From:	Grace Ockwell
To:	Georgina.O"Reilly@parliament.govt.nz
Cc:	Laura McElhone; Sandy Graham; Kristy Rusher
Subject:	LGOIMA request - Correspondence between DCC, Henry and Williams
Date:	Friday, 18 September 2015 04:41:52 p.m.
Attachments:	Curran, Clare LGOIMA request Correspondence between DCC, Henry and Williams.pdf image001.png image002.jpg image003.jpg image004.jpg

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Dear Clare,

Thank you for your email dated 21 August 2015 requesting all correspondence from June to August 2015 between Bruce Henry, Trevor Williams and the Dunedin City Council.

Your request has been considered under the provisions of LGOIMA and the information requested is attached.

Please note that the questions raised by Mr Henry and Mr Williams are comprehensively addressed in a report scheduled to be presented in public at the next meeting of the Infrastructure Service Committee on 13 October 2015.

Yours sincerely,

Grace Ockwell
Governance Support Officer
Civic and Legal

Dunedin City Council
50 The Octagon, Dunedin; P O Box 5045, Moray Place, Dunedin 9058, New Zealand
Telephone: 03 477 4000
Email: grace.ockwell@dcc.govt.nz

Grace Ockwell

From: Vivienne Harvey
Sent: Friday, 5 June 2015 10:23 a.m.
To: Ruth Stokes; Laura McElhone
Subject: Bruce Hendry [redacted] designed the stormwater reticulation system in the 19060s

Hi Ruth/Laura

Just spoke to Bruce who wanted to talk to Sue. She has suggested that one of you speak with him.

He wanted you to check that the screens at the Portobello Road stormwater pumping station had been cleaned as he doesn't believe that there should still be flooding in Bayview Road.

He also suggested that the contractors cleaning the mudtanks are not doing this regularly enough, or correctly as they have sumps to collect the debris.

Thanks
Vivienne

Vivienne Harvey
PA to the Chief Executive Officer
Dunedin City Council

50 The Octagon, Dunedin; P O Box 5045, Moray Place, Dunedin 9058, New Zealand
Telephone: 03 474 3851; Mobile: 021 148 1912
Email: Vivienne.Harvey@dcc.govt.nz

Grace Ockwell

From: Trevor Williams [redacted]
Sent: Sunday, 21 June 2015 12:35 p.m.
To: Chris Henderson
Cc: Laura McElhone
Subject: FW: Rainfall records - South Dunedin Flood June 2015 (Typos, Etc)
Attachments: South Dunedin Flood June 2015.xlsx

Hi,
I am forwarding this to you as I am advised that Ms McElhone is an leave at present and advised you are dealing with her duties at present.

From: Trevor Williams [redacted]
Sent: Sunday, 21 June 2015 12:29 p.m.
To: 'Laura.McElhone@dcc.govt.nz'
Subject: Rainfall records - South Dunedin Flood June 2015 (Typos, Etc)

Dear Ms McElhone,

Further to my recent email dated Wed 17 June, I found a few typo errors that I have corrected in this version!! I sent this correction just after the recent email, but I had your email address wrong and have just found the system rejection message. Sorry for this inconvenience to you.

Here is the corrected original message:-

Mr Bruce Hendry has told me that he has been speaking to you, and that you would be interested in my investigations into the recent rainfall records.
The attached spreadsheet summarises my results and some conclusions derived from them. I assume you have seen the old 1968 report by the City & Drainage Engineer of the day that I sent to the Chief Executive just after the flooding. My role in 1968 was Deputy City & Drainage Engineer and I drafted the 1968 report for the CE. Furthermore in the early 1960's I designed the substructure and superstructure of the Portobello Road Pumping Station. The actual hydraulic design and purchase of the pumps, and the intake, screens and outlet structures were handled by other engineers of the Drainage Board.

Dealing now with the spreadsheet information, firstly, you will see that the spreadsheet confirms that the media and council statements to date have been based on the Octagon gauge and that the Musselburgh rainfall was lower both in 24 hour rain and peak hourly rain. The 2015 Musselburgh readings were lower than the 1968 rainstorm both in the 24 hour peak and the hourly peak!!

Secondly, the Portobello Road Pumping Station was designed using the old rational method of calculating catchment runoff. A time of concentration of
43 minutes was used to produce an estimated hourly rainfall of 14 mm/hour for a 3 year return period and 19mm/hour for a 10 year return period. Note that I have checked the validity of the design assumptions using the NIWA Website's High Intensity Rainfall Design System V3 (HIRDS) and found that this modern method gave almost identical results to those of the original design assumptions. The 1968 report advised that it was expected the 10 year rain fall would produce some ponding or backing up in the street channels. In 1968 we had 16mm/hour and there was some ponding but the blockage of the pumping station screens was the cause of the ponding rather than the intensity of rain experienced. See the old 1968 report for
details. In 2015 the peak intensity was 11.8 mm/hour well within the
design capacity of the pumping station. Even the peak 24 hour rainfall in
2015 at 141.6mm was well below the 1968 figure of 158.2mm. The system should have been able to handle this flow effortlessly.

The extensive ponding actually experienced could have been caused by stormwater entering the system from other catchments, or from overflow from the Wastewater system. There have been press comments that the South Dunedin area is a basin and water from the adjacent hills flooded into the basin. This is just not true, as all the hill stormwater is captured by contour aqueducts that flow along the base of the hills and convey the water direct to the Ocean or the Harbour. The Forbury Aqueduct runs along the base of the hills bordering the SW edge of South Dunedin from the top end of Hillside Road along Forbury Road to the sea just south of the St Clair Pool.
A former colleague Mr John Henderson has told me that he found no sign of an overflow along Forbury Road. An overflow did occur in 1968, but this was remedied following that flood.
The other interceptor of hill water is the Wilkie Road Pressure Conduit that runs from the Corstorphine Creek intake along Playfair St, South Road, Wilkie Rd, the Warehouse Carpark, Hillside Rd & Orari St to the Harbour.
Glen Creek is intercepted at an intake above the Glen Rd/South Road intersection. The lower length of the aqueduct flows to the Harbour under pressure. The outfall structure has flap gates to keep seawater out & a small pump to keep the system dry in dry weather. If the Glen Creek intake screens and associated silt chamber were blocked the creek would have overflowed into the South Dunedin system at the Glen Road/South Road intersection. I understand there was a lot of water at that intersection.

Over flow from the wastewater system occurred in the area of South Dunedin where the Kaikorai Valley wastewater sewer goes after exiting the old Caversham Rail tunnel, and in addition, the ponding in the properties throughout the South Dunedin area would have flooded house wastewater gully traps. This would have added to the flow reaching the Portobello Road Pumping Station. A study of the actual pumped flows recorded on the Pumping station flow data would be needed to decide if such overflows were significant.

The only other possible source of the flooding that occurred was blocked mudtanks, and I believe that this was a major cause of the ponding. A letter to the editor ODT from a Brian Andrews in Bellona Street describing how his street was cleared of floodwater in a half hour after mud tanks were cleared by three men (not contract workers) is very significant in my view.
I note that Mr Bruce Hendry has pointed out to the CEO that if the maintenance contractor is only emptying mudtanks that are half-full of silt, as they have stated in the ODT, then the mud tanks are almost blocked and should be cleaned much sooner. The plan of the No1 mud tank that Mr Hendry sent to the CEO shows this clearly and I suggest that cleaning should be done when the tank is 1/3 full.

The other matter I would like to comment on is the problem posed by the Kaikorai Valley Wastewater Sewerage system being routed back into the South
Dunedin area via the old Caversham Valley Tunnel. I note that there is a $M4 provision in the Council's 10 year plan to improve this. I know of the history of this matter from old staff members of the DD&SB who told me about it when I was a young engineer. In the early 1920's when the DD&SB was developing the sewerage system for the Kaikorai Valley area of the City, the lower end of the Valley was in the territory of the Green Island Borough.
The DD&SB wanted to run the City's sewers right down the valley catchment to the Ocean in the vicinity of the present Waldronville. The Borough Council refused consent for this, perhaps they tried to drive too high a price, so the DD&SB chose to divert the sewerage back through the newly abandoned Railway tunnel and across South Dunedin to the Musselburgh Wastewater Pumping Station.
Now that the City includes the Green Island area I believe it should be possible to divert the sewerage system out of the rail tunnel and down through Green Island to the Wastewater Treatment Plant. I understand that the Wastewater Treatment Plant has spare capacity now that some of the major trade-waste producing industries in Green Island have closed. I guess that the cost of the trunk sewer would exceed the $M4 provided in your 10 year Plan, but I believe this option would be well worth your consideration.

Kind regards,

Trevor Williams (Retired)

BE(Civil) FIPENZ MICE MNZIS FNZIM

South Dunedin Flood June 2015

Rainfall Records of Various Rain Gauges

Date & Time Data			Ex D. Stewart CliFlo Musselburgh Gauge			TJW CliFlo results Musselburgh Gauge			Ex 1968 report Musselburgh Hourly Reading			Ex ODT Graphic- 4 June 2015		Ex Mr Robert Hamilton of MetService					
CliFlo Date	Date	Period end	Hourly	Σ total	total previous	Hourly	Σ total	total previous	Time adjusted to start of 2015 storm			Octagon adj.	Σ total	Octagon	Σ total	total previous	Airport	Σ total	total previous
& Time Format		Time	mm	mm	24 Hours mm	mm	mm	24 Hours mm	Inches/100	mm	Σ total	to 0 at 5am	mm	mm	mm	24 Hours mm	mm	mm	24 Hours mm
	3 June 2015	12:00:00 a.m.	0.0	0.0	0.0	0.2	0.2	0.2						0	0.0	0.0	0	0.0	0.0
20150603:0100		01:00:00 a.m.	0.4	0.4	0.4	0.5	0.7	0.7						0.2	0.2	0.2	0	0.0	0.0
20150603:0200		02:00:00 a.m.	0.2	0.6	0.6	0.5	1.2	1.2						0.2	0.4	0.4	0	0.0	0.0
20150603:0300		03:00:00 a.m.	0.0	0.6	0.6	0	1.2	1.2	Inches/100	mm	mm			0	0.4	0.4	0.2	0.2	0.2
20150603:0400		04:00:00 a.m.	0.2	0.8	0.8	0	1.2	1.2	5	1.3	1.3			0	0.4	0.4	0.2	0.4	0.4
20150603:0500		05:00:00 a.m.	1.2	2.0	2.0	1.3	2.5	2.5	6	1.5	2.8	0.0	0.00	1.4	1.8	1.8	0	0.4	0.4
20150603:0600		06:00:00 a.m.	8.2	10.2	10.2	7.5	10.0	10.0	8	2.0	4.8	6.6		6.6	8.4	8.4	0.8	1.2	1.2
20150603:0700		07:00:00 a.m.	8.0	18.2	18.2	7.8	17.8	17.8	9	2.3	7.1	13.6		7	15.4	15.4	5.6	6.8	6.8
20150603:0800		08:00:00 a.m.	7.0	25.2	25.2	6.9	24.7	24.7	18	4.6	11.7	20.0		6.4	21.8	21.8	6	12.8	12.8
20150603:0900		09:00:00 a.m.	5.2	30.4	30.4	5.3	30.0	30.0	32	8.1	19.8	25.8	25.80	5.8	27.6	27.6	7.4	20.2	20.2
20150603:1000		10:00:00 a.m.	7.2	37.6	37.6	7.2	37.2	37.2	38	9.7	29.5	32.0		6.2	33.8	33.8	7.6	27.8	27.8
20150603:2000		11:00:00 a.m.	11.2	48.8	48.8	11.2	48.4	48.4	35	8.9	38.4	42.8		10.8	44.6	44.6	8	35.8	35.8
20150603:1200		12:00:00 p.m.	11.8	60.6	60.6	11.8	60.2	60.2	31	7.9	46.2	58.0	60.00	15.2	59.8	59.8	7.8	43.6	43.6
20150603:1300		01:00:00 p.m.	7.0	67.6	67.6	7	67.2	67.2	31	7.9	54.1	69.2		11.2	71.0	71.0	9.2	52.8	52.8
20150603:1400		02:00:00 p.m.	8.0	75.6	75.6	8	75.2	75.2	63	16.0	70.1	80.8		11.6	82.6	82.6	5.8	58.6	58.6
20150603:1500		03:00:00 p.m.	7.8	83.4	83.4	7.8	83.0	83.0	60	15.2	85.3	92.2	92.00	11.4	94.0	94.0	6.8	65.4	65.4
20150603:1600		04:00:00 p.m.	7.8	91.2	91.2	7.8	90.8	90.8	28	7.1	92.5	103.2		11	105.0	105.0	7.6	73.0	73.0
20150603:1700		05:00:00 p.m.	6.8	98.0	98.0	6.8	97.6	97.6	8	2.0	94.5	113.0		9.8	114.8	114.8	6.8	79.8	79.8
20150603:1800		06:00:00 p.m.	6.4	104.4	104.4	6.4	104.0	104.0	2	0.5	95.0	122.4	124.00	9.4	124.2	124.2	5.6	85.4	85.4
20150603:1900		07:00:00 p.m.	7.2	111.6	111.6	7.2	111.2	111.2	3	0.8	95.8	130.4		8	132.2	132.2	4.2	89.6	89.6
20150603:2000		08:00:00 p.m.	6.6	118.2	118.2	6.6	117.8	117.8	53	13.5	109.2	139.8		9.4	141.6	141.6	3.4	93.0	93.0
20150603:2100		09:00:00 p.m.	7.0	125.2	125.2	7	124.8	124.8	93	23.6	132.8	147.8	150.00	8	149.6	149.6	3.4	96.4	96.4
20150603:2200		10:00:00 p.m.	4.4	129.6	129.6	4.4	129.2	129.2	54	13.7	146.6			6	155.6	155.6	3	99.4	99.4
20150603:2300		11:00:00 p.m.	3.2	132.8	132.8	3.2	132.4	132.4	22	5.6	152.1			4.6	160.2	160.2	2.4	101.8	101.8
20150604:0000		12:00:00 a.m.	2.8	135.6	135.6	2.8	135.2	135.2	13	3.3	155.4			3.8	164.0	164.0	1.8	103.6	103.6
20150604:0100	4 June 2015	01:00:00 a.m.	3.0	138.6	138.2	3	138.2	137.5	7	1.8	157.2			4.4	168.4	168.2	2	105.6	105.6
20150604:0200		02:00:00 a.m.	2.4	141.0	140.4	2.4	140.6	139.4	2	0.5	157.7			4	172.4	172.0	0.8	106.4	106.4
20150604:0300		03:00:00 a.m.	1.2	142.2	141.6	1.2	141.8	140.6	2	0.5	158.2			2.4	174.8	174.4	0.2	106.6	106.4
20150604:0400		04:00:00 a.m.	0.6	142.8	142.0	0.6	142.4	141.2	623	158.2	= Check Totals			1	175.8	175.4	0.2	106.8	106.4
20150604:0500		05:00:00 a.m.	0.2	143.0	141.0	0.2	142.6	140.1						0.6	176.4	174.6	0.2	107.0	106.6
20150604:0600		06:00:00 a.m.	0.6	143.6	133.4	0.6	143.2	133.2						1	177.4	169.0	0	107.0	105.8
20150604:0700		07:00:00 a.m.	0.2	143.8	125.6	0.2	143.4	125.6						0.2	177.6	162.2	0	107.0	100.2
20150604:0800		08:00:00 a.m.	0.0	143.8	118.6	0	143.4	118.7						0.2	177.8	156.0	0	107.0	94.2
20150604:0900		09:00:00 a.m.	0.0	143.8	113.4	0	143.4	113.4						0	177.8	150.2	0	107.0	86.8
20150604:1000		10:00:00 a.m.	0.2	144.0	106.4	0.2	143.6	106.4						0	177.8	144.0	0	107.0	79.2
20150604:1100		11:00:00 a.m.	0.0	144.0	95.2	0	143.6	95.2						0	177.8	133.2	0	107.0	71.2

Notes:-

1. This table lists the hourly, running total, and totals for the 24 hours previous to the time of each reading.
2. Data is from NIWA and MetService sources, with the exception of the data ex the 1968 report of the City & Drainage Engineer dated 15 March 1968.
3. The section headed Ex ODT Graphic - 4 June 2015 is included to confirm that the graphic was based on the MetService Octagon Gauge rather than the NIWA Musselburgh one.
4. The sections headed "Ex D Sterwart …" & "TJW CliFLo Musselburgh Gauge" confirm that both results are very similar and so can be relied on as representing the Musselburgh rainfall.
5. The MetService Octagon rain gauge is located on the roof of the Forsyth Barr building and it is believed it was installed in 2006 according to news media information.
6. The Musselburgh Gauge is at the Musselburgh Wastewater Pumping Station and has been there since about 1905. Rainfall readings from that location have been used to design the South City's stormwater systems for all of the 20th century.
7. The Octagon guage readings do not provide reliable information on rainfall in South Dunedin. They do of course give information on the rainfall experienced in the City's north & hill suburbs.
8. The cells outlined with dotted lines show maximum hourly figures & those with double lines show the maximum 24 hour rainfall in each set of records. The maximum hourly rainfall at Musselburgh in the 1968 storm was 16 mm/hour, much higher than the 2015 storm which was 11.8 mm/hour. The Octagon at 11.6 mm/hour was similar to the 2015 Musselburgh rainfall. The Octagon's 24 hour peak was 175.4, and Musselburgh's was 141.6 (Avge of the two series). Compare these with the 1968 figure of 158.2mm/24 hour!

Grace Ockwell

From: Laura McElhone
Sent: Monday, 8 June 2015 08:53 p.m.
To: [redacted]
Subject: Flood info

Dear Bruce,
Thank you for the information provided in your correspondence with Sue. We spoke in the immediate aftermath of the floods. I apologise if I was a little curt with you at that time but as I am sure you can appreciate it was a rather stressful time.
At this stage I have briefly reviewed the flood report from your colleague and we are currently reviewing the pumping station performance, pump regime, rainfall and flow patterns during the event to identify any issues with how the system operated during the event. We will bear in mind your comments regarding the way the system was designed to operate as part of that review.

For your reference, the stormwater from the area that you described as the Tainui low levels no longer discharges to the Musselburgh pumping station. There is now a stormwater pumping station adjacent to the Musselburgh pumping station which transfers this water to the Portobello pumping station.

My understanding is that the mud tank maintenance records are also being reviewed by the relevant team.

Regards
Laura McElhone

Sent from my iPhone

Grace Ockwell

From:	Laura McElhone
Sent:	Tuesday, 9 June 2015 12:22 p.m.
To:	'tb.hendry'
Subject:	RE: Flood info

Thank Bruce,
I have already received a copy of the flood report that you referenced and we are reviewing this as part of the follow up works.

Regards
Laura

-----Original Message-----
From: tb.hendry [redacted]
Sent: Tuesday, 9 June 2015 12:08 p.m.
To: Laura McElhone
Subject: Re: Flood info

----- Original Message -----
From: "Laura McElhone" <Laura.McElhone@dcc.govt.nz>
To: [redacted]
Sent: Monday, June 08, 2015 8:52 PM
Subject: Flood info

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My understanding is that the mud tank maintenance records are also being reviewed by the relevant team.

Regards
Laura McElhone

Sent from my iPhone

Thank you and I appreciate the presure you were under as I have been there myself at times. Just to as always Taianui Low levele always drained to Musselburgh PS from where it is pumted to join the South Dunedin system at the corner of Andersons Bay Road and Portobello Road.

I suggest you ask the CEO for a copy of the City Engineers Report on the March 8th 1968 storm sent to the CEO by T J Williams last week.It is a very comprehensive report on the drainage system.

Bruce H

Grace Ockwell

From: tb.hendry[redacted]
Sent: Tuesday, 9 June 2015 12:08 p.m.
To: Laura McElhone
Subject: Re: Flood info

----- Original Message -----
From: "Laura McElhone" <Laura.McElhone@dcc.govt.nz>
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Bruce H