

## SUMMARY OF POINTS ADDRESSED IN THIS SUBMISSION

- DCC seems obsessed with talking about future-impact climate change issues for South Dunedin, but seems reluctant to acknowledge the existing flood risks, and remains intent on avoiding its expensive obligation of dealing with those existing flood risk issues.
- DCC has NOT addressed key issues identified more than a decade ago in its 2010/11 Integrated Catchment Management Plan (ICMP) for South Dunedin, These issues were responsible for much of the damage in June 2015.
- Despite its claims made to the contrary, DCC has not “fixed” key causes of the June 2015 flooding.
- Proper solutions to existing problems are likely to cost far more than the \$37 million budgeted for the next decade.
- Despite the submission process being touted as an opportunity for “conversation”, my experience has demonstrated that DCC is intent on avoiding meaningful conversation. My good faith attempts to communicate with senior relevant staff with a detailed professional-level assessment of flood risk realities in South Dunedin have effectively been ignored and unacknowledged.

## INTRODUCTION

This submission has been prepared solely by me, Neil Johnstone BE (Civil), former Investigations Engineer at Otago Catchment Board and Otago Regional Council. I have decades of experience of Otago-wide flood issues, and have investigated infinitely more complex flood events than that of June 2015 in South Dunedin. One in particular that comes to mind involved my role as Technical Advisor to the Government appointed Clutha Flood Solutions Co-ordinator, Alex Adams who reported to Government extensively on the 1999 Clutha-wide catchment flood event. Mr Adams is on record as having found my technical expertise in the flood analysis field to be “nothing less than inspiring”. I record this solely to assure readers of my competence to comment on the realities of the South Dunedin flood risk issue.

## COMMENT ON THE 10-YEAR PLAN

The 10-year plan document states that DCC plans to allocate about \$37 million over the next decade to improve South Dunedin’s stormwater systems to reduce its flood risk.

- There is no mention of what these works will entail or where they will be carried out.
- Similarly, there is no indication of what additional, if any, standard of protection they will afford the South Dunedin area.

Without that information, consultation (so called) seems pointless.

My comments here can be read in isolation, but could also be read in conjunction with a 30-odd page draft paper entitled **An Independent Appraisal of the Causes of the June 2015 Flood - A Technical Analysis of Flood Cause and Documentation of Personal Experience** that I presented to the current DCC Chief Executive Officer and senior technical staff on 5 November 2020. That paper outlines the real flood issues currently facing South Dunedin (irrespective of, but not ignoring, climate change).

The paper demonstrates that in addition to failed maintenance (especially of mud tanks) and ignorance (including failure to utilise the Lawyers Head outfall), the other major causes of flooding

were an undersized existing pipe network, characterised by bottlenecks at multiple locations, and the ability of cross-catchment flows from St Clair and Orari Street catchments to inundate the area. I would expect resolution of the last-mentioned 2 issues alone would cost far more than the budgeted \$37 million. I would also submit that resolution of these issues should have been progressed long before now since they were brought explicitly to Council's attention in the ICMP some 10 years ago.

### INACCURATE INFORMATION

The belatedly-delivered (17 April to my address) invitation to join the conversation (how ironic) fails to present an accurate assessment of current South Dunedin flood risk, in the same manner as has much of Council information dissemination since immediately following the June 2015 flood disaster and right up until the present. Refer my paper for multiple instances. As representative examples:

1. On 5 June 2015 the then Mayor told ODT readers that the stormwater system "*was up to scratch*";
2. On December 5 2020 DCC's Infrastructure Services General Manager told ODT readers - or allowed them to be told - that problems that showed up in 2015 have been "*fixed*";
3. In the same article, the current Mayor told readers that work on finding solutions "*has not slowed since 2016, even if it has not all been in the spotlight. The challenges are large and complex, but we believe that there is time to respond in a careful and considered way*".

All 3 statements are/were demonstrably challengeable, and are far from being cases in isolation.

- In respect of the first inaccuracy, DCC's position ultimately altered to the equally challengeable claim that the now-infamous mud tank blockages had little or no impact on the extent of flooding. That claim has been-repeated ad nauseum;
- in respect of the second, it is a matter of record that the DCC 3 Waters Group Manager presented a seemingly entirely different assessment in his (eventual) response of 11 September 2020 to my letter to the former CEO of 18 June 2020. There was no suggestion in his reply that the problems of overland flow or bottlenecks had been advanced at all. See my further comments later in this submission.
- In respect of the third, it would appear that the current Mayor is convinced that South Dunedin flood issues are simply associated with future climate change impacts. South Dunedin's flood risk is a current danger, requiring urgent - and expensive - action on several fronts. I would urge him and any other seemingly poorly-advised Councillors to read both my paper and the 2011 South Dunedin Integrated Catchment Plan produced by OPUS and URS.

### THE REALITY

South Dunedin has a known, but often misunderstood susceptibility to flooding. The pump-driven drainage system installed in the early 1960s to replace the half-tide system improved the system greatly. The new system coped admirably with a 24-hour rainfall of 158 mm in March 1968, but was found severely lacking in a lesser rainfall event (142 mm) in June 2015. Please be reminded that that is now almost six years ago.

In general, the reasons for the 2015 flooding can be found by referencing Council's own extensive, expensive, and ignored Catchment Management Plan completed in 2011, *i.e nearly 5 years prior to the 2015 flood event*. That report highlighted weaknesses and vulnerabilities in the SD stormwater

system. Council seemingly shelved the report - possibly without even reading it properly - and ignored its recommendations. As a result, in 2015 there was a largely avoidable disaster caused by the indefinite deferment of upgrading/renewal of stormwater infrastructure, a failure of maintenance and an absence of operational "nous".

Councillors, needing to appreciate the shortcomings of South Dunedin's *existing* stormwater infrastructure and its true cost ramifications should read the ICMP, and (re-)acquaint themselves with the comments of former CEO Bidrose on the real cost implications of a proper upgrade to an acceptable minimum standard for South Dunedin. Dr Bidrose addressed Council's April 2016 Infrastructure Services Committee thus: "*The problem we have got is that we're dealing with this in an austerity time when we're trying to pay off \$220 million of debt, so we are fiscally constrained, and we're trying to balance competing priorities for kind of new and innovative stuff to keep (up) with the future, start to pay down debt and at the same time start to increase our catch up for the water renewals, increase our catch up for the (hesitates) taking that we've been doing from the companies, so they don't have to borrow to pay a dividend, increase our catch up for Waipori. These are all difficult things to balance..... If Council is wanting to make a decision to get the South Dunedin / Mosgiel infrastructure to a 1 in 10 level then there are considerable financial implications for this*".

It appears that there has continued to be no real appetite within Council to face the physical and financial challenges of providing proper stormwater standards in South Dunedin, or to acknowledge the real contributing causes of the 2015 flood disaster. It seems incomprehensible to me that DCC, having the benefit of the 2010/11 reporting and of Dr Bidrose's statements, can possibly believe that the proposed \$M37 over 10 years will produce the timely and overdue improvement to a long-neglected problem. It is specifically noted that there can be no suggestion, in my opinion that such limited expenditure will achieve the nationally-expected standard of a 1 in 10 year primary stormwater standard (i.e. the standard referenced by Dr Bidrose).

#### **WHAT HAS REALLY BEEN DONE BY DCC IN THE PAST SIX YEARS ?**

The Mayor has advised that Council has been working on the issue at a good rate since 2016. I have pondered the following relevant questions: What is Council actually doing? What did it do between 2011 and 2015? What has it done since 2015? What, in practical terms, is this "big project" that Council is undertaking according to its 10-Year Plan attempt at "conversation". The following provides some illumination:

In the ODT of 7 July 2016, Dr Bidrose told readers that Council was already doing the following:

- i. Revisiting the South Dunedin stormwater system design parameters in light of changed imperviousness, updated rainfall data, climate change, and the lack of secondary flow paths;*
- ii. Conducting further research into the availability of soakage during extreme rainfall events, and into the transfer of flows from the St Clair and Orari Street catchments;*
- iii. Investigating ways to enhance pipe inlet capacity across South Dunedin.*

Sceptical of this, but being prepared to give Council time to deliver on its statements, I delayed writing to Dr Bidrose until 18 June 2020 asking what progress had been achieved in the intervening

four years. I had to wait 3 months for an answer. The eventual reply came from DCC's Group Manager 3 Waters. He informed that

iv. *"a South Dunedin Flood Mitigation Project is currently in progress. We are in the process of updating our stormwater and wastewater hydraulic models in South Dunedin... to improve their accuracy and suitability for simulating real world conditions and rainfall events now and in the future. This project will enable a wide range of flood mitigation options to be assessed with a sufficient level of confidence given the significant ratepayer investment that may be required".* (Please note \$M35 had already been budgeted over 10 years by this stage).

He continued " *The work due to be completed... will achieve the following benefits:*

v. *Updating information on current and future imperviousness, rainfall, climate change projections and secondary flowpaths.*

vi. *Improving understanding of and simulation of groundwater response and soakage and how these interact with our wastewater and stormwater networks. In this work we are collaborating closely with ORC and GNS Science who are conducting further research...and (improving understanding of) the transfer of flows between catchments, including St Clair and Orari Street catchments into South Dunedin.*

vii. *Improving the level of detail in the models so that pipe inlet and mudtank capacity can be assessed and improved".*

He further continued that *work on short term options completed to date has shown the following:*

viii *"Pipe inlet and mudtank improvements on Forbury Road are likely to be insufficient to reduce the transfer of flows between St Clair and South Dunedin due to the Forbury aqueduct being fully surcharged in moderate to heavy rainfall events".*

ix. *"Removal of the Portobello bottleneck and/or increasing the capacity of the Portobello (sic Road) Stormwater Pump Station (SWPS) have negligible benefit on flooding in South Dunedin because a significant proportion of the upstream network has insufficient capacity to convey flows to the Portobello (sic) bottleneck and SWPS".*

x. *"To date the primary option that has provided demonstrable benefit or did not cause more significant flooding elsewhere in the catchment was the Portobello SWPS Screen Replacement which was completed in late 2016".*

xi. *"The next significant milestone for our current work will be more detailed optioneering in 12 to 18 months. This stage will include some meaningful conversations about options and their trade-offs with the community".*

Even to the most non-technical Councillor, it must be obvious from comparison of paragraphs i. thru iii. with paragraphs iv. thru vii. that DCC was doing the same (largely inconsequential) things in September 2020 as it was in mid-2016. DCC had achieved nothing in more than 4 years.

Paragraph viii. states the obvious that has long been apparent to any resident travelling along Forbury Road during moderately heavy rain. It is hardly a finding.

Paragraph ix. Is particularly interesting because bottlenecks are mentioned in a DCC report or correspondence for the first time - to my knowledge - since immediately following the 2015 flood (ODT 12 June 2015). Since then, it would appear that the admission that bottlenecks -

essentially undersized pipes-are a prime and expensive problem has not been part of DCC's preferred narrative.

Paragraph x.'s confidence that the replacement of the pumping station's screens will produce some benefit to South Dunedin is not disputed, but the amount of benefit can be shown by me to be much less than that claimed by DCC. The admission of bottlenecks in paragraph ix. in itself confirms that the failure of the pumps to deliver their full capacity in 2015 was caused by factors other than screen blockage, contrary to Council's long-held, but unsustainable stance. The pipes' capacity was-and remains-less than that of the pumps. My detailed paper on the 2015 flood demonstrates that the impact of bottlenecks etc was far more damaging to South Dunedin than that of any screen blockage.

I met with senior Council staff on 5 November 2020 to discuss South Dunedin flood causes. At the end of the meeting, I presented a draft copy of my report and challenged them to get back to me with anything that was considered to be in error. Six months on, nothing has been challenged, and repeated undertakings to respond have not been met.

The question posed in the heading to this section is for you, the Councillors, to answer. I also invite Councillors to consider whether they can allow the situation to continue.

Appended:

- Correspondence with DCC seeking information on progress.
- A selection of my photographs of South Dunedin flood issues



February 2020 St Clair cross-catchment flows in moderate rainfall (NOT fixed)



**February 2020 Surface Flooding (NOT fixed)**



**January 2021 Auxiliary Pumps Required at Portobello Road Pump Station, also in moderate rainfall (Issues not fixed ?)**

19 June 2020

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The Chief Executive  
Dunedin City Council  
50 The Octagon

Dunedin 9016

Dear Dr Bidrose

**South Dunedin Flood Mitigation Recommendations (OPUS)**

The Opus reviews of early July 2016 made the following recommendations to DCC in the wake of the 2015 flooding:

- i. *That Council re-visit the South Dunedin stormwater system design parameters in light of changed imperviousness, updated rainfall data, climate change, and the lack of secondary flow paths;*
- ii. *That Council conduct further research into the availability of soakage during extreme rainfall events, and into the transfer of flows from the St Clair and Orari Street catchments;*
- iii. *That Council investigate ways to enhance pipe inlet capacity across South Dunedin.*

As part of the Otago Daily Times report of 7 July 2016 (copy included) ex-Mayor David Cull and yourself both asserted that all of the recommendations were already being acted on. Almost four years on, I struggle to find any obvious evidence of progress on any of those issues. As a clear case in point, nothing has been done to mitigate St Clair flows. Considerable cross catchment flow was observed by me from the St Clair catchment in relatively minor rainfall events in February 2018 and February 2020, respectively. Incidentally, I emailed photographic evidence of such cross flow and of inadequate stormwater pipe capacity on the flat areas of South Dunedin in the recent event to your Mr Dyer, but received no acknowledgement of receipt.

Can you kindly advise which, if any of the above commitments has in fact been met and why none of the most serious issues (especially the identified bottlenecks in the stormwater system) noted about a decade ago in the ICMP for South Dunedin has seemingly been addressed, given the commitment to "ensure the council's infrastructure was operating at full capacity".

Given that notice of your rather imminent departure has only just been made public, I ask that my request for this information be treated with urgency.

Yours faithfully,

Neil Johnstone



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11 September 2020

x !

Mr Neil Johnstone

Dear Mr Johnstone

**South Dunedin Flood Mitigation Recommendations (OPUS)**

The three recommendations of the Opus review which you detailed are all being acted upon through a South Dunedin Flood Mitigation Project that is currently in progress. We are in the process of updating our stormwater and wastewater hydraulic models in South Dunedin and other areas of Dunedin to improve their accuracy and suitability for simulating real world conditions and rainfall events now and in the future. This project will enable a wide range of flood mitigation options to be assessed with a sufficient level of confidence given the significant ratepayer investment that may be required.

The work due to be completed in the stage of this project will achieve the following benefits:

- Updating information on current and future imperviousness, rainfall, climate change projections and secondary flowpaths.
- Improving understanding of and simulation of:
  - groundwater responses and soakage and how these interact with our wastewater and stormwater networks, current and future. In this work we are collaborating closely with the Otago Regional Council and GNS Science who are conducting further research into South Dunedin's groundwater and future sea level rise in conjunction with the NZ SeaRise project run by the Ministry for Business, Innovation and Employment.
  - the transfer of flows between catchments, including St Clair and Otari St catchments into South Dunedin.
- Improving the level of detail in the models so that pipe inlet and mudtank capacity can be assessed and improvements identified.

Work on short term options completed to date has shown the following:

- Pipe inlet and mudtank improvements on Forbury Road are likely to be insufficient to reduce the transfer of flows between St Clair and South Dunedin due to the Forbury Aqueduct being fully surcharged in moderate to heavy rainfall events.

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- Removal of the Portobello bottleneck and/or increasing the capacity of the Portobello Stormwater Pump Station (SWPS) have negligible benefit on flooding in South Dunedin because a significant proportion of the upstream network has insufficient capacity to convey flows to the Portobello bottleneck and SWPS.

To date the primary option that has provided demonstrable benefit or did not cause more significant flooding elsewhere in the catchment was the Portobello SWPS Screen Replacement which was completed in late 2016.

The next significant milestone for our current work will be more detailed optioneering in 12 to 18 months. This stage will include some meaningful conversations about options and their trade-offs with the community.

Yours faithfully



Tom Dyer  
**GROUP MANAGER 3 WATERS**

25 September 2020

The Acting Chief Executive

Dunedin City Council

50 The Octagon

Dunedin 9016

Dear Ms Graham

**South Dunedin Flood Mitigation Recommendations (OPUS)**

I have recently received by mail a letter dated 11 September 2020 from your Mr Tom Dyer. The letter appears to be intended to serve as a reply to my letter of 18 June 2020 to the now-departed Chief Executive Dr Bidrose. On 19 June, I was assured by email that I would receive a reply "as soon as possible", but once again DCC appears to have attempted to revert to avoiding its LGOIMA responsibilities.

Can you kindly confirm whether Mr Dyer's letter is intended as a reply, and if so, advise why no explanation or apology for the 12-week delay was included.

I shall fully address the contents of Mr Dyer's letter in due course.

Yours faithfully,

Neil Johnstone



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18 December 2020

The Chief Executive  
Dunedin City Council  
50 The Octagon  
Dunedin 9016  
Dear Ms Graham

**South Dunedin Flood Issues**

Amazingly it is six weeks since we met along with your staff members. You will remember that I gave you a draft copy of my paper on the causes of the 2015 flooding and associated ongoing issues.

I invited - challenged, if you like - DCC to advise where it might have thought my paper was in error. Should I expect a response?

Yours faithfully,

Neil Johnstone

3/28/2021



Gmail - South Dunedin Flood Issues

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Neil Johnstone

### South Dunedin Flood Issues

4 messages

Vivienne Harvey <Vivienne.Harvey@dcc.govt.nz>  
To: Neil Johnstone

De: Vivienne Harvey

Mon, Dec 21, 2020 at 11:24 AM

Thank you for your hand delivered letter of Friday 18 December 2020.

Your paper on the causes of the 2015 flood and associated ongoing issues is with Simon Drew for consideration.

He sends his apologies for the delay in responding, and has asked me to let you know that a reply will be provided in the new year following the Annual Plan meetings.

Kind regards

Vivienne

Vivienne Harvey

**PA TO THE CHIEF EXECUTIVE OFFICER**

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Neil

# South Dunedin Flood Issues Inbox x

**Vivienne Harvey**

Dear Mr Johnstone Thank you for your hand delivered letter of Friday 16 December 2020. Your paper on the causes of th

**Neil Johnstone**

to Vivienne

Hello Vivienne.

"In the new year" and "following the Annual Plan Meetings" give me no insight into the intended time frame. Can you advise?  
Thanks  
Neil J

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**Vivienne Harvey** <Vivienne.Harvey@dcc.govt.nz>  
to me

Good Morning Neil

Next week we have a three day Council meeting on Annual Plan/10 Year Plan, so it is likely to be early February.  
Regards  
Vivienne

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No Hangouts contacts

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