream which is currently woeful. Have the wastewater discharges into the stream been stopped from occurring from the wastewater pump station north of the Averill St / Stapletons Rd intersection? I am concerned that the purchase of 65 Petrie Street by the council signals a predetermined outcome of Option C. I am very concerned for residents in Petrie St, Randall St, North Parade, Medway St and others in the general community area of works for Option C (and the other options) which have the potential to cause considerable stress to many who are or have been stressed out by previous works and insurance battles. I am concerned the amount of flood water coming down Dudley Creek is going to hit a newly created bottleneck at or around Stapletons Road / Averill Street for Option C. This potentially could end up with a new Flockton Basin to the south. I would like the Council to show beyond doubt that flooding is not being moved to Averill St / Stapletons Rd / Dudley St area for Option C by showing the flood modelling which has been done.	Thank you for the submission. The Council considered upgrading the full length of Dudley Creek, but concluded that the risk and cost associated with work on so many privately owned properties, would result in unacceptable timeframes given the urgent need to address the flooding. The Council is considering all three options equally and has no predetermined preferred option. The Council will be carefully designing any works to provide the required capacity, to limit the risk of bypass pipe inlets blocking and considering overflow paths, so as not to increase flood risk to other parties. All three options are designed to lower flood water levels in Dudley Creek. It will also seek to design any channel works to improve the landscape, recreation and ecology values of that section.	

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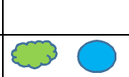
Getting the works done as soon as possible

NO PREFERRED OPTION

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
6	NP	3	4	5	3	3	5		Thank you for your submission.	
20	NP	2	4	5	2	2	4	Whilst I do not currently reside in the immediate area, I have a son and daughter in law who own a property in the Flockton Basin, where they have returned to live with our baby Grandson after months renting while their home was being repaired. So I/we do have a vested interest, as we intend to continue to support them throughout this saga. They are realists, and would like to continue to live in this property, if the flooding issue can be adequately rectified, and if this can be done in a cost-efficient and structured way to dramatically improve flood protection, and provide council first-responders with a very clear snapshot of just what they are dealing with at any given time, and ready access to problem areas through grates/gates/traps, etc, so that problems/potential problems can be addressed and rectified in real time, and with a minimum of disruption to the community. I am not an engineer, so I am not sufficiently well informed to have a preferred option, but as a CCC rate payer with four separate properties, cost and disruption is a secondary consideration for me in these circumstances.	Thank you for your submission. Works are programmed to be completed by mid 2017. The Flockton Street area continues to be an area of focus for Council.	
104	NP	4	4	5	4	1	4	My concern is that no matter what is done to Dudley Creek, can we be assured that the solution will work. As far as I can see, at high tide the Avon backs up to Kerrs Reach, so the water coming down the Avon has nowhere to go remember the problems around the Barbadoes Street bridge? That area becomes a lake. So what assurance do we have that millions of dollars improving drainage for Dudley Creek will prevent flooding in the Flockton area - given that the Creek joins the Avon river below the lake at Barbadoes St/Avon Motor lodge area.	Hydraulic modelling using 'backed up Avon tide levels' shows that all the options achieve the flood risk reduction in the Flockton Area while not increasing flood risk in other areas. Even with high Avon levels there is hydraulic grade down from the Dudley Creek.	
112	NP	3	5	5	4	4	4	None of these options are suitable I have been involved with the Council for some time over solutions I have to the flooding - and will hand deliver my full set of submissions along with diagram to the CCC offices in 53 Hereford Street. Full submission attached.	Thank you for your submission. It is apparent you have put considerable thought into ways to meet the needs of the Flockton area residents. Trenchless techniques such as horizontal directional drilling have been considered by the design team but were discounted due to construction risks, cost uncertainties and required pipe depths to prevent surface disruption. Council is also considering the flood management options in the wider catchment including Shirley Stream, Horseshoe Lake and the Avon River amongst other parts of the city. A tidal barrier solution is currently being considered and it will be reported to Council in the coming weeks.	
116	NP	4	4	5	4	4	5	My concern with the suggested solutions to the problems is what will happen further downstream. Putting all the extra storm water into the Avon River even quicker than happens at the moment is a recipe for disaster if remedial work to the estuary and river is not done first. Silt has raised the levels of both-their ability to cope with increased river flow has been compromised. It will be necessary to do this for any of the three plans to be successful.	The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	
131	NP	4	4	5	4	4	3	I prefer option "D". Improving the capacity of lower Dudley and installing tide gates and a lift station at a suitable point downstream of the North Parade crossing. Dudley creek exists to drain the area and should be improved to be able to do so, isolated from the impact of High tide and with minimum ongoing ratepayer costs.	The team considered a flood gate and pump station on Dudley Creek at the Avon River. Hydraulic modelling showed this option provided benefits to lower Dudley Creek, but the benefits did extend far enough upstream to achieve the required flood reduction at the Flockton Street area, without widening the creek all the way up which was considered but not pursued because of the number of private properties affected.	

THEMES


Use of existing waterways and opportunity for ecological and landscaping enhancement and concerns regarding tree loss and loss of visual amenity


Concerns relation to impact of the works on Banks Avenue


Moving the flooding problem from one community to another


Increased flow of water into the Avon River


Getting the works done as soon as possible

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	Themes
140	NP	3	4	5	3	3	5	The Flockton Community understands that all options offer similar benefits and outcomes, and that it is the residential neighbourhoods further downstream who will experience changes to their communities as a result of the required work. As all options offer similar benefits, the Flockton Community urges CCC to move forward with the option that offers the fastest construction time. We need an option that provides future proofing in the event of climate change which may negatively affect Flockton in the future. We need the option that can cope in larger rain events. We support the wishes of the downstream communities in retaining the character and flora and fauna of their neighbourhood. But our first priority needs to be people having safe dry homes. We thank everyone for the amazing work that has been put into our community's future.	Thank you for your submission. Works are programmed to be completed by mid 2017. The Flockton Street area continues to be an area of focus for Council.	
141	NP	4	5	5	2	2	5	I own a house in the Flockton area where we live with a young family. I am worried every time we have a rain event. If an option could be chosen as soon as possible so that the works can commence and people in our community can go back to living rather than worrying. I look forward to a decision being made and works starting.	Thank you for your submission. Works are programmed to be completed by mid 2017. The Flockton Street area continues to be an area of focus for Council.	

THEMES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DID NOT INDICATE

Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
4								I would like to make some suggestions for discussion before going through the above consultation process. We have gone through several of these processes and both my wife [redacted] and I agree in that the lack of vital information for each options since the residents have only a small window of opportunity at the drop in sessions. You may well say what information? Questions I would ask would be in no particular order and some residents may not even consider asking them since it is a complex issue but they are relevant. The advantages and disadvantages of each option. Flow Capacity of each option. Constraints on flow due to configuration/sharp bends in the pipe and waterways, water flows better in a straight line. Would the pipe section have lower maintenance cost. Cost analysis of each option including long term costs including maintenance work. Would the pipe sections have pressure valves to release excess water in case of exceptional water flow. I would point out that option "B" the pipe section although the more expensive may be more cost effective long term because it may not need the maintenance cost that goes into our other open utility waterways. Like David Adamson commented in today's Press "We will look at all things like the effectiveness of dealing with the drainage, costs, environmental impact, and community preferences" If the community who are all stake holders have all the above information they can make a better informed judgement call before deciding. You may not agree on all those mentioned above, but I ask you to consider them.	Please refer to p20 of the consultation brochure for a table of advantages and disadvantages. Further information is contained within the Downstream Options Report , Section 8, available on Councils website: http://resources.ccc.govt.nz/files/cityleisure/projectstoimprovechristchurch/landdrainage/dcbecareport.pdf Further information on the hydraulic design principles is provided in Section 7.3 of the Downstream Options Report and further information on the hydraulic design of each option is provided in Sections 8.1.4, 8.2.4 and 8.3.4 for Options A, B and C respectively. The hydraulic model considers the geometry of the pipe/waterway and, where possible, sharp bends are minimized to improve hydraulic capacity. Note that in some locations, this is not possible due to property impacts. Information regarding the maintenance considerations of each option is provided in the Downstream Options Report, Sections 8.1.4, 8.2.4 and 8.3.4 for Options A, B and C respectively. Cost information is provided in Section 9 of the report. The long term costs, including maintenance, are being developed and will be considered when the Council makes its decision, however the 'ranking' of the options in terms of cost won't change. In general the pipe sections will have higher average maintenance costs than the open creek sections (the pipes will need periodic cleaning which is expensive given the size of the pipes). Irrespective of which option proceeds the Council will still maintain the creek. Piped sections will not have pressure valves to release excess water. 'Excess' water would not be able to get into the top of the piped section, so it would carry on down the creek. The design caters for a 50-year flood event, and hence this situation of surcharging would only occur in flood events which are more extreme than this.	
45								On initial inspection there seems to be no accounting for the following adverse events. Climate change that will lead to -weather bombs -higher sea levels These events could combine with spring tides to effect massive flooding in the Avon river. I have to ask what will be the effect on the flood level of the Avon when all these events combine with the addition of the flow of the Dudley Creek. Will the Dudley Creek drain flow be stopped when the Avon's flow is reversed flooding upstream areas? In regard to this idea of attempting to drain the area already prone to flooding it is difficult to understand why ratepayers money should go towards an already lost cause. Will the schemes listed provide full protection in all events?	Adaptability to cater for increased rainfall and higher tide levels as a result of climate change is one of the factors the Council will consider when it decides on which option to construct. The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	

THEMES

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
56								To Whom it may concern, I am not convinced by either of Options A, B or C alone, as they fail to fix all of the creek, and the pipe and pump station seem massive intrusions when we already have a natural watercourse which just needs upgrading with perhaps, additional ponding (water storage in heavy rain I believe we can improve on the 1910 layout of our suburb, that had little respect for our waterways and natural environment. This is an opportunity to build on the concepts of open, greener spaces. Every new subdivision should design lowered storm water storage areas that most of the time are open park or wetland areas. This is what is possible in this case. Further, I am concerned about the loss of trees along the Stapleton bank of the Dudley stream. It seems that option C in responding to the interests of those in Banks Avenue sacrifices the environment of the few established trees near us. Perhaps part of the present Shirley Boys High school and Churchill Courts sites where 2 creeks meet, offer the chance to recreate an inner city wetland/ponding area and to improve water capacity when we need it. I note that Council has already brought 65 Petrie St towards the 10m setback, but I wonder if a lot more houses beside the creek on Petrie St and Stapletons Rd could be brought and the sites lowered creating thousands of cubic metres of storage. The latest Council option booklet shows cross section drawings through the creek along Stapletons Rd indicating minimal gain in water cubic capacity for the amount of destruction and trees lost. While the main arterial bridges might need to be maintained, I wonder what savings and improvements to the neighbourhood environments could be achieved by only having smaller single lane bridges or just small foot bridges with services running underneath, and making cul-de-sacs of the road each side, lowering the ground level between to allow for flood water storage , creating open green areas for families to enjoy wildlife and a greener environment as was highlighted as a high priority in CERA's ideas for our new city. If Option C were to go ahead it concerns me that no allowance has been made for ponding at Petrie St (where the pipe starts) when the Avon is in full flood and the tide is high. I have noted that the tide now comes up as far as North Parade. In conclusion, which ever option is decided upon I insist that Dudley along Stapletons gets cleaned up regardless to give the whole solution more resilience. Thank you in anticipation for considering this submission.	Thank you for the submission. The Council considered upgrading the full length of Dudley Creek, but concluded that the risk and cost associated with work on so many privately owned properties, would result in unacceptable timeframes given the urgent need to address the flooding. If Option C is the preferred option, the Council will be seeking opportunities to work with land owners to reduce tree loss where possible, and to design replacement planting such that the works are a long term enhancement. It will also consider removing (rather than replacing culverts) where possible in the context of the road network. The Council will be carefully designing any works to provide the required capacity, to limit the risk of bypass pipe inlets blocking and considering overflow paths. All the options aim would have the general effect of lowering flood water levels in the creek beside your property.	
57								Thank you for letting me have my say. I do not care which option is decided on. I do care that it happens though. Please do not stall or postpone, please move ahead and complete. Thank you,	Concerns noted - project completion date is programmed for mid 2017. Significant flood risk reduction has been achieved with the Tay Street Drain Pump Station.	

THEMES

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
59								Hi there, I do not support any of the proposed Dudley creek options which will directly affect Stapletons Road. Stapletons Road and surrounding streets have been affected one way or another with constant disruption from road and drainage works since the earthquakes and sadly our streets and footpaths have not had the attention they deserve. Dudley Creek does need improvement but not improvements that will have dramatic, unsightly and an enormous impact to our neighbourhood. The problem created by the Flockton floods has now been unfairly transferred to Stapletons Rd. More effort needs to be focused on roads and footpaths along Stapletons Rd we do not need months and potentially years more of disruption. The Christchurch City Council should be ashamed how the area surrounding Stapletons Rd has been ignored since the earthquakes. Roads and footpaths have been in appalling state since the earthquakes making life difficult for able bodied people and people with disabilities. Regular maintenance of all water ways is required not ridiculously expensive solutions that will predominantly benefit the construction sector. I hope my submission is taken seriously and hope the council wake up and fix more pressing problems in my area.	Thank you for your submission. The Council is very mindful of the effect the earthquakes and repair works have had on the community. Council will be considering the effects of further work as part of the decision process, and will also seek to coordinate any necessary works with road repairs planned by SCIRT in the area.	
61		4	5	4	4	4	6	I do not like any of the above options but if I must choose one it would be option A. I would prefer Flockton Basin flood water be pumped to Horseshoe Lake otherwise you are simply transferring Flockton Basin problem to our area. The Avon in River Rd/Medway already runs bank to bank after heavy rain/spring tides so more water pumped in would be a disaster. We are happy with our road & lovely footpath after years of losing lovely neighbours & the noise & dust of demolishing their homes. Please do not devalue our homes that are left.	The Tay Street Drain Pump Station (recently built in Kensington Ave) discharges to Horseshoe Lake via the Dudley diversion. However this was unable to be sized to address the full issue. The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres.	

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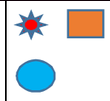
Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
64 to 82		5	5	5	4	4	3	To Whom it may concern, We do not agree with Option A, B or C, as it fails to fix all of the creek, and the pipe and pump station seems unnecessary when we already have a natural watercourse which just needs upgrading with additional ponding (water storage in heavy rain). Don't reinvent the wheel, just fix the flat tyre. We believe we can improve on the 1910 layout of our suburb that had little respect for our waterways and natural environment. As we regenerate our little piece of "God's own", let's build on the central city's concepts of open, greener spaces, and use this unique opportunity to do it better. Every new subdivision must design lowered storm water storage areas that most of the time are wonderful open park areas, this is what we need. Now is the time to take advantage of available sites like the old Shirley community centre site, the present Shirley Boys High School, and where Churchill Courts were, which happens to be where 2 creeks meet, to create an inner city wetland/ponding area to improve water capacity when we need it. There are a number of house sites along the creek that must be uneconomic to reinstate and within the new 10 metre waterway setback. The council has already brought 65 Petrie St to this end, but I would like to suggest that a lot more houses beside the creek on Petrie St and Stapletons Rd could be brought and lowered creating thousands of cubic metres of storage. In the latest Council option booklet cross section drawings through the creek along Stapletons Rd show very minimal water cubic capacity gained for the amount of destruction and trees lost. Do we need to fix or replace all the bridges? Obviously main arterials need to be maintained. However, we could save millions by not reinstating all the road bridges, only having smaller single lane bridges to help with traffic calming, or just having small foot bridges with services running underneath, and making cul-de-sacs of the road each side, lowering the ground level between to allow for flood water storage, creating open green areas for families to enjoy wildlife and a greener environment. This was highlighted as a high priority in CERAs ideas for our new city. Positive spinoffs from this:-it would give great ponding areas during heavy rain, -it would open up the waterways to achieve ecological, recreational and landscape value (The Waterways, Wetlands and Drainage guide, ccc 2003); -limits through-traffic (with no bridges or much smaller ones); -more cost effective to remove road bridges; -less disruptive than 2 years of putting huge pipes down roads; -cheaper to buy land and lower the level of it, so that we can all enjoy a park-like space rather than a pipe no one sees; -creates community areas. If Option C were to go ahead it concerns us that no allowance has been made for ponding at Petrie St (where the pipe starts) when the Avon is in full flood and the tide is high, as I have made aware that the tide now comes up as far as North Parade. AS we, the residents, have our own personal battles with insurance, EQC, flooding, roads blocked and houses demolished around us, etc, we need light at the end of the tunnel, something to strive for and to come to fruition for our children's future that is better than what we had before. In 50 year's time our grandchildren will judge us on how well we have taken this opportunity to make better what we were given to look after for a while. Thank you for considering this submission	Thank you for the submission and the time you took to engage with the Council team during the consultation period. The Council considered upgrading the full length of Dudley Creek, but concluded that the risk and cost associated with work on so many privately owned properties, would result in unacceptable timeframes given the urgent need to address the flooding. Whichever option is preferred, the Council will be seeking opportunities to work with land owners to reduce tree loss and to increase capacity where possible and where needed, and to design replacement planting and paths such that the works are a long term community enhancement. Ponding areas (rather than increased capacity and pipes) were considered as early options, however the area required to address the flooding issues was found to be very substantial and therefore not practical in the built up urban context in the timeframe and budget available. Council will also consider removing (rather than replacing culverts) where possible in the context of the road network. The Council will be carefully designing any works to provide the required capacity, to limit the risk of bypass pipe inlets blocking and considering overflow paths. All the options aim would have the general effect of lowering flood water levels in the creek beside your property.	





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118		4	5	5	2	4	4	Dear City Council, Dudley Creek Downstream Options Having attended the Drop-In session at Delta Community Support Trust Building, 205 North Avon Road, I had the opportunity to discuss my objections to all three proposals with City Council staff that were present. I do not agree with Option A B or C, and raised with Council staff the question as to why they had not continued their investigations with the horseshoe lake option which i consider the best option for the following reasons:- The horseshoe lake option has a better opportunity to flow naturally out to sea, It has a natural ponding area, and it has the ability to take the required water flow from the Dudley Creek area. My objections are to ALL THREE PROPOSALS that have been made (and I consider that the Council has already made its decision) and are based on the following points:- We are on TC3 land and overlook a red zone-which in significant rain already becomes a quagmire-further cubic metres of water pumped into the Avon in the Banks Avenue stream or Medway Street dumped into the Avon raises the potential for our property to now flood. Pre-Quake, we were neither in a 50 nor 100 year flood plan. Our property has lost significant land value and will if this scheme goes ahead; further financially compromise our property to the extent of being worth nothing. To return our property to pre quake does not indicate pumping water into our street. The Red Zone across our road becomes water logged and becomes a bog/swamp area, with more water into the Avon (which is already sluggish and at high tide not able to disperse well) this will flood into our street which will make access in and out of our street night impossible. Our street has dropped approximately 600 mm to a metre-to pump an already flood prone area in heavy rain now places more risk to our property-the Avon river has breached its temporary flood banks on several occasions around our area. The new in ground waste water pump system will be compromised by the higher water level and could cause sewerage overspill in the street in a significant rain/storm. It is worth noting that none of the City Council Staff that I spoke with have actually being down our street, nor were they interested in the fate of the 10 houses in Woodchester Avenue, it was obvious that there mission was only to move the water from Flockton Basin. It has become very apparent to us as Owners of a property significantly damaged by quakes that we will now be significantly compromised by flooding. It is also very obvious that ECAN has not been consulted in this process as there has been considerable damage already around out Avon River with the water level being so high that trees, flora and fauna have already started to die and the bird life severely compromised. CERA has not yet released its long term Red Zone land plan and this too will have an impact with this decision to flood this area. Whilst we as property owners totally agree that there is a requirement to assist the residents in Flockton Basin which has had a long term difficulty we do not agree with Option A B or C being advantageous to the Avenue that we live in and have done so since 1990. We have included photos of our area in the March 2014 flooding in the Flockton Basin which clearly shows that our area too is now prone to flooding-without pumping extra cubic meters of water into the Avon. The City Council staff stated that the extra amount of water being pumped into the Avon would not significantly change anything-we dispute this wild statement as the photos show a very different story of what is our reality now.	The overall project does discharge water to Horseshoe lake. The newly constructed Tay Street Drain Pumping Station (located on Kensington Ave) takes a maximum of 2 m3/s of flow out of the Flockton Street area and discharges it to the Dudley Diversion and on to Horseshoe Lake. For the remainder of the flow in the creek there is a complex interaction between rainfall, run off, flooding and the potential tidal influences between the Avon River and Dudley Creek catchments. Considerable effort has been placed in understanding these interactions which have informed the design. Due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels, so the peaks would not typically coincide. In that case changes in the Avon River peak levels and flows are assessed as being negligible. If the peak Dudley Creek discharge occurs at peak Avon water levels there is a very small increase in the Avon River levels. Further hydraulic work is being done to confirm the impact is negligible. Avon River flood protection options are being considered by Council, and these would reduce flood risk from on Woodchester Avenue from the Avon River. Future use of the Residential Red Zone is related to potential flood protection options for Woodchester Avenue and the wider Avon River catchment.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
124								Submission on the Three Options for Dudley Creek Flood Remediation Jürgen Komp is a drainage expert who arrived in Christchurch in 2012, via South Africa and Gisborne, to help with the repair of our quake-battered infrastructure. Jürgen gained his engineering degree and became a certified professional engineer in South Africa. A man with a constantly enquiring mind, he has become an able problem-solver. Knowing flooding from experiences in South Africa - Ladysmith, (town flooded 5x in two years) Australia – Forbes, (houses on poles by 2.5m and still flooded) and New Zealand – Gisborne, it is not surprising to find that Jürgen has recently grappled with the problems of Christchurch's flooding due to earth quakes. He has compassion for the people affected and believes the solution is with us. Finding a REAL solution to the flooding problem requires a PARADIGM shift. Current practice = Build houses/buildings on good footings (strip, rib raft, flat slab or piled etc.) When floods are greater than estimated/calculated flood levels flooding occurs. DOES NOT WORK! PARADIGM shift required. Enable the house/building to become buoyant when water level threatens to enter the house/building. Provide a buoyancy system/device together with guides which will then prevent water from entering the house/building and preventing the dreaded flooding. This can be easily achieved. The research is done and a model shows it works. Further proof is in all the floating boat jetties in New Zealand, even one at Lyttelton Harbour ferry terminal to Diamond Harbour. The design and installation of this system is Home Owner friendly, Environmentally friendly, Traffic friendly, Insurance friendly, Budget friendly, Resource Consent friendly, Tree friendly, Landscape friendly, Existing Character friendly, Ecologically friendly, Low Risk, future proof against rising sea level of up to 2.4m or more if you like. Please measure it to the proposed MCA evaluation methodology. No excavations, dumping, pipe manufacture and instalment, traffic disruptions, budget over expenditure (more controllable), river channel dredging, waste disposal, stop bank raising and more. Yes, flooding will occur on the ground as it has always done and the protection works are only as good as the last known highest flood. This solution does not rely on any of the above. The house/building floats, no water inside no matter how much rain, storm intensity, re-occurrence of rainfall events sea level rising. To this end he has constructed small-scale models to demonstrate a simple and inexpensive solution. In December, 2014, Jürgen demonstrated the ply-wood models he has made in his Addington garage. One model shows a basic home that would flood as soon as the water level rises. The other one is equipped by a system of buoyant cubes (for easy installation) which floats on the rising water with guides to keep the house horizontal and also protect its utilities and services. It would cost around $80,000 (excluding GST) to install the system under an existing average 120 sqm house, and this would result in on-going flood protection. No flooding ever again. All services taken care of by engineering design. Please I would like to speak to this submission and/or if possible to the two consultant teams of BECA and OPUS. I can show a video on the workings of the model. Thank you.	The Buoyant Foundation System is outside the scope of this project and would involve work on private property, so has been discounted. It may be feasible to construct 'floating houses' but a great deal of investigations would be required to prove this concept and quantify the cost, along with the property owners level of acceptance around such an option.	
143								Full submission attached.	Thank you for your submission. The project completion date is programmed for mid 2017. This will be reviewed after the engagement of the contractor which may yield some programme reduction. Your involvement in the origin of option C is acknowledged, which closely resembles the route you identified in your 6 May 2014 submission. We thank you for your efforts in considering the needs of the Flockton community and for sharing your ideas on options with Council.	
146								The Burwood/Pegasus Community Board provides the following feedback on the Dudley Creek Options for downstream, long-term flood remediation consultation. Of the three options presented, the Board does not support option A because of the high number of mature trees removal required, particularly in relation to Banks Avenue. The Board has concern about the effects of additional flow into the Avon River, which should in theory affect the tidal outflow through to the estuary. The Board seeks clarification if any work has been done on forecasting water levels from Dallington at the outfall into the Avon through to South Shore? The Board is aware that this concern has been expressed by residents at the drop in sessions. While the Board is supportive of a remedy for the Flockton area flooding, it wouldn't want to see increased potential effects on our ward's Avon/estuary suburbs which are already facing flood concerns. The addition of storm surge and any other factors that raise water levels, means we could be facing worse issues in our own area. The Board does not have a fixed view on the better of the two remaining options.	The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres. Avon River flood protection options are being considered by Council.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
147								Hi There Here is the best way to solve the flooding First Take all the Merivale water and put it down Winchester St to the Avon River then pond flood water in English Park. We now have lots of better green areas in ChCh now that can be used for parks. Pond in St Albans Park that park is useless in the winter anyway. And you should Pond where the old Shirley School. Do A and B BUT first of all Block The drain at St Albans Street AS up stream of this is where all the water has been created with infill house roofs and driveway whereas where it floods is much less flat areas for run off.	Thank you for your submission. Diversion and storage options were considered during the options assessment stage. St Albans Park was considered but not identified as the preferred option. Diversion and storage options on St Albans Creek could provide significant benefit to St Albans residents, however, treatment of St Albans Creek in isolation (or in conjunction with St Albans Park storage) is unlikely to resolve Flockton Street area flooding given the required design flows in the system.	
148								Dear Sir/Madam We do not agree with any of the 3 Options to solve the Flockton and Dudley stream flood issues. JUST AS the Banks Avenue recent submissions objected to the Flockton Basin draining through their neighbourhood, the Randall St Option (Option 3) will see the desecration of the Stapletons Rd section of Dudley Creek. The potential for all trees and vegetation to disappear throughout future works progress is HIGH. The Stapletons/Dudley option is a process for NW Richmond to carry the responsibility for Flockton's Flood issues, instead of reviewing the 15 or so other options and others, which were apparently on the table. Issues for Randall/Stapletons Rd Option 3 1. I understand that the underground at the corner of Randall and North Parade exists a Spaghetti Junction of Utility Services-the main trunk waste pipe flushing the NW of the city, Randall and North Parade waste pipes, a major plumbing unit for the said waste water, drinking water pipes and not east electric cables and underground street light cables. Amongst these crucially important services there is the proposal to install a massive pipe to aid draining the Flockton. A risky junction indeed, fraught with potential problems and expense. There exists a huge potential for budget blowouts and further issues to materialise. Pipes possess definite capacities, therefore, is and when a future weather/climate event occurs, (the Randall option is apparently not 100% robust) and in the event that the creek and pipe solution fails, NW Richmond will carry the can so to speak, as evidenced in March 2014. 2. The desecration of a beautiful amenity in our community. The clearance of most trees and vegetation along the Stapletons section will surely happen with the proposed engineered drainage solution. As you may or may not realise Richmond was a particularly hard hit suburb after the quakes, we do not need another constant taken away, and also to inherit the flood problems from other suburbs. NW Richmond's roads and footpaths are 3rd works, we are now on a new Flight path, we have a Quarry unconsented on the Anglican Church site. As is homes have become unofficial Depots. We are Cera TC3 zoned, and in various categories of Flood Zones. Now we are expected to take responsibility for the Flockton Basin flooding problems. I believe the Council needs to look at a more naturalised solution to solve the Flockton flood issues, and not placing the problem further downstream, thereby desecrating the arboreal character existing at present along the Dudley/Stapletons creek. We live in a swamp essentially, perhaps it is better to address that and use the water systems to our advantage to create a solution which stalls the flow of water, and at the same time, providing an amenity to the local and wider community. There is abundant land for the council to use and acquire to provide a drainage system which has the capacity to hold water in pockets instead of it racing through fixed capacities of streams and pipes. Heavily engineered solutions are expensive and invasive. Understandably most neighbourhoods are NIMBY so why not keep the problem at the Flockton Basin and use the designated funds to solve the problem at that site. Thank you for your time and attention.	Thank you for your submission. Your comments regarding the options are noted and will be taken on board when the Council considers the options through the multi criteria analysis process.	

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Submitter #	What is your preferred option?	Environment	Community	Flood risk reduction	Cost	Construction impacts	Time to complete	Comments	Responses	
151		5	5	5	4	4	4	No. Please just fix the flooding-prefer B-seems logical to use red zone and save Banks Ave. Also option C is more invasive on Stapletons Rd- a lovely streetscape.	Thank you for your submission.	
152								Declaration of Downstream Community Priorities regarding Council Options for Dudley Creek Flood Mitigation • We acknowledge the increased risk of flooding to residential households in the Flockton Basin as a result of the earthquakes and the need to address this for the residents concerned. • We understand that that the Council has determined that retreat from the affected neighbourhood is not being considered in recognition of the wishes of that community and its wellbeing and of the potential costs involved. • We are concerned that in attempting to address the issue by increasing the floodwater capacity of Dudley Creek downstream of the Basin that this will significantly impact the environment and wellbeing of other communities. • We are not convinced that improving the floodwater capacity of Dudley Creek will in fact resolve the problems due to the tidal nature of the Avon River at the confluence of the two waterways as indicated by the high level of inundation at the confluence in both Richmond and Avonside during recent floods. Indeed it will aggravate this issue. • We resolve to ensure that problems experienced in one part of the city are not simply transferred to downstream communities resulting in the degradation of the environments of those communities and increasing their exposure to a range of public safety risks including flooding. • We are aware of proposed Dudley Creek floodwater remediation options potentially affecting the communities bordered by Banks Ave, North Parade, Poulton Ave, Medway St, Woodchester Ave and River Road. This block includes Richmond Park a popular and significant sports and green space amenity and a block of adjacent red zone land, the proposed site of the Riverside Heritage Garden Park. • In determining the appropriateness of any floodwater remediation / diversion option our Priorities are: 1. Safety of the public especially children playing in green space 2. Maximum possible protection and preservation of mature trees 3. No degradation of existing landscape or of the unique character of the neighbourhoods 4. Preservation of all sports fields, courts, playgrounds and facilities including the planned new tennis courts – recognising the history (Richmond Park cricket ground since 1885) and high patronage of sports facilities and clubs in the area (7th largest tennis club overall in the city with 110 senior and 220 junior members) 5. Zero impact on any residential housing including from: a. Increased risk of lateral spread and liquefaction b. Increased exposure to damp through infiltration of soils, presence of surface water, etc c. Increased exposure to flooding including back flow d. Increased exposure to sewage-contaminated waters e. Increased risk of insect pests – mosquitoes, sand flies, etc 6. Preservation of heritage gardens and the buildings at 373 River Rd which are an integral part of that heritage 7. Enhancement of the amenity value of the neighbourhood • While we acknowledge the difficult financial position of the Council and the need to contain costs, there is also a need to reflect the true costs of remediation options in any financial viability assessment including the hidden costs to the environment and wellbeing of downstream communities. • We therefore resolve that: 1. The so-called Option A involving the further widening and removal of trees along Dudley Creek around the Banks Ave loop will not be countenanced in any form 2. Option B, a flood overflow diversion from Dudley Creek via Marion College, Richmond Park and the residential red zone would be considered by the local communities if: a. it was demonstrated to be of value in remediating flood risk b. it was fully enclosed, culveted and underground running under Marion College AND diagonally under Richmond Park (to avoid the maximum possible perimeter trees) to the junction of Tilia Lane and Woodchester Street and thence down Tilia Lane to emerge above ground in the red zone lands beyond the tennis courts and c. it was sited the maximum possible distance from the boundary of 43 Woodchester Avenue while not impacting the tennis courts d. it did not prevent the traditional uses of the playing field once installed and did not prevent the proposed additional courts e. once emerging in the red zone it added to the amenity value of the proposed park with appropriate planting and avoided trees	Thank you for your submission. Your comments regarding the options are noted and will be taken on board when the Council considers the options through the multi criteria analysis process. The proposed works do increase peak flows from Dudley Creek to the Avon River, however, due to the different characteristics of the Dudley Creek and Avon River catchments, the peak Dudley Creek discharge would normally occur before the Avon River reaches peak levels. Therefore the peaks would not typically coincide. In that case, changes in the Avon River peak level and flows are assessed as being negligible. If the peak Dudley Creek discharge did occur at peak Avon River water levels, the river levels are predicted to increase by up to a few centimetres. Note that the use of RRZ land is not currently approved by CERA and there may be delays associated with this approval. Note also that trees in Poulton Ave are not targeted for removal in any of the three options.	

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								and heritage elements to end in a wetland at the confluence of Dudley Creek and River Rd f. it did not impact the normal flow in the natural Dudley Creek bed during non-flood conditions 3. No option (Option C) that involved the removal of any tree in Poulton Ave will be countenanced in any form		
153								Ngā Rūnanga Feedback to Council on the proposed Dudley Creek Flood Management proposal. Background The Christchurch City Council (CCC) is seeking rūnanga input into the proposed options for managing flooding along the length of Dudley Creek. Council approached Mahaanui Kurataiao (MKT) in May 2015 to consult Rūnanga on the proposed options. An initial project briefing meeting was held between MKT and Council Contractor (Opus International) on the project. The meeting was held at Opus offices on May 20th and MKT was briefed on the project scope and timelines. MKT was informed that part of the works on the Flockton Basin had already been designed and signed off by Council (Upstream widening of Dudley Creek, St Albans Creek and Shirley Creek). Engagement/Consultation From the initial briefing meeting with project managers MKT was also informed that the current proposals were well advanced with then three options already developed and documented and ready for public consultation. Council had already planned Community drop-in-sessions in the month of June. MKT enquired about previous involvement of Papatipu Rūnanga in this project and the response was that an attempt was made to involve rūnanga through MKT but there was no feedback from MKT. However Council advised that it is now committed to work with Ngai Tahu Papatipu Rūnanga going forward in the selection of the desired option and its implementation. Council also advised MKT of the upcoming workshop (Multi Criteria Analysis) for key stakeholders which is scheduled for 14th July 2015. Council would like to have a rūnanga representative to attend and advise on potential impact of the proposed options on tangata whenua values. MKT organised an initial hui with Ngāi Tahu Papatipu Rūnanga at Rehua Marae on 15 June 2015 and invited Council to present the proposal to rūnanga representatives. The project was tabled and discussed but Rūnanga representatives where overwhelmed by project material which was distributed on the day. Rūnanga needed time to go through the material to be able to provide considered feedback. The day of the hui (Monday 15 June 2015) also coincided with Council pre-planned public consultation which was scheduled to run from Monday 15 June to Wednesday 8 July 2015. MKT arranged a follow up hui on Monday 6th July but unfortunately the hui did not go ahead as scheduled due to unavailability of some rūnanga representatives. Due to tight project timeframes, MKT, on behalf of Papatipu Runanaga have prepared this preliminary feedback on the proposal pending a more detailed submission. Key Issues A. Rūnanga are concerned that they are being involved at an advanced stage of the project development with very little time to consider the proposal. There is also no information about iwi involvement in the implementation of the project. Runanga have interest in the implementation and in the future management and monitoring of the scheme. B. The draft proposed options do not address relevant policies from the Mahaanui Iwi Management Plan. It does not include a summary of key cultural values associated with storm water management as well as an overview of mana whenua values with regards to water and waterways. C. The three proposed options seems to have a narrow focus on conveyance of flood water from one point of the creek to another. Rūnanga believes these options are not really different and are short term measures which will leave houses still vulnerable to flooding in the future. Council should look at a long term plan including a gradual retreat of housing from the banks of the creeks and return it to natural flood plain which can accommodate floods and allow natural river process to take place without human interference. D. The proposed options do not address the significant cumulative impact of modifications of the three streams particularly where the streams pass through private land. There are multiple structures built in or over the creek channels on private sections. These structures cumulatively impedes flow of water and exacerbates flooding. Until Council takes practical steps to take control of the waterways and remove these structures and clear the banks of streams, flooding risk will not go away. E. The proposal did not factor in the influence of climate change in the future. The whole system of creeks including the discharge point at Avon/Ōtākaro River is subject to tidal influence and therefore in the event of high tide coinciding with high rainfall pumped water will go nowhere but push back up the creek causing flooding.	Thank you for your submission. The Council will liaise with MKT directly to discuss these comments.	

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Solution to Dudley creek and Flockton basin flooding

Introduction

[redacted] is my name I was born in Christchurch and have lived here all my life in Opawa The Heathcote river has been a part of my life since as long as I can remember .I must admit up until the recent flooding I had never heard of Dudley creek or the Flockton basin.

But as I will explain I have developed concepts and solutions which will fix the flooding in Christchurch not just to pre earth quake levels but in its entirety thus alleviate any potential further future flooding and the stress that goes with it for the residents

.Although our house is within 400m of two banks of the Heathcote river, we in as long as I have lived here, which is over 50 years, have never been in any way adversely affected by flooding and it is highly unlikely it will be in the foreseeable future

I am not any kind of engineer and have had no formal experience in drainage or flood control. I neither attempt to pretend to be, or do so

I spend most of my spare time studying renewable energy from this I have taken an active interest in the affects of climate change and studied a lot of the ways other countries have dealt with much worse flooding than Christchurch has or likely to experience.

I have approached my concept to a solution to mitigate and prevent this flooding in a logical holistic manner. First preventing the excess water getting to the flood area , then finding somewhere the excess water can go or be diverted to and finally moving the water to this area.

I first contacted the CCC in early 2014 through Councillor Tim Scandrett who is the Councillor in my area .I stated I had a number of solutions to flood problems and had discussed for these to be carried out by a suitably qualified and experienced Overseas Contractor. But more importantly the possibility these maybe able to be done on a substantial long term deferred payment basis. I feel was of most significance

All I wanted in return for this was for the CCC planning department to engage with me on a good faith basis in a review of the Resource management and Local government Act processes as well as the Valuations used by the **Selwyn District Council(SDC)** in its procurement of our ex farm at Rolleston, at a price much less than it cost us to buy and develop this same farm .

Plus I wanted the CCC to highlight the SDC's subsequent immediate rezoning and resale at a huge profit of this farm for their Izone Industrial Park whereby the most important means they used to negotiate the price and ratchet down our expectations of this sale was specifically stating in writing they would not do this. This style of misrepresentation is clearly unlawful for anybody let alone a Local Government.

What I was asking from the CCC was similar to a **peer review**.

I realise the CCC have no jurisdiction over the SDC and find it condescending to be repeatedly told this. But it is ridiculous to state, as they are, that the CCC have no influence or interest in the way the SDC conducts its business and applies the law in this close vicinity.

I could and can see no valid reason why the CCC would not want to do this especially considering what I had to offer in return.

As if the SDC has not acted unlawfully, it is in everybody's interest to show this, including the Central Government. And if they have, as I strongly contend, the CCC as a statutory body should be exposing it .That is the way a functioning and sustainable democracy should work

The Selwyn District Council(SDC) was so easily able to act unlawfully, unfettered, unperturbed but most importantly, unchallenged because the lawyers(Paul Rodgers and Chris Fowler then of Anthony Harper Lawyers now both sole Partners of Adderly Head Resource Management lawyers) we inadvertently chose to promote and protect our interests had a valuable ,long term but most importantly **undisclosed** association with the initiator, Chairman and main negotiator of this same SDC owned Industrial Park, the then Councillor Jens Christensen .

It is also important to note that before we became involved with Rodgers and Fowler, as well as Christensen these Lawyers did a significant amount of work for SDC controlled or interested entities eg Selwyn Plantation Board of which I think Christensen was a director (again completely undisclosed by the lawyers or the SDC) and this has subsequently developed into a multi million$ relation ship between the SDC and these Lawyers .

It is not hard to work out these Lawyers and the Selwyn district Council had a substantial conflict of interest and duty in representing us against Christensen as Chairman and negotiator of the IZONE Industrial park and the SDC as owner ,developer and more importantly consent holder, on an undisclosed basis. Also the same lawyers had a huge incentive to see that the SDC's motives and interests were satisfied as opposed to ours(their clients) this can be verified on analysis of the work these same Lawyers have done for the SDC and its entities subsequent to these negotiations.

Every time we asked these Lawyers why the SDC could get away with what they were doing and we had no say in it. The reply was they are doing it on the basis of a non-notified resource consent and they are the consent holder they can as of "right".

What the SDC were infact doing amounted to coercion and harassment. As was impossible to safely train our horses beside this construction .The more we pleaded with these lawyers to do something about it the more it escalated and focused on the are we were using to train our horses. Amounting to a complaint to the Rolleston Police by me, who replied they cannot get involved in civil matters.

In those days we trusted the Government of this country even the Local ones as well we trusted lawyers and had no idea of any connection between these Lawyers and the SDC.

Everything relates to the valuations. If the valuation of our land was correct and legal on the basis of potential Industrial subdivisible land as obviously it qualified as. None of this conflict of interest or duty material would matter.
But as the valuations are nothing more than a scam fraud and these lawyers were responsible for enlisting the Valuers as well as not in anyway challenging the SDC valuations. Therefore these Lawyers are responsible and the SDC liable for entering into negotiations with them in order to take advantage of this.

Apart from the clear RMA manipulation and abuse by the SDC, also allowed to go unfettered and unchallenged by these lawyers, due to such a significant conflict of interest in the matter .The SDC being a Statutory Body is required under the Local Government Act "*To conduct its business in an Open Transparent and Democratically accountable manner.*" This is not a suggestion or option, but a stated obligation but even on cursory examination and review of this whole affair , nothing could be further from this statutory requirement.

Obviously these lawyers and the SDC had a duty of disclosure thereby giving us a full account of the association between them as soon as it became aware to them. Then seek our written informed consent before continuing.

But not so, according to the Judicial system and the other forms of so called Democratic Government in this country. Even though the law written in Parliament states it. That being the already mentioned Local Government Act but also the Legal Practitioners Act requires more than just full disclosure and written informed consent. In any case of potential or likely conflict of interest an independent law firm must review the situation before it is acceptable to proceed.

For some people concerning the Government in New Zealand, but most significantly the Judicial system, which everybody who is in a position to change it are afraid of, in this country
3+2 = **anything but 5**

Any review would not have taken more than 8 hours by the CCC (much less by a multiples of 100+ than the amount of time I have spent finding a solution to this flooding along with the possibility of favourable payment options) as I already have a report by a senior RMA consultant Peter Glasson, citing many specific areas of "*obvious*" manipulation and abuse of the RMA process and which is also scathing of the lawyers involvement with the SDC in this situation as well most importantly questions the conflict of interest and valuation matters .Peter Glasson states in his report on the conflict of interest is "**basic and fundamental**"

Also in an email to the first review lawyer we engaged Dean Russ who for some reason did not forward this report, the Authors name and the correct mantra of the report , **to us**. *"how they can state it is not a conflict of interest with Christensen involved is beyond me"* I only came upon this report and got the true idea of it correct contents by pure chance, 2 years after it was authored and presented to Russ.

Yet unfortunately subsequent to reviewing the files and making this report, Peter Glasson now wants nothing to do with this matter, which could be something to do with the SDC apparently employing him on a lucrative consultancy basis, consequently due to the report. Also Hughes who is or was the head of marketing or some such thing of this IZONE has enlisted Peter Glasson's services as an RMA consultant.

Back to my initial communication with the CCC.I found my time spent with Tim Scandrett completely wasted and his response most unsatisfactory.

I then, along with my sister [redacted] met with the community board members; Rik Tindal and Karolin Potter separately. In contrast to Councillor Scandrett both these meetings were constructive and productive

Rik just straight away stated the CCC will not in anyway get involved in a process that has anything to do with a review of the workings of the SDC I am not exactly sure of his reasons why and don't want to mis quote him but it certainly is not anything to do with any legal or statutory prohibition. More I feel some unwritten protocol not to get involved in each other's business or territory. This sounds like the way the Mafia works.

I then met with Ms Potter who along with Rik I found to be very friendly, amiable and engaging. I met with Ms Potter on the basis of trying to see if it was possible to put forward our proposals to mitigate the flooding on the basis that our intellectual property will be protected. Ms Potter informed me this was not possible that all submissions come into the public domain thus there is no right of intellectual property.(I hope that is what Ms Potter said because also I do not want to mis quote her either)

I then contacted the Mayor and CEO to state that I have a solution to the flooding as well as a means whereby possibly payment may be negotiated on a deferred payment basis and if they gave me their word that these or part of, would not be implemented without our consent I would forward them to the Council. Then if the CCC wanted to use these concepts and solutions along with the deferred payment option, they could negotiate with us on a separate basis. It should be noted this was solutions for the whole city not just the Dudley/Flockton area.

I also had some constructive comments on issues concerning the building of the new stadium. Most notably concerning the problems these stadiums have with consistent grass growth and ways to mitigate this as well as creative ways to pay for this stadium that would not involve burdening ratepayers, most of who have no interest in the stadium.

I could not possibly see what the CCC had to lose by this proposal. As even if they reneged on the agreement. We could not challenge them, as from my experience of the so called Judicial system in this country and the bottomless pit of money these Councils concentrate on any fight against single rate payers it is like a row boat against a flotilla of battleships with all the expert witnesses lining up, but more importantly the Judges, on the side of the battleships. Unless of course there is some political correct reason for these judges to side with the underdog, then much

publicity is made by it, forgetting the large numbers of peoples lives they have ruined by their attitude which never becomes a matter of public record .

A reply to this email to the Mayor and CEO was not forthcoming and I had to telephone a number of times to the CCC. Then I finally got a reply that the CCC was not interested in anything except the deferred payment option which they stated they would look upon favourable, as though they were doing me a favour contemplating it. As well this message suggested I contact the Ombudsman which obviously along with the Office of the Auditor General., the State Services Commission and a litany of MP's and Ministers as well as their departments I have a number of times.

This terse unengaging reply was unnamed and unsigned and I found its tone extremely insulting and offensive. Considering I was not actually asking for anything except to be able to put solutions for the whole city's flooding forward with the possibility our intellectual property not to be stolen.

I then sent 2 further emails in response to this reply which as usual were not acknowledged or replied to by the CCC .

But it appears even when they are in dire financial straights, by their own doing(lack of adequate Earthquake insurance) and have nothing to lose and much to gain. These Councils cannot help themselves from being intransigent, arrogant and dogmatic

I then sent an email to the CCC engineer involved after reading an article in the Press newspaper, again no reply or acknowledgement. Again I was forced to telephone and got instructed to send the email once more, which this time was acknowledged and with a reply about 1 week later informing me to present this submission by July 8th

I have also sent a number of emails to along with Tim Scandrett ; other Councillors Andrew Turner (on the basis of negotiating this vital infrastructure repairs done on deferred payment thus without the need to sell assets) and Raf Manji (because he is the elected Financial officer) except in the case of Cr Scandrett who was always extremely late and in hindsight appeared reluctant or uninterested. None were replied or acknowledged I telephoned them and left a messages, without reply.

I then visited a Patent attorney who stated it was possible to patent the Intellectual property of flood mitigation concepts and solutions So this I am in the process of doing now

As mentioned I have looked at the whole city and have a solution on this basis.

<u>It involves 4 separate areas</u>
1)The Estuary
2)The Avon catchment
3)The Heathcote catchment
4)the Styx catchment

The Flockton basin/Dudley creek is part of the Avon catchment and as this area appears the most urgent I will concentrate on that first but as I later explain it is not the way I would have ideally approached solving the flooding problem in the City

It appears first there were 2 options to try and mitigate and prevent the reoccurring flash floods in this area

1) was by means of widening and increasing the capacity of the channels as well as bridges and I presume culverts

2) A piped bypass down Warden street across Shirley intermediate with either the flood run off down Banks Avenue(stream) or Marian College, Richmond Park ,Red Zone land to the Avon River or Medway street should the Red zone land not be available (culvert)

Then a third option was added which is a southern piped bypass down Petrie street then along Randall across North Avon Road then along Medway to the Avon River

I do not intend to critique any of these options, as all are deficient in that they do not address the Flockton basin, it reasons and causes for the flooding. As well they do not address the 3 major constraints in the system, which are;

a) The change in direction of the Dudley creek after the confluence with the Mairehau drain this is obviously due to an unfavourable drainage land contour. Then the constriction of the Shirley/Hills Road culvert is exacerbating this unfavourable elevated contour .

b) the lack of scope of the Stapleton's road section of Dudley Creek due to its surrounding topography to carry the required amount of water thus prevent the flood build up without its self seriously flooding .

c)But most importantly they do not address the Avon River and the rise of this especially during prolonged flood events . Even though the CCC state there is a substantial elevation difference, I doubt the Avon river in its present condition during a flood event has the scope to cope with an extra 5cumecs (5 Cubic metres per second) of water to adequately prevent the existing flooding and not cause more problem somewhere else. Also with out the Avon River being properly addressed, means the water table is allowed to rise through out the catchment in consequence exacerbating the flooding.

Hopefully Banks Ave is off the agenda because this part of Dudley creek is completely unsuited to carry the 10+cumecs of water capacity needed to disperse the Dudley creek catchment. To make it suitable will require major and irrevocable remodelling which will completely change the character of this area. I can not see how the CCC or the Government can contemplate this when a better solution can be obtained with inconspicuous pipes/culverts under vacant open land and the ability of that land to return to normal after a short construction and settling period.

Most importantly none of these options do anything to stop the large amount of water getting to the areas which are affected most by the flooding and with the escalations of Northern subdivisions and development, this will increase

In regards to the major drainage of the Dudley creek catchment being the Avon river and even **if** as the CCC state, the Flockton basin is 2 metres above the high tide mark of the Avon. With all 3 options failure to address the Avon river is a sever impediment in the scope of flow of the Dudley creek during a flood event

To overcome this will mean substantial **high pressure** pumping capacity will need to be installed. Not only is the installation and servicing of high pressure piping extremely expensive, as flood events usually accompany inclement weather, which is a threat to the electricity supply. Meaning the reliance on pumps will require backup diesel generators or other capacity

It is important to understand 3 fundamentals in the transportation of water;

a) any deviation from the straight, consistent and direct route costs hugely in efficiency and 90 degree turns as are most roads, without sufficient pressure and or specially designed conduits are fatal to the momentum thus dispersal of the water flow.

b) Putting conventional pipes laying down established roads with existing services is inherently difficult and prohibitively expensive with high pressure piping even more so. Thus the use of open space parks, schools and red zone Crown or CCC land for pipes and covered culvert would make a large difference in the final cost and overall efficiency of the project.

c) Gravity and time will eventually defeat any technology so the answer in successful flood prevention is the best use of gravity. Which often means supplementary and complementary technology i.e In this case finding somewhere or way the water has scope to flow to by enhancing the affect of gravity.

It appears the Crown or Council can acquire private land and easement under the Public Works Act but are reluctant to use their own unused open space land for this purpose instead wanting to rely on upgrading and unsatisfactory channels or the hugely expensive inefficient conventional piped road way option. This is when the open space unused Crown land would be returned to normal after pipe/culvert installation .

Even the contemplation of the restriction of the use of red Zone land to best and most efficiently means to prevent this flooding is an example of bureaucracy gone mad by unelected and unaccountable, highly paid civil servants

The terminology used by the CCC and its engineers is confusing. They speak of 1 in 10 year flood , 1 in 50 year flood or 1 in 100 year flood it seems this area has experienced a number of 1 in 50 year floods in the last 3 or 4 years .Though I can't be sure as I don't remember the magnitude of any floods previous to 50 years ago.

It would be much easier to understand and less ambiguous if simply used **mm per day** or **mm per hour** to explain the capacity or different options

For instance I toured the area on my bicycle during or shortly after the recent prolonged heavy rain fall on the 18th and 19th of June 2015 whereby a total of 25mm of rain fell in about a 12 hour period. The existing drainage infrastructure seemed to be able to handle that fine. Although it should be said this was a Southerly storm as opposed to a slow moving easterly weather event which caused most of the previously flooding problems for various reasons I will later explain why, in submissions concerning the greater Christchurch flood solution .

However it would be much better if the CCC asked these engineers to calculate and tabulate the range and scope of concentrated precipitation each option can handle (mm/hour) to a sustainable threshold without flood disruption. Either access disruption or most importantly people's homes being repeatedly inundated with floodwater, which must be sole destroying for the homeowner.

It is important to understand there are 4 different issues in this

1) the Flockton basin is obviously lower than the surrounding land which accounts for the unusual grid pattern of the streets This results in other areas water draining into it and a constriction to this water getting out

2) The low lying Stapleton's Road has lack of scope to provide adequate drainage of the Flockton basin and Shirley stream in a flood event

3) the meandering nature of this stream after Flockton basin caused by the raised elevation of surrounding land both magnify the flooding and hinder dispersal of flood water

4) As already stated Banks Ave is completely unsuited to handle the dispersal of this water. Remediation of this area to facilitate the dispersal of the water would completely change the character of this area.

The Earth quakes are not the main cause of the flooding in this area as there was regular flooding before the earthquakes The after effects may have exacerbated the flooding in heavy rain events >50+mm in a 24 hour period this is due to lowing of the low points, the mis alignment of banks, channels and culverts. The lowering of the land has not actually caused the flooding just made it worse. I cannot speak from experience but I would not think it make any difference if 100mm of water is in a persons house or 200mm both are entirely unsatisfactory and should not be happening. And maybe somebody is experience flooding that would not have before but that is extremely hard to quantify or justify the cause solely down to the Earthquakes

As already mentioned the lowest part of the Flockton basin is still (relatively) substantially higher than the high tide mark of the Avon, which at present is its only drain sink. So with proper remediation this water has the ability to drain away before there is any floods build up thereby **no flooding for anybody**, which I consider the only option worth considering.

If what the Council states is correct about this 2 metre difference between the lowest point of Flockton basin and the high tide mark of the Avon. This flooding is certainly fixable and not just to pre earthquake levels, but completely .I doubt the 2 metre claim but from my observation of the flow in these channel the height difference is certainly significant.

For this reason alone it would be unlikely for any Government agency to Red Zone this land. I think all the Red Zone land will be at or slightly above high tide mark and /or within 1km of the lower reaches of the Avon river with obvious land stability problems

So the residents of this Dudley/Flockton basin area should be pushing to have a satisfactory solution implemented rather that trying to get the land Red Zoned. As I really think both Red zoning won't happen and the flooding and its potential is completely fixable

Our Solution

All of these concept solutions will **not** need to be implemented to stop the flood problem but all are listed for completeness.

It is also important to state that trying to fix the Dudley creek/Flockton basin first is ideally **not** the way I would have approached it .

First I would have dealt with the Estuary then the Avon river then the Flockton/Dudley creek .As this would have conformed with the holistic logical approach I have noted.

Had the CCC not been so devious and uncompromising when I first approached them over 18months ago this work would have been well underway and the Heathcote flooding and potential would have been completely dealt with by now, maybe with extremely favourable payment options.

This specific and isolated solution to Flockton/Dudley creek primarily involves preventing as much water as possible entering the Flockton Basin by diverting it to Horseshoe lake in the **north east** thereby moving it to somewhere it can be stored satisfactorily This will be done by under ground pipe and/ or covered culvert with gravity the main drive augmented by low pressure auxiliary pumping.

. The pipeline would be between about 750mm and 1.5 metre diameter and where possible cut and covered (open land) where not possible by Horizontal Directional Drilling (HDD) concerning roadways or built up land.

There are many open space starting and landing points (I have noted my starting and finishing points) would mean no traffic needs be disrupted and the longest distance is about 800-1000m which is well within the scope of modern HDD technology. Most distances are under 500m.

I will negotiate the price with an overseas contractor which will be $multi millions x10 less than the laying of pipe down roads

I am unsure of the legality of HDD under private land I know it is done overseas and as long as it is deep enough should not present any long-term problems or issues

Many of the houses affected are Housing Corp owned and many places the route will follow the driveway so the residence is not affected.

Where possible the HDD pipe will follow the road contour but it will be installed **under** the existing services not through them.

All structures will be underground(unless this is simply not possible) so the area is left **aesthetically completely unaltered.**

Northern Divert to Horseshoe lake (ND)

Starting at The Mairehau drain adjacent an empty section number 25-35 Aylseford street . An underground collection sump will be constructed with a retractable barrier then an underground pipe through to Westminster Park. Or a larger underground collection sump can be constructed in the empty section, which obviously the Council would need to purchase. Which should not be difficult as it is for sale at the moment .

Then across Westminster Park to Hills road intercepting the Hills road portion of the Dudley creek to feed in more water

then along/under Achesion Avenue to the reserve opposite the shops

then intercepting the Shirley stream at Quinn's road for another feed in

Across Hamersley primary school.

Then to Shirley Golf Club and beside the existing drain to Horse shoe lake

This would have the potential to remove approx 4.5 cumecs from the Flockton /Dudley creek basin before there is any chance of flooding But due to physical constraints of gradient and pipe size may require more than one pipe

As well Horseshoe lake, especially considering the recent Red Zone demolitions adjacent to it has the scope and capacity to store this flood water until it can be dispersed into the Avon after the flood event or during low tide.

There is already a barrage/ pump station at the Horseshoe lake/ Avon river confluence so this would aid in the storage and dispersal of the Dudley creek excess water.

This northern diversion alone along with the present channel upgrades and maintenance on the basis of what I observed after 25mm had fallen in a 12hours period should be enough to prevent any further flooding.

Northern diversion distances

Mairehau drain intake across Westminster Park to road 400m Cut and Cover (C&C)
Edge of Westminster Park to reserve on Achesion Ave 400m Horizontal Directional drilling (HDD) includes Dudley creek intercept
Westminster Park-120m– Dudley Creek – 280m-Achesion reserve

Achesion reserve – Edge of Hamersley School 180m (HDD)
AR-160m Shirley Stream –20m Hamersley Sch

Edge of Hamersley School to road 265m (C&C) Road to Shirley Golf Club 400m(HDD)
Edge of Shirley Golf Club to Horseshoe lake stream 400m (C&C)

Though as I mention the northern divert may be sufficient. As a matter of completeness I will include my full concept solution that will eliminate all flooding – and future potential from this area (the Gold Standard)

Central (C1)

Diverting from confluence(central 1) of Mairehau drain and Dudley Creek under Hills road/ Shirley Road to the vacant Community Centre Site then to Petrie Park

As well if necessary an extra culvert**(central 2)(C2)** can be put under this intersection from an empty section next to the Shopping centre and beside the creek to the vacant community centre section and potentially joining with the divert to Petrie Park joining with south divert through Shirley Boys High, Marian college vacant land to Richmond park then direct to the Avon

The water from these culverts under this intersection can either be diverted to Petrie Park or just run in the existing system depending on the scale of the flood event

Central Divert distances

Mairehau drain/Dudley creek confluence – vacant land community centre 330m (HDD)
Central 2 Shopping centre –community centre 180(HDD)
Community centre to road 120m (C&C)
CC Road –Petrie Park 265 (HDD)
Petrie Park---edge 65m (C&C)
Edge PP to Shirley Boys high direct 140m (HDD)
SBHS-----Edge 200(C&C)
SBHS Edge to Richmond Park 200m (HDD) under North Avon Road and Marian College Possible intercept Dudley creek if needed but doubt need
Richmond park to Avon Direct 400m (C&C)

Alternative Central (AC)

Takes the same feed in with central 1 exiting at the Northern end of Shirley primary school
And Central 2 exiting at the Southern End then Both Diverging at the North East Boundary of Shirley primary School

From there HDD to Sabina playground intercepting the Shirley Stream with a feed in Across Sabina playground

Then HDD to a pump station at 63 Marshlands Road then HDD to Shirley Golf Club under Mc Corkindale lane converging with the Northern Divert to Horse shoe lake

Alternative Central distances
Central 1---- Nth of Shirley pr School 200m (HDD)= 100m to Eastern Boundary(C&C)
Central 2---- Sth of Shirley pr School 125m(HDD) =100mto Eastern boundary (C&C) Eastern Boundary ----Shirley stream intersect 150m(HDD) ------ Sabina playground 365m(HDD)=road edge (C&C)—63 Marshalands Rd 130m (HDD)----200mShirley Golf Club(HDD) then connect with Northern Divert to Horse shoe lake.

The Northern Divert and alternative central would in affect take all the flood water out of the Flockton creek basin and store it in Horse shoe lake both would augment and compliment each other perfectly. The main difference with the Alternative Central to the Central is that the Central will put its water into the Avon which I feel is not a prudent option in the Avon's present condition , if something else is available .

However because of the diagonal direction of this alternative central divert it would require a lot of(approx 750m) HDD under houses so this depends on any issues arising from this.

If there are any such issues of HDD under houses an alternative is;
Shirley Road Central (SRC) Under Shirley Road to empty section beside Shirley Stream to Shirley Intermediate to Burwood Park then cut and cover, over Burwood Park to Horseshoe lake stream or through the Red Zone land to the Avon river outlet
Hills Road/ShirleyRd Intersection -------- 325m(HDD)Shirley Stream ----------
Shirley Intermediate 325m(HDD)-------Burwood Park 520m (HDD)
either =across Burwood park to Horse shoe lake stream 450m(C&C)
or = across Red Zone to Avon outlet 1000m(C&C)

Alternative central2(AC2) is from Shirley primary school cut and cover North to the Northern Divert at Achesion Ave/reserve then out to Horse shoe lake with the Northern divert .This eliminates the HDD down Shirley road .
The advantage is comparatively easy cut and cover but it is slightly up hill so the pipe will have to be laid progressively deeper to compensate as well it will require a 90 degree turn (conduit) to connect with the Northern Divert.
North edge of Shirley School ==== Achesion Ave/reserve Nth Divert 600m(C&C)

The only advantage of these alternate central diverts is it facilitates the removal and storage of more water in Horseshoe lake. Obviously if all our flooding concepts for the city are implemented there will be no need for this as the Avon will be at permanent low tide in spite of and during any flood event.

It should be noted that this change to the Avon's natural flow will only occur during potential flooding the rest of the time the Estuary and Avon **will function as normal.**

South 1(S1)
Starting at St Albans park diverting along/under Edward avenue (collection drains every approximate 100m or where intercept road drains) through to Petrie Park

Joining with the Shirley/ Hills road divert then through Shirley Boys High under North parade and Marian College across Richmond park then to the Avon River either across the Red Zone land or down Medway Street to the Avon river.

Note. *According to the Ministry of Education,Shirley Boys High is to be abandoned so providing the work is done in the holidays there should be no issues with crossing this land*

St Albans Park ----------Edward Avenue ------ Hills road-------Petrie Park 800m (HDD)

South 2(S2)
Then starting from English Park To Bishop Street where there is an abandoned house beside the creek then along/under Edgeware road.
To Champion Street where there is an empty section beside the creek
Then through to the construction yard in Stapleton's road and down/under Averil street Poulton Avenue to Richmond Park Divert

English Park --------Bishop Street/St Albans Creek 550m(HDD)
----------Champion Street 600m(HDD) ---------construction yard 400m(HDD)---across Construction yard 140m=(C&C) ----Averil/Poulton Avenue to Richmond Park 400m(HDD) alternate in line drain collection with South 1

Intercept1(I1)
A connection can be made between English park and St Albans park and St Albans Park through the middle of Flockton Basin to Westminster Park.

Or more expensively **Intercept2(I2)** from St Albans park to the Lady Fatima School including connecting with the Kensington Rd Pump Station to Westminster Park and the Northern divert

This would completely encircle the flood prone area thus with strategically placed intake drains would completely eliminate any and all flooding as well as all future potential .It would, providing everything functioned as designed, just be physically impossible to flood in any event.

These intercepts would not be required if the Alternate central was implemented with the Northern Divert. But I can not state with the same certainly there would be no future flooding as with out the intercepts the water is not being stopped from entering the area which is against our flood protection ethos and methodology.

Intercept Distances (I1)
StAlbans park----------Westminster park 550m(HDD) through Flockton basin intake drains every 100m

Alternate(I2) St Albans Park ------Lady Fatima School 800m(HDD)-------
Westminster Park 340m HDD drains every 200m or connecting with existing drainage

These connections also present the same potential issues as the central divert of HDD diagonally under houses.

General
This concept does have inherent problems though nothing that cannot be resolved

The pressure of each individual entrance point will need to be equalised to be more than the arterial line in the Northern Divert that can be achieved by increasing the diameter of the arterial pipe after each entrance and obviously each divert pipe will have back flow valves.
It may be easier to have another separate pipe from each entrance to a point where each pipes pressure is equalised.
As well some how the auxiliary drain entrances will need to be standardised in relation to pressure
This could also be achieved by an auxiliary by pass pump at each entry with a novel back drain(subject to a later patent) I have devised so both can work in tandem

Overall I am not entirely sure if this system can function without pumping backup that depends on the exact elevation differences of the area and Horseshoe lake or the Avon storm high tide . But because the HDD technology is not constrained by the local topography a straight and constant gradient can be maintained from the entrance to the out flow point gravity should be sufficient to clear and prevent the flooding .

But as I am sceptical of the 2 metre CCC claim of elevation difference e.g are they speaking of a normal high tide or a flood high tide I am proposing a pumping booster even just to eliminate air blocks However the main trust of the system will run by gravity and it will be low pressure pumping option <2metre head.

Obviously in dealing with the Avon river storm tide scenario before this Dudley creek remediation (as we would have suggested) would enhance the gravity option as there will be at least another metre free board.

Cleaning and removing sediment will be very easy with existing oil pipe cleaning technology as well it is designed to be only used in a major flood event

I have developed a new concept of continuous concrete piping (subject to a later patent) which could be implemented in the areas of cut and cover at a hugely reduced cost of conventional piping.

One of the reasons for this is that it is very expensive and difficult to lay piping through existing services ,whereby workers are required to get in the drench. This is

for obvious reasons. However if the drench can be excavated and the pipe laid then the drench back filled, it cuts out this constraint.
This option of continuous concrete pipe cut and cover down roadway with existing services is impossible.

I have also a new form of variable pressure inline pumping(subject to a later patent) should this be required.

As well as a hybrid diesel Electric form of motive power for the pump that uses cheap and readily obtainable Japanese import300+ HP diesel engines to start the pumps and cover for any electric outage.

This eliminates the need for expensive starters in the electric motors plus prevents excessive wear and tear on the electric motor/ generators These hybrid pump generators/motors could also be used to put electricity back in the grid at times of Electricity black outs for other reasons not involved in flood events these diesel engines would be a good source of auxiliary or emergency electricity

.Due to my previous business experience of importing Japanese trucks and earthmoving machinery I know exactly the type of engines to use. They are durable, dependable, cheap, readily available and most importantly have much useable life left in them as well as being extremely reliable(can be left unused for more than 10 years and providing there is suitable battery power, will still start easily and run perfectly.) These also could be replaced at a moments notice in not much more than 30 minutes in the unlikely event that they will need to be.

I also have developed a concept for a new form of HDD which would enable pipe of over 2-3 metre in diameter to be easily installed over 1 km but I think this is not needed in this case.

As well it may be a better option to HDD under the existing drains and stream i.e if Banks Ave must be used as a final dispersal putting an HDD pipe under it in preference to widening it as an auxiliary means of dispersing flood water .This would not be idea but better than cut and cover down roads or drastically altering the character of the areas just for flood events. However I am not sure of the affect on trees of HDD under them

Conclusion
As I state not only can this flooding in the Flockton/Dudley catchment be fixed in a cost effective and efficient manner, any potential for future flooding can be completely eliminated. The same applies to all the flooding and potential in this city

Obviously I am no help to the residents who want this area Red Zoned I am just a simple dyslexic, aspiring inventor. I have no interest in either getting into any confrontation with anybody over this matter, or trying to convince people to do something they don't want to do or in anyway helping or supporting the Government, Council or any of its agencies in an argument with residents over their homes future. That is for the residents and the Government to work out and nothing to do with me except for the fact I am entitled to what I consider an informed opinion.

If the residents of this area want this matter fixed and the flood potential removed I can facilitate that if they don't want this done that is their business, not mine.

As I have stated to the 3 elected Council representatives I have met with. If the CCC does not want to use our ideas and concepts that is fine I have no hard feelings but don't steal our intellectual property. The time devising and formulating these concepts ands solutions is time I have not been able to put into our business plus they have value to me and I don't want them taken or used without our agreed and informed consent.

What does concern me is the already mentioned arrogance and intransigence of the CCC over this matter, despite the façade they put forward.

I have never had one of the multitudes of emails I have sent to any council unelected officials returned or acknowledged and only 50% to elected officials returned with out a series of telephone calls. Not only do I intensely dislike telephoning people I do not know I find it very difficult to do and am extremely annoyed at the Council making me do this.

This should be contrast to a recent email I sent to the Holcim Cement NZ Head office in Christchurch about a means to power their cement making process by burning waste tyres at a high computer controlled temperature (eliminating pollution) as I had seen in Japan .The only self interest in this for us was we have a lot of waste tyres I want rid of.

The **very next day** after I sent this email I received a courteous and considered reply. First of all thanking me for such a constructive suggestion, but explaining for various reasons, why this could not be implemented. The response from this large International Company could not be more diametrically opposite from what I have received from the CCC.

This concept of incinerating waste tyres or another better concept I have devised, would be absolutely ideal for heating the CCC swimming pools, heating the hospital as well as generating electricity . Providing any potential for pollution was removed which with a bit of creative thinking it can be.
Not only is it obviously a cheap source of energy it gets rid of a waste product that is otherwise difficult to get rid of.
But I would not waste my time even suggesting it to the CCC, let alone anything else.

But it is not just the CCC concerning this flooding . I have contacted many of the relevant residents associations affected by this flooding and never received reply or acknowledgement **from one yet**

I have contacted the MP's in the affected areas though not as bad as the CCC obviously without any satisfactory out come.

Sometimes I wonder, who actually runs this country. Until our recent most unpleasant experiences I was of the opinion, like I am sure most New Zealand people, it was supposed to be the Central Government and predominantly Parliament. And we as citizens are not only governed by the laws written in this institution

formulated and approved by these, our elected representatives but just as importantly we as citizen are protected by these laws .
However since these unfortunate experiences, with other branches of the Government, concerning our farm and other matters it gives me the impression of being more a kin to a Banana republic with regional and crony oligarchies.

From my brother's and my experience, outfits like the Selwyn District Council resemble one of those corrupt Cowboy towns.

The Doobie Brother have a song " *What a fool believes , he sees"* in stead with these Courts and Judges in this country it should be what they want to believe, **they see.** Central Government including MP's and offices specially designated to deal with Local Government abuse i.e Ombudsman .Office of Auditor General, wash there hands of the matter and do their very best not to get involved.

Cowboy methods by Local Government and more importantly Judges and lawyers would not be so bad if the aggrieved citizen could do Cowboy back, but should these citizens complain about these Judges then do one thing wrong, even by mistake. Then these vindictive and malicious Judges apply the full force of the law to harshly penalise them.

Yet every Anzac day we remember the sacrifice and service of so many families so our society could not, should not but more importantly would not resemble my description of it

I would not go as far to suggest the CCC resemble Cowboy town tactics that is what surprised me in the reluctance to expose the SDC . But the CCC appear certainly not interested in anything that does not come from their own channels of cronies with their exorbitant consultancy fees attached . The $5+million contract awarded to BECA Consultancy to decide between the Dudley creek option 1 and option 2 bypass I mention top of page 6 is a prime example of this madness while at the same time the CCC stating they are going to have to increase rates ,**again**

For me fixing this problem in a cost effective manner or even possibly arranging it to be done on a substantial deferred payment basis **is not the problem.**

First is getting somebody with any influence to listen to and meaningfully engage with me over it, in so acknowledging our intellectual property has some value and we are entitled to be protective of it thus in someway be compensated for it and the work required in it compilation.

Second is getting the general public of this city to understand the flooding problem and potential can be fixed in a cost effective and complete manner.

That being said, the flooding and its potential to adversely affect this city will never be fixed in its entirety until the Avon and Heathcote rivers are addressed. That **cannot** be done with out a tidal surge barrier.

Though a tidal surge barrier by its self will not solve this problem it is simply the pre requisite foundation and the vital basis of the concept

The Avon and Heathcote rivers are where most of my time a research have gone into and I have developed a new concept of tidal surge barrier and transporting the water from flood prone portions to other areas that will fix this problem despite what the academics say about the rising sea level negating any chance of this problem being fixed.

This matter can be fixed in a cost effective manner.

From my research I have developed a huge respect for the Dutch Government and people, not only, even at the huge loss of life caused by comparatively recent flooding (1950's) do they refuse to admit defeat or surrender of homes they do not even contemplate it. Again the complete opposite of the CCC and I presume the Government of this country.

The Dutch however are instituting a process of temporary surrender of farmland to save urban centres from flooding, if required during flood events.

I do not consider this policy surrender, but tactical retreat

As well the Dutch have the Rhine river delta to deal with and when considering the Rhine river average flow of 2900Cumecs (cubic metres per sec) and maximum flow of 13000 cumecs plus 2 other significantly large rivers coming from the East . Combined with the North Sea 5 –6 metre over normal high tide storm surges exposing a 100+km coastline and previously open estuary from the West .

This should be compared with the Heathcote and Avon river of about average flow of 5-10 cumecs each and maximum flow of 30-50 cumecs. And an estuary exposed to the sea of no more than 300metres

To put the Dutch effort to control the flooding in proportion the Waimakarari River average flow of 150-200cumec and maximum of 2500cumec with no more than a 1-2 metre storm surge in Pegasus bay

This puts Dudley creek **5 cumec** excess, which is causing the flooding into perspective. As opposed to the Dutch who's feat to defeat this taunting flood threat which is truly amazing

However unlike the CCC the Dutch have absolutely no financial constraint in achieving this feat and it is a sense of national pride that it is achieved. The Dutch have approached this matter on a basis of firepower and almost unlimited resources. Up until recently they have not considered the natural environment and unlike our proposals are anything but subtle and visually or environmentally unobtrusive .

For this reason, as well as the possibility to have our concepts constructed on a deferred payment basis, I can not understand why the CCC has not only ignored us but been so arrogant towards us .As I have stressed all along in all my correspondence with the CCC. I want nothing to do with anything that ruins any part of this city that has been my home all my life, whether it be the natural environment of the estuary or the natural meandering flow of these rivers. However obviously this is about balance and compromise e.g. if snails are put a risk by the increased water temporarily in

Horseshoe lake obviously these snails have 2 options; move to higher ground or learn to swim.

Contrasting the Dutch I can understand why these academics and politicians in Christchurch will so easily reach for the surrender lever.

Surrender in this case for them is very risk adverse they will not be proved wrong and still they get paid.

The 2014 paper these CCC commissioned academics came up(Who knows what it cost) with. Not sure about the just published paper from Tonkin and Taylor I only know of through the Press article July 2015.

Is full of incorrect assumptions turned into fact, which I will later write a rebuttal to.

For a start a 1 metre sea level rise by the year 2100 does not equate to a 1 metre rise in the Heathcote and Avon river.

The tidal difference is about 2 metres at Pegasus bay,Sumner, the entry/exit of the estuary
As I have mentioned I have spent my entire life around the Heathcote river. As a child I swung on the willows, and sailed rafts in this river. The difference from high tide to low tide is nowhere near 2 metres my guess is, it would under 1 metre. Thus we are talking a 85 years future max of 500mm rise in the flood affected areas which can be easily mitigated against

Also these academics have not factored in the lowering water table of the Canterbury plains caused by depleted aquifer recharge and excessive irrigation extraction which will be exacerbated by the same climate change which is causing the sea level to rise. This is significant being the aquifer is the main source of water for these rivers when not flooding so a decrease in this correlates to a decrease in the flood height.

Most importantly how can any body suggest a policy as radical as surrender on the extrapolation of a model of something, which **could** occur in 85 years. When there is no way of calculating the affects and mitigation of future technology to deal with the cause predicating the forecast

This contingency of surrender is clearly not formed on the basis of balanced data thus is neither, credible, valid nor applicable.

The affects and reasons for climate change are now self evident and along with it the subsequent sea level rise and dramatic un predictable climatic events,(which are and will be the major cause of the flooding) are almost irreversible

But who knows what will exist in 2100 to counter or mitigate against this sea level rise.
e.g. New energy ,pumping and piping technology may enable huge amounts of sea water to be transferred to the vast inland desert basins creating inland seas along with aqua culture and desalination of water ,green houses with variable oasis's of life and food production . So long as sufficient water travels to and from the ocean there will

be no great salinity change. Lake Eyre in Australia and the Deep sea in the middle east are a prime candidates for this. Because the rise in temperature of this seawater it will also facilitate massive amounts of it to be evaporated thus the possibility of it falling as rain on the deserts. As well some useful option can be made of the salt and mineral deposits by a bit of positive and creative thinking

As well I think the recent havoc caused by ocean storms will reap leaps in advanced sea side protection and land reclamation such as man made islands and reefs. Pushing this rising ocean and more importantly the storm surges that cause the problem, further away from the urban build up

I am of the opinion like the Dutch.
People's homes are not up for surrender from anything. If the battle is to be lost it is a loss sustained while fighting not retreating.

I also qualify that by stating no body should have to put up with even the chance of **any** floodwater inundating their homes and before libraries, convention centres or stadiums and even smooth roads it is the Governments duty and obligation to ensure this does not happen and just as important can not happen.

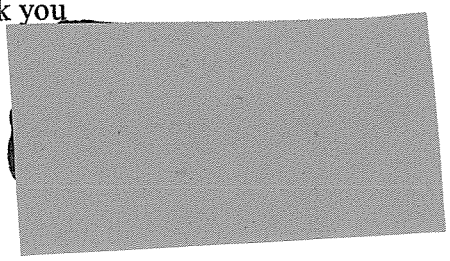
But it appears what they are doing here is nothing and hoping for favourable weather like some dysfunctional corrupt third world entity.

Obviously concerning my solutions stated for the Dudley creek the main constraint is cost . Up till now the CCC the only approach to fix the problem in its entirety has been cost prohibitive. The 2 or 3 solutions put forward at an estimated cost of $50million with a margin for error of up to 30% increase and a $5million+ cost to decide which diversion to implement ,**will not fix the problem in its entirety** But we went to the CCC with a realistic, viable, achievable and creative solution to this and still they ignore and insult me.

My concepts and solutions to the Heathcote and greater Avon catchments will be the subjects of other patents, which have been already entered on a provisional basis like this one for the Flockton/Dudley creek catchment

If you have taken the time to read this

Thank you



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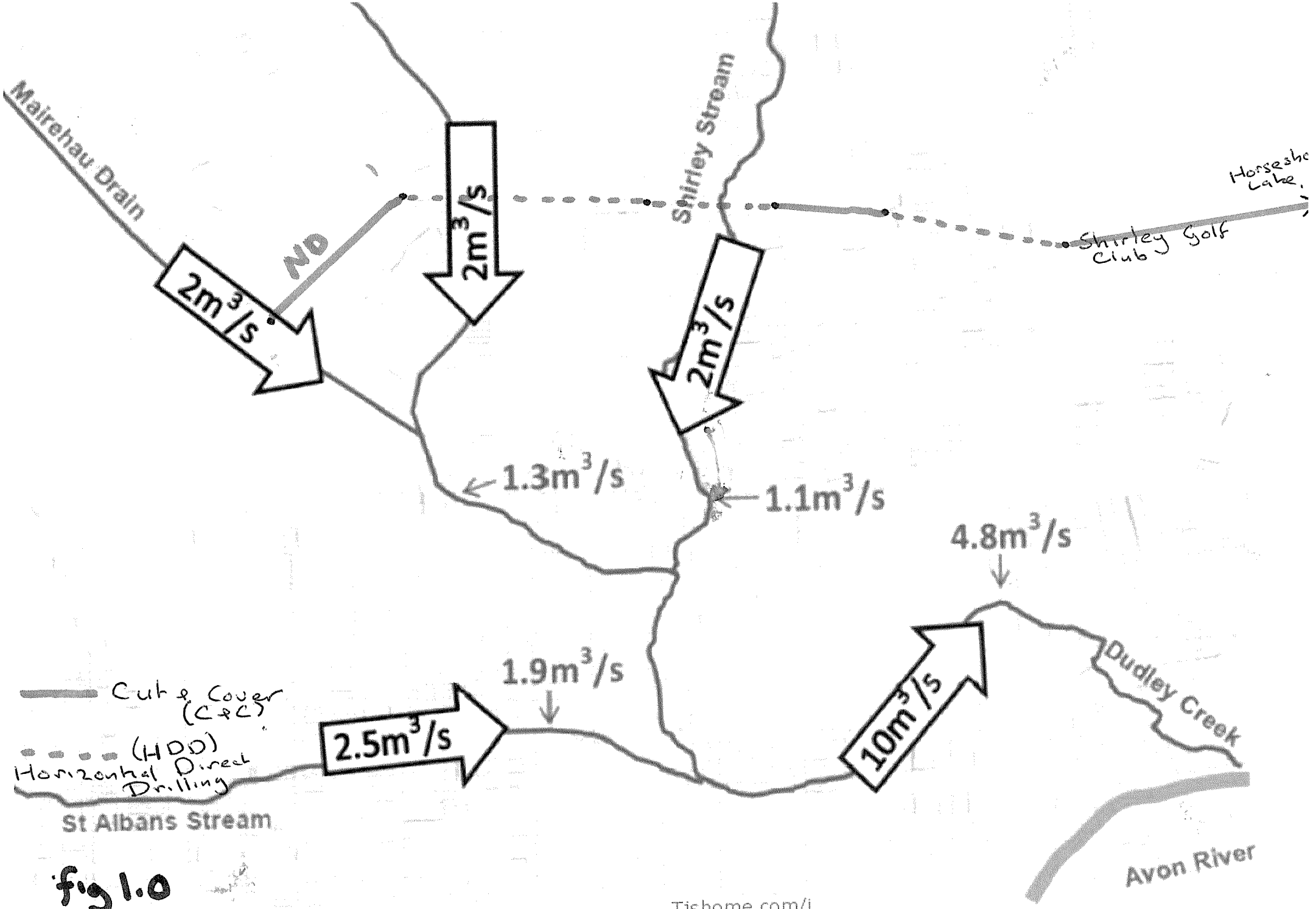
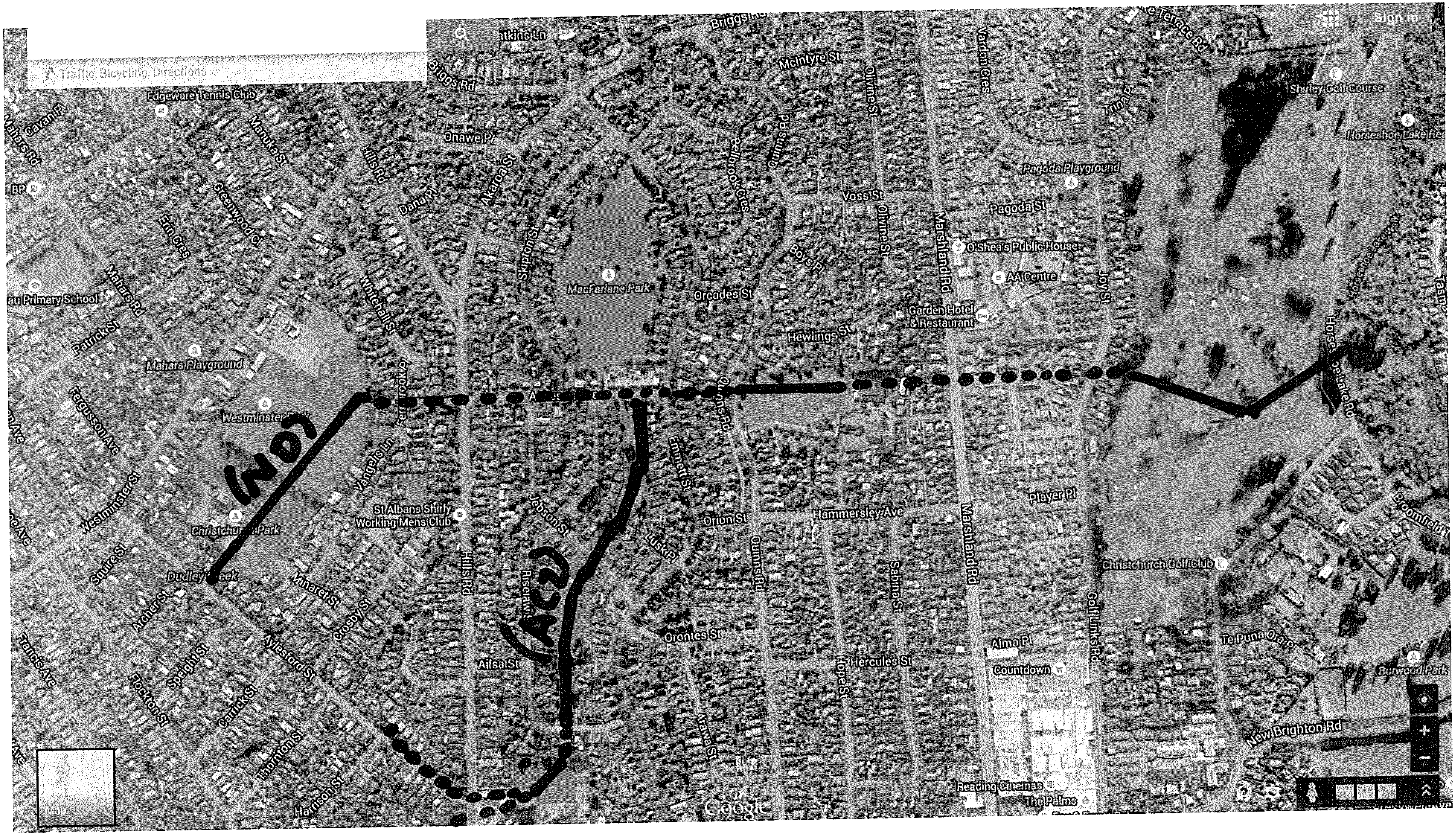


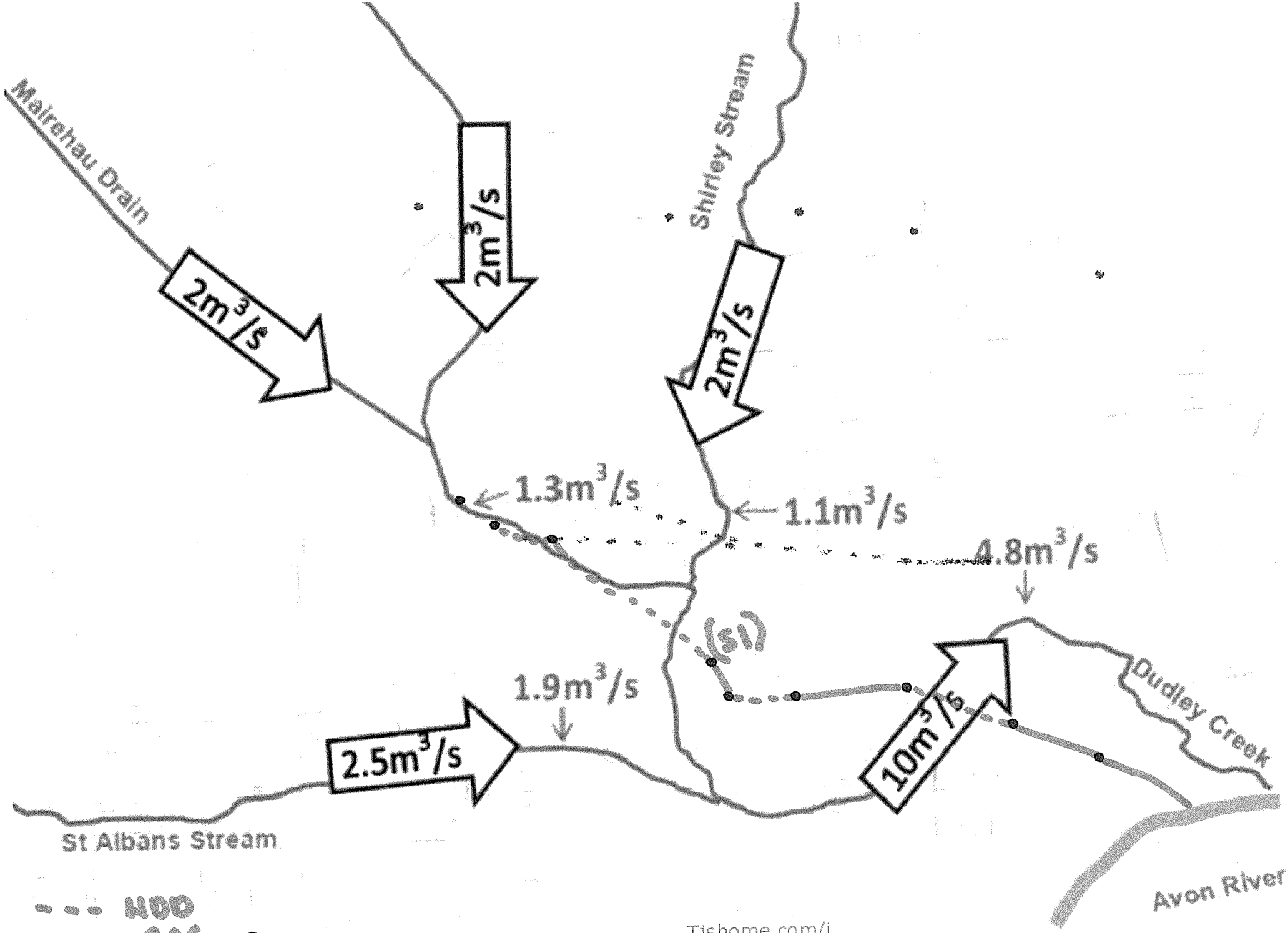
fig 1.0

NORTH



(ND)
(AC2)
Marshland Rd
Hills Rd
Quinns Rd
MacFarlane Park
Golf Links Rd
Christchurch Golf Club
Shirley Golf Course
Horseshoe Lake Rd
New Brighton Rd
Mahars Rd
Westminster St
Traffic, Bicycling, Directions
Sign in
Map

Fig 1.1



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— CTC.

fig 2.0

CENTRAL

fig 2.1

SOUTH

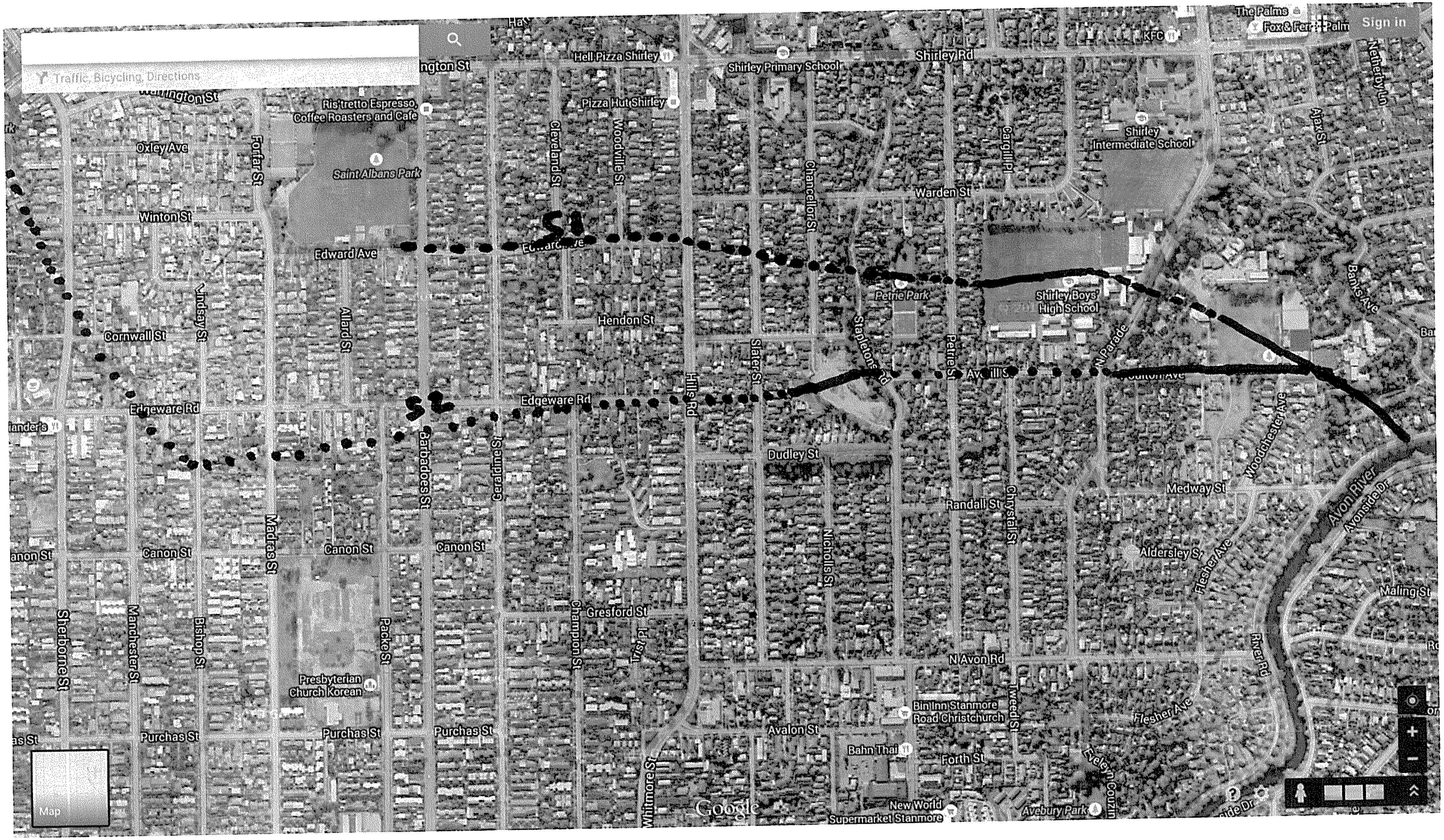
S1
S2
Traffic, Bicycling, Directions
Sign in
Shirley Rd
Hell Pizza Shirley
Shirley Primary School
Pizza Hut Shirley
Ristretto Espresso, Coffee Roasters and Cafe
Saint Albans Park
Oxley Ave
Forfar St
Winton St
Edward Ave
Cornwall St
Lindsay St
Allard St
Edgeware Rd
Cleveland St
Woodville St
Hendon St
Chancellor St
Warden St
Cargill Pl
Shirley Intermediate School
KFC
The Palms
Ajax St
Netherby Ln
Banks Ave
Petrie Park
Stapletons Rd
Petrie St
Shirley Boys' High School
N Parade
Hills Rd
Slater St
Dudley St
Barbadoes St
Geraldine St
Madras St
Canon St
Packe St
Champion St
Gresford St
Trist Pl
Nicholls St
Randall St
Chrystal St
Medway St
Woodchester Ave
Avon River
Avonside Dr
Aldersley St
Flesher Ave
Maling St
River Rd
N Avon Rd
Tweed St
Bin Inn Stanmore Road Christchurch
Avalon St
Bahn Thai
Forth St
New World Supermarket Stanmore
Avebury Park
Evelyn Couzins
Whitmore St
Presbyterian Church Korean
Purchas St
Sherborne St
Manchester St
Bishop St
Map
Google

fig 3.0

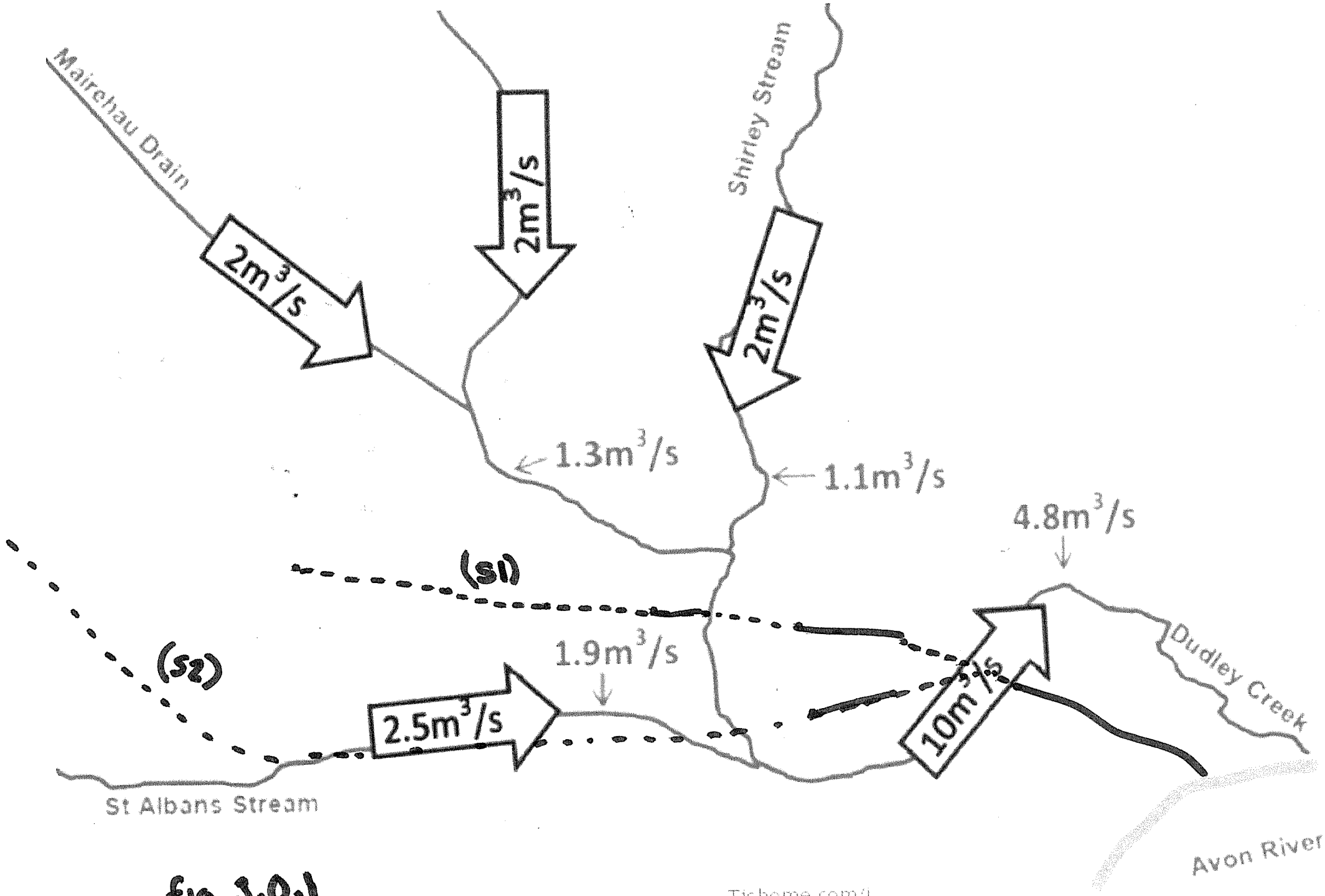

fig 3.0.1

Submission to CCC – Dudley Creek Consulation

Prepared By: Bruce W K White

Date: **8th July 2015**

To: **Ann Campbell**
Christchurch City Council.
Consultation Leader,
Public Information and Participation Unit

1700 Days ?

Dudley Creek Consultation – Submission – In Response to Consultation Report dated 12 June 2015

Overview of Project:

Project Start Date:	November 2012
Target Conclusion Date:	August 2017
Project Time Span:	4 years & 9 Months - **say 1700 days**.
Downstream Pipe – Option C:	800 meters long.
Proposed Progress Rate:	**Less than ½ metre per day !**

Summary of Submission:

The Problem:

- The flooding problem is caused by a constraint or bottleneck in the Dudley Creek system.
- The best solution is to prioritize the removal of that constraint or bottleneck.

The Council Process:

- The internal processes adopted so far have been sub-optimal.
- The interests of the residents have been very poorly served.
- The financial impact on ratepayers has not been minimized.

The Outcome:

- Council continues to operate outside its statutory purposes.
- Council continues to ignore the requirements of the LGOIMA.
- Requirements of effectiveness, efficiency, transparency, sustainability and democracy have not been met.

The Submission:

I have read the main consultation documents dated 12th June 2015.

I acknowledge the work done by the named report authors, Beca, Opus and EOS. Thank you to them.

Reports produced by consultants are always constrained by the 'scope of engagement' provided by the client; - which in this case is the Christchurch City Council. I am not privy to the scope of engagement or the various communications that have taken place between the Council and the consultants.

The June 2015 report is a hesitant step towards the sensible remediation of the Dudley Creek flooding issues.

However the exact nature of the critical 'downstream' works is dependent on the current consultation process, the assessment by Council staff and then the decision of the elected Council. That gives rise to considerable trepidation.

I submit that the remediation of the Dudley Creek flooding situation is **probably the worst example of any post-earthquake recovery project in the city**.

The residents of the Dudley / Flockton area have suffered the multiple disruptions of the flooding events and all the ongoing uncertainty.

Unfortunately, under the current preferred options, the Council's clear intention is to stretch the project out for another 2 years. As noted in the Beca-Opus-EOS 'Downstream Options Report (Section 1.2 , Project Objectives) , the Council still has an objective that the 'scheme' be completed by August 2017.

That time frame can be and must be reduced.

I believe that the critical 'downstream' component of the project could have (and should have) been completed by now. In fact it could have been in place this past summer !

To understand why such a statement can be made, requires some knowledge of the way in which the project has proceeded to date.

Dudley Creek – A short project overview:

The project commenced in November 2012. In the sixteen month period to March 2014, fourteen possible options were considered. Around the time of the March-April floods, those fourteen were whittled down to two and presented in reports dated March 2014.

The political response to the three floods was the formation of a 'Mayoral Flood Taskforce', probably borne from the Mayor's exasperation with the performance of Council managers and engineers. Naturally the Taskforce recommendations were adopted, as the Council needed to be seen to being doing something, even if the proposals (upstream works and the Tay St pump) were skew-whiff in terms of priorities and probably a waste of money.

Another report and round of consultation followed in November 2014 with a couple of revised options being recommended. Upon analyzing submissions, Council staff and consultants (Jacobs) produced new plans for approval by the elected Council. And so the 'downstream' options were carefully narrowed down to two, with a pesky third relegated for nuisance value.

A second consulting firm (Pattle Delamore) was quickly brought into the mix to steady the ship with a peer review and they were careful in their appraisal. Then in March 2015, yet another set of consultants (Beca-Opus-EOS) were awarded the contract to further scope the options; - and it is their report which was released on 12 June 2015.

The June 2015 report currently out for 'consultation' is now showing three options; - down from the original fourteen of 1½ years earlier, but up one from what the elected Council had been maneuvered by staff into approving six months earlier.

The question arises; - where did the third option (Option C) come from? Why has it been sprung on the residents and ratepayers this late in the piece. Here is the short version of the origin of Option C.

Option C – Bypass using Randall & Medway streets:

The 'Randall-Medway Bypass' option was first proposed (by myself) on **6th May 2014**, a few days after the last of the floods and the establishment of the Mayoral Flood Taskforce.

In the intervening months, the failure of Council staff to properly consider the 6th May proposal was something I've never personally witnessed in my business career. If I put forward a sensible option that saved considerable time & money to any decent corporate, I'd expect to be welcomed and thanked. But not so with the CCC. How naïve of me.

When it came to the November 2014 submissions, I felt it best to prepare a full submission, including copies of all relevant correspondence. I did this in the knowledge that few would read the submission, but at the very least it might induce a proper consideration of the 'Randall-Medway Bypass' option.

It obviously received consideration, but it certainly wasn't proper consideration. It seemed that every effort was made to ensure the 'Randall-Medway Bypass' was ranked third or lower.

The manner in which the submissions were considered, followed by the hasty rearrangement of proposals put forward to the elected Council in December 2014, demonstrated the severe deficiencies in the Council engagement processes and the elected Council decision making process. *The extent of those governance deficiencies is a matter for another time.*

As expected, the June 2015 Report for the current round of consultation says exactly **zero** about the origin of Option C, the 'Randall-Medway Bypass' option. How crass.

Effects of the Failure to properly consider the 'Randall-Medway Bypass' option:

There are two main effects:

- The 'Randall-Medway Bypass' could have been completed by now; - by this past summer.
- The overall project cost would have been substantially less.

Unfortunately, there are senior members of the Council staff who have failed to engage with a sensible proposal and thereby squandered both time and the ratepayers' money.

That failure to engage has meant the proposal I first put forward on 6th May 2014 has not been correctly understood. In simple terms, the project priorities have been **bizarre**; - the priorities are arse-about-face. A serious change in thinking is required, as set out in the appendix below.

The failure to understand how to handle system constraints has a continuing impact. It skews the assessment of the three 'downstream' options and impacts on the delivery time & cost of the overall project.

In terms of timing, there is a continuing reticence to invoke the powers of the CER Act (Canterbury Earthquake Recovery Act) in tandem with community consultation. The prime purpose of the CER Act is to aid the recovery and the Dudley Creek remediation requires a proper recovery response.

I won't bother going into other aspects of the 'timing' and 'cost' effects. To do so would be difficult, as any in-depth analysis would require substantial disclosure of information by Council. Regrettably information disclosure is not a strong point of Council: - the situation is that some Council staff members have deliberately withheld information on the Dudley Creek project which should have been provided under the Official Information provisions of the LGOIMA (Local Government Official Information & Meetings Act).

On the matter of legal responsibilities, Section 10 of the Local Government Act provides as follows:

Local Government Act
Section 10 Purpose of local government
(1) The purpose of local government is—
(a) to enable democratic local decision-making and action by, and on behalf of, communities; and
(b) to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.
(2) In this Act, **good-quality**, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are—
(a) efficient; and
(b) effective; and
(c) appropriate to present and anticipated future circumstances.

I'll put my money on no-one stepping forward to defend the Dudley Creek project as meeting either of the provisions of Section 10 (Purpose of Local Government).

Concluding Comment:

In my view, the remediation of the Dudley Creek flooding situation is **probably the worst example of any post-earthquake recovery project in the city**.

The public keeps hearing about the need to change the culture within the Council and the financial predicament facing the ratepayers in the next few years. Improving the Council's performance requires some significant changes. A good place to start might be to look at the Dudley Creek fiasco.

I hope that the Mayor, Councilors and CEO of the Council take appropriate action in the cause of sorting out the Dudley Creek situation and in the wider cause of helping the city move forward.

Finally, just think about the big numbers in the whole project – and draw your own conclusions:

Project Start Date:	November 2012
Target Conclusion Date:	August 2017
Project Time Span:	4 years & 9 Months - **Say 1700 days**.
Downstream Pipe – Option C:	800 meters long.
Proposed Progress Rate:	**Less than ½ metre per day !**

Yours sincerely

Bruce White

Contact Details

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Appendix: How to think about Constrained Systems:

Part A: A general overview of the flooding problem:

- The flooding problem in Flockton Basin and other parts of the Dudley Creek is primarily due to a **constraint** in the discharge of storm water in heavy rain events.
- In other words, there is insufficient capacity in the pipes and natural waterways to handle the volume of rain water. A bottleneck (constraint) exists.
- To use the bathtub analogy, the taps are on and the plug is in (or perhaps partly in). The water outlet is constrained and water can't discharge as fast as it is coming in via the taps. To stop the water overflowing, you either turn off the taps - or you remove the plug - or you get the buckets & syphons working.
- Clearly, there are constraints in the discharge of water from Flockton Basin, because when the flood waters disappeared, they did so fairly rapidly.

Part B: Dealing with Constraints:

Step 1. The first thing about any constrained system (eg. flood waters, road works or a manufacturing facility) is to identify the main constraints in the system. At this stage, there are of course numerous assumptions being made in identifying and assessing these constraints.

Step 2. The second thing is to identify which of the main constraints (identified in Step 1) is the 'Primary Constraint'. This is the constraint which has the most overall impact on the constrained system.

Step 3. The third step is to focus on and do whatever is needed to remove the 'Primary Constraint'.

Step 4. Once the 'Primary Constraint' is removed, the next steps are to repeat the process on the other constraints in the system, as identified in Step 1. However with the 'Primary Constraint' now resolved, the overall system is now different and the nature of the residual 'Secondary' constraints tends to become clearer. The earlier assumptions and estimates need to be modified and some secondary constraints may not be any issue at all.

Part 3: How to Apply Constraints Principles to the Dudley Creek System:

Best Practice:

Step 1. Clearly there were constrained flows across the Dudley Creek system.

Step 2. The 'Primary Constraint' in the system was identified as being east of Stapletons Rd, and specifically downstream of North Parade.

Step 3. The third step should have been to deal with this clearly identified 'Primary Constraint'.

Council Practice:

That 'third step' is **not** what Council and Consultants did. They incorrectly focused on the whole catchment and made numerous estimates in doing so.

Then the Mayoral Taskforce got into action and they talked about social issues, retreating from Flockton Basin, wrapping houses, doing upstream works and building the Tay St diversion.

In the process, they all lost sight of what had to be done as a 'Number 1 Priority' ahead of all else. The consequence has been a bucket-full of money spent and the project is far from finished.

Using the bathtub analogy, they got buckets & syphons out and didn't focus on removing the plug.

Part 4. How the Randall-Medway Bypass options was quickly developed.

- The original proposal was not some flashy piece of inspiration.
- Rather it was a very deliberate (short) study of the Dudley Creek system after I travelled through the area expecting to find flood water and found none. It was based on my experience as a key stakeholder & project manager guiding a successful stormwater and land construction project in Auckland, my knowledge & experience of systems and constraints theories and a clear enunciation of the purpose and principles that should guide projects such as the Dudley Creek remediation.