

From: Colin Hey
Sent: Monday, 25 March 2019 10:26 AM
To: Peter Connors <Peter.Connors@nzta.govt.nz>; s 9(2)(a) @gmail.com>;
Brendon Russ <brendonr@wrc.govt.nz>; 'Randal Beal' <rb@wrc.govt.nz>; s 9(2)(a) @fultonhogan.com>; s 9(2)(a) @fultonhogan.com>;
s 9(2)(a) @mbdcontracting.co.nz>; Moira Whinham
<Moira.Whinham@nzta.govt.nz>; 'John Bainbridge' <john.bainbridge@westlanddc.govt.nz>
Subject: FW: Waiho River at SHB Bed Level Cross Section

Email below and attached letter FYI
Regards
Colin

From: s 9(2)(a) @wsp-opus.co.nz>
Sent: Friday, 22 March 2019 4:39 PM
To: Jessica McFarlane <Jessica.McFarlane@nzta.govt.nz>; Colin Hey <Colin.Hey@nzta.govt.nz>
Subject: FW: Waiho River at SHB Bed Level Cross Section

FYI



s 9(2)(a)
Technical Principal – Bridge Asset Management

WSP Opus, 12 Moorhouse Avenue, Christchurch 8011, New Zealand
PO Box 1482, Christchurch Mail Centre, Christchurch 8140, New Zealand

s 9(2)(a) @opus.co.nz

f t in
www.wsp-opus.co.nz

From: s 9(2)(a) @niwa.co.nz>
Sent: Wednesday, 20 March 2019 12:40 p.m.
To: s 9(2)(a) @opus.co.nz>; s 9(2)(a) @wsp.com>
Cc: s 9(2)(a) @niwa.co.nz>
Subject: Waiho River at SHB Bed Level Cross Section

Hi,
The usual six monthly cross section survey work was completed on Monday along with the telemetry upgrade.
The results of the survey are attached.
There was a small rise in the mean bed level.
The next cross section work will be carried out in September 2019.

Regards,
s 9(2)(a)



Climate, Freshwater & Ocean Science

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Environmental Monitoring Technician
Field Team Leader

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20/03/2019

s 9(2)(a)

Opus International
Christchurch

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Another cross-section survey of the Waiho River bed on the downstream side of the state highway bridge was completed on Monday 18th, and the results have been reduced and plotted. The same datum was used as for previous work.

Below are:

- 1) An over-plot of the latest cross section and the previous two. The previous cross sections are dotted and broken lines, and the latest one is a solid red line. The soffit and deck levels are also displayed, (plotted as thick gold and blue lines). The two alarm levels are shown as thin purple dotted lines. This plot is to the same scale as the previous two.
- 2) A plot showing the trends in mean bed level for this cross section, with data points marked. (A listing of the point values is on the same page).

The mean bed level has risen by just over 100 mm since the last cross section measurement (October last year).

The landline (PSTN) modem was removed and a cell phone (3G) modem installed on the same visit.

If you have any queries about this, please contact me.

Regards,

s 9(2)(a)

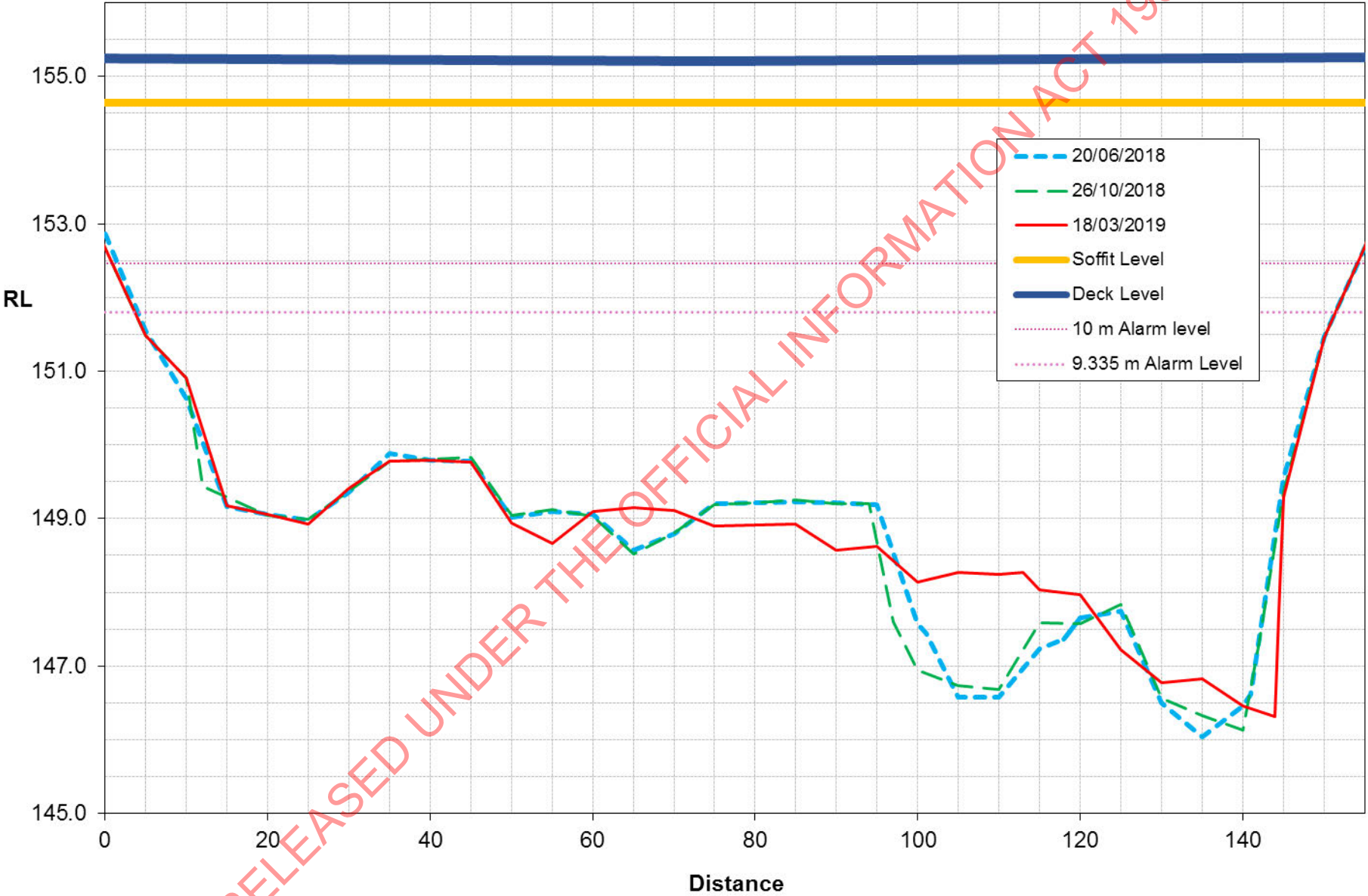
Greymouth Branch Manager

National Institute of Water & Atmospheric Research Ltd

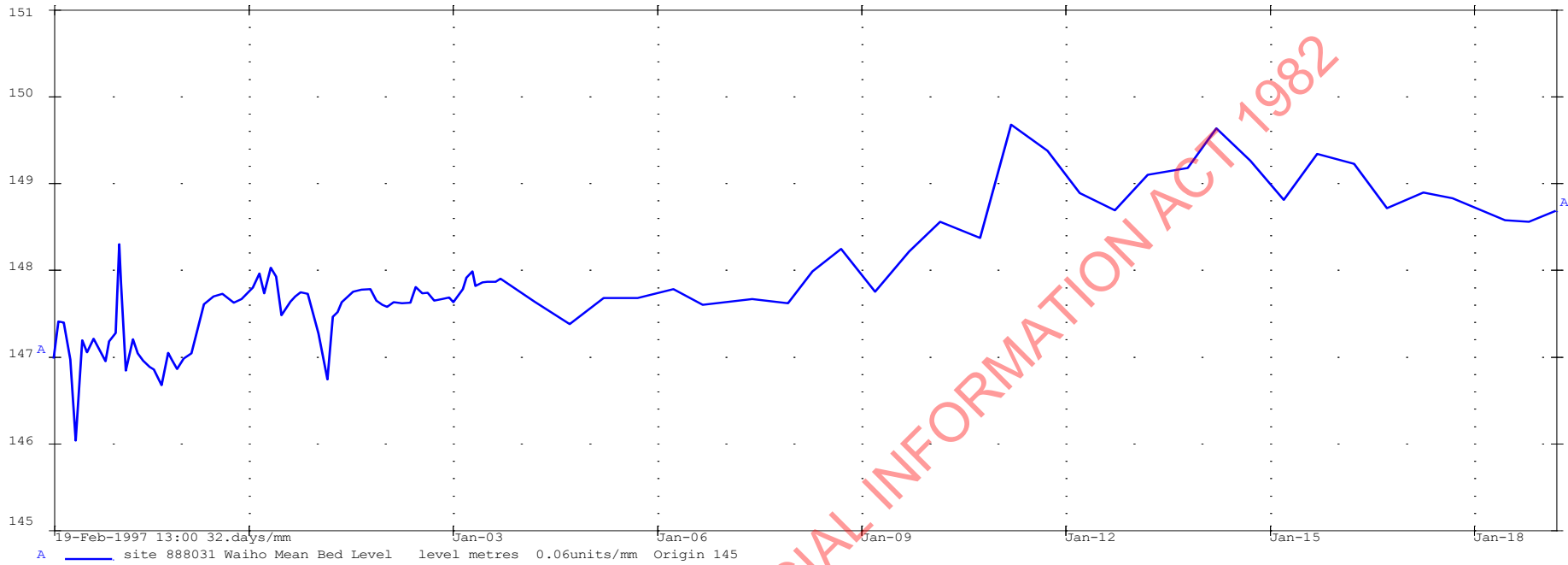
NIWA - Greymouth

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Waiho River at SHB Bed Level X-Section



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Mean Bed Level (mm)	Date of Survey	Mean Bed Level (mm)	Date of Survey	Mean Bed Level (mm)	Date of Survey
146978	19-Feb-1997	147038	2-Mar-1999	147572	15-Jan-2002
147402	19-Mar-1997	147604	7-May-1999	147624	18-Feb-2002
147389	16-Apr-1997	147692	30-Jun-1999	147615	4-Apr-2002
146966	21-May-1997	147720	16-Aug-1999	147620	21-May-2002
146029	18-Jun-1997	147617	15-Oct-1999	147802	18-Jun-2002
147188	23-Jul-1997	147664	26-Nov-1999	147728	24-Jul-2002
147051	18-Aug-1997	147792	26-Jan-2000	147734	20-Aug-2002
147205	22-Sep-1997	147955	29-Feb-2000	147645	25-Sep-2002
146944	27-Nov-1997	147730	28-Mar-2000	147663	7-Nov-2002
147174	16-Dec-1997	148024	1-May-2000	147677	13-Dec-2002
147268	21-Jan-1998	147923	30-May-2000	147626	6-Jan-2003
148296	9-Feb-1998	147477	27-Jun-2000	147779	26-Feb-2003
147840	17-Feb-1998	147633	15-Aug-2000	147909	17-Mar-2003
146840	16-Mar-1998	147692	8-Sep-2000	147980	17-Apr-2003
147201	22-Apr-1998	147742	9-Oct-2000	147815	5-May-2003
147035	19-May-1998	147720	16-Nov-2000	147852	12-Jun-2003
146954	16-Jun-1998	147267	12-Jan-2001	147858	8-Jul-2003
146879	21-Jul-1998	146735	1-Mar-2001	147858	20-Aug-2003
146852	13-Aug-1998	147455	30-Mar-2001	147897	15-Sep-2003
146672	22-Sep-1998	147514	23-Apr-2001	147633	15-Mar-2004
147040	29-Oct-1998	147627	17-May-2001	147372	21-Sep-2004
146965	17-Nov-1998	147748	17-Jul-2001	147674	21-Mar-2005
146856	15-Dec-1998	147771	30-Aug-2001	147675	20-Sep-2005
146977	18-Jan-1999	147774	16-Oct-2001	147777	1-Apr-2006
		147644	20-Nov-2001	147593	5-Sep-2006
		147595	20-Dec-2001	147659	27-May-2007
				147612	7-Dec-2007
				147982	14-Apr-2008
				148237	15-Sep-2008
				147745	18-Mar-2009
				148212	15-Sep-2009
				148553	3-Mar-2010
				148367	1-Oct-2010
				149670	18-Mar-2011
				149370	29-Sep-2011
				148881	21-Mar-2012
				148686	25-Sep-2012
				149092	20-Mar-2013
				149170	20-Oct-2013
				149630	24-Mar-2014
				149256	22-Sep-2014
				148804	19-Mar-2015
				149334	16-Sep-2015
				149220	30-Mar-2016
				148708	22-Sep-2016
				148886	07-Apr-2017
				148821	11-Sep-2017
				148569	20-Jun-2018
				148552	26-Oct-2018
				148676	18-Mar-2019