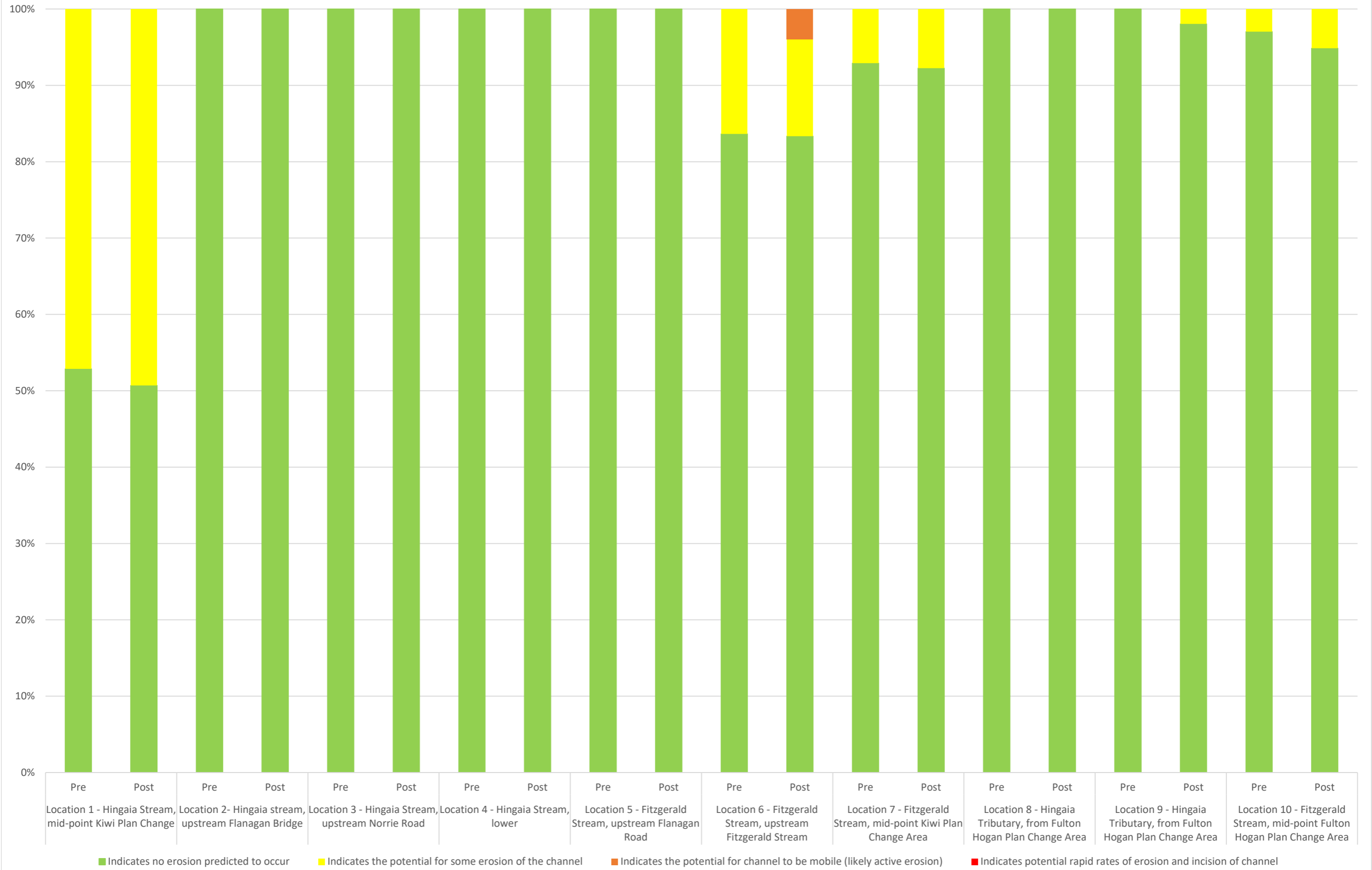


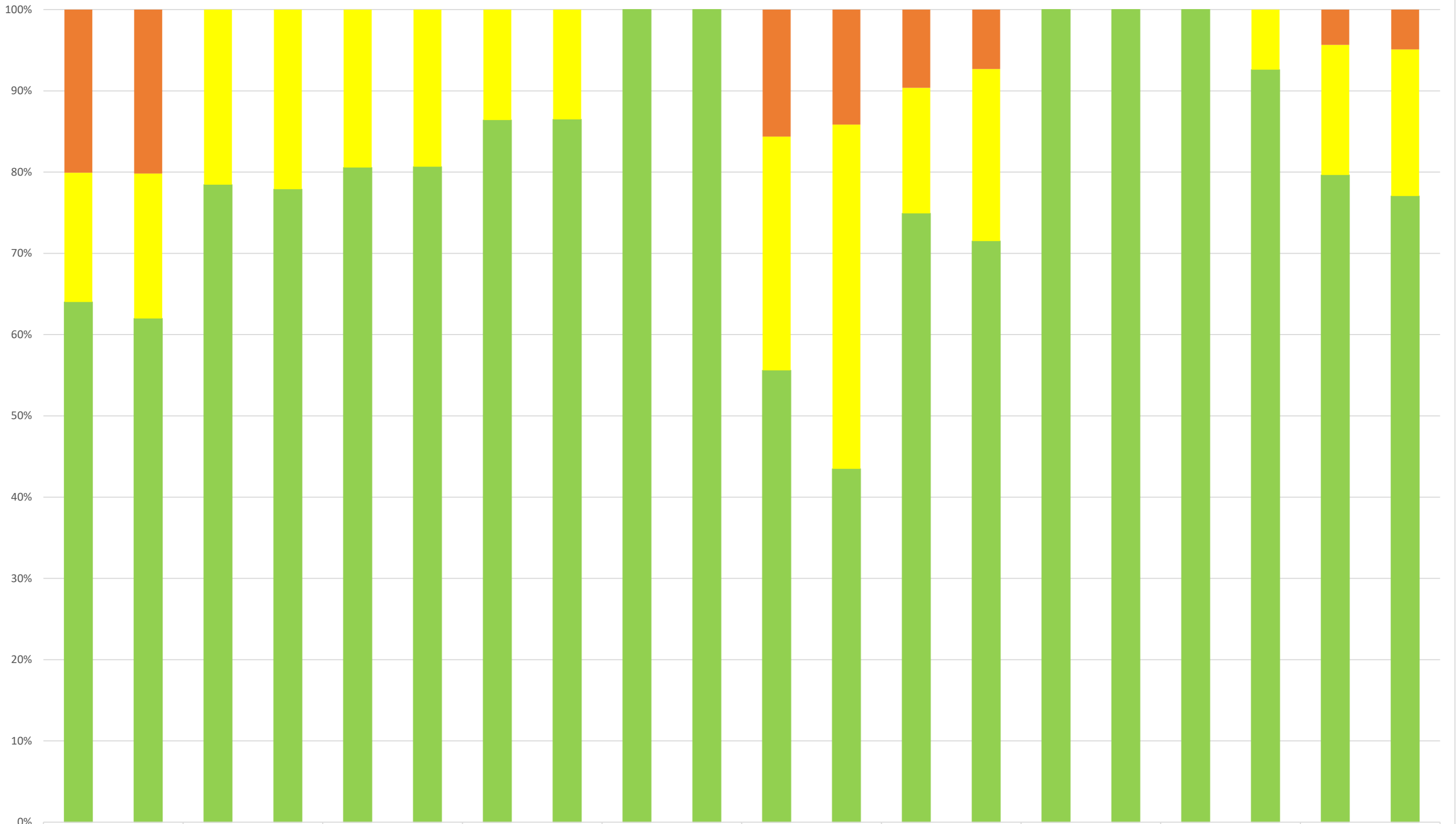
This table summarises the information included within this excel spreadsheet

Tab name	Purpose
Summary	Summary results used within the RFI erosion memo
Chart1	Summary chart and tabular results of excess shear stress and threshold exceedence during a 2 year event
2yr shear stress	
Chart2	Summary chart and tabular results of excess shear stress and threshold exceedence during a 10 year event
10yr shear stress	
Chart3	Summary chart and tabular results of excess shear stress and threshold exceedence during a 100 year event
100yr shear stress	
Location 1	Shear stress over 24 hour design storm event for 2, 10, and 100 year events, for pre- and post-development scenarios at each location
Location 2	
Location 3	
Location 4	
Location 5	
Location 6	
Location 7	
Location 8	
Location 9	
Location 10	
Sensitivity - Location 1	Sensitivity analysis at each chosen location for 2 year event
Sensitivity - Location 2	

Excess shear stress in streams during 2 Year Pre and Post Development MPD CC



Excess shear stress in streams during 10 Year Pre and Post Development MPD CC



Indicates the potential for channel to be mobile (likely active erosion)

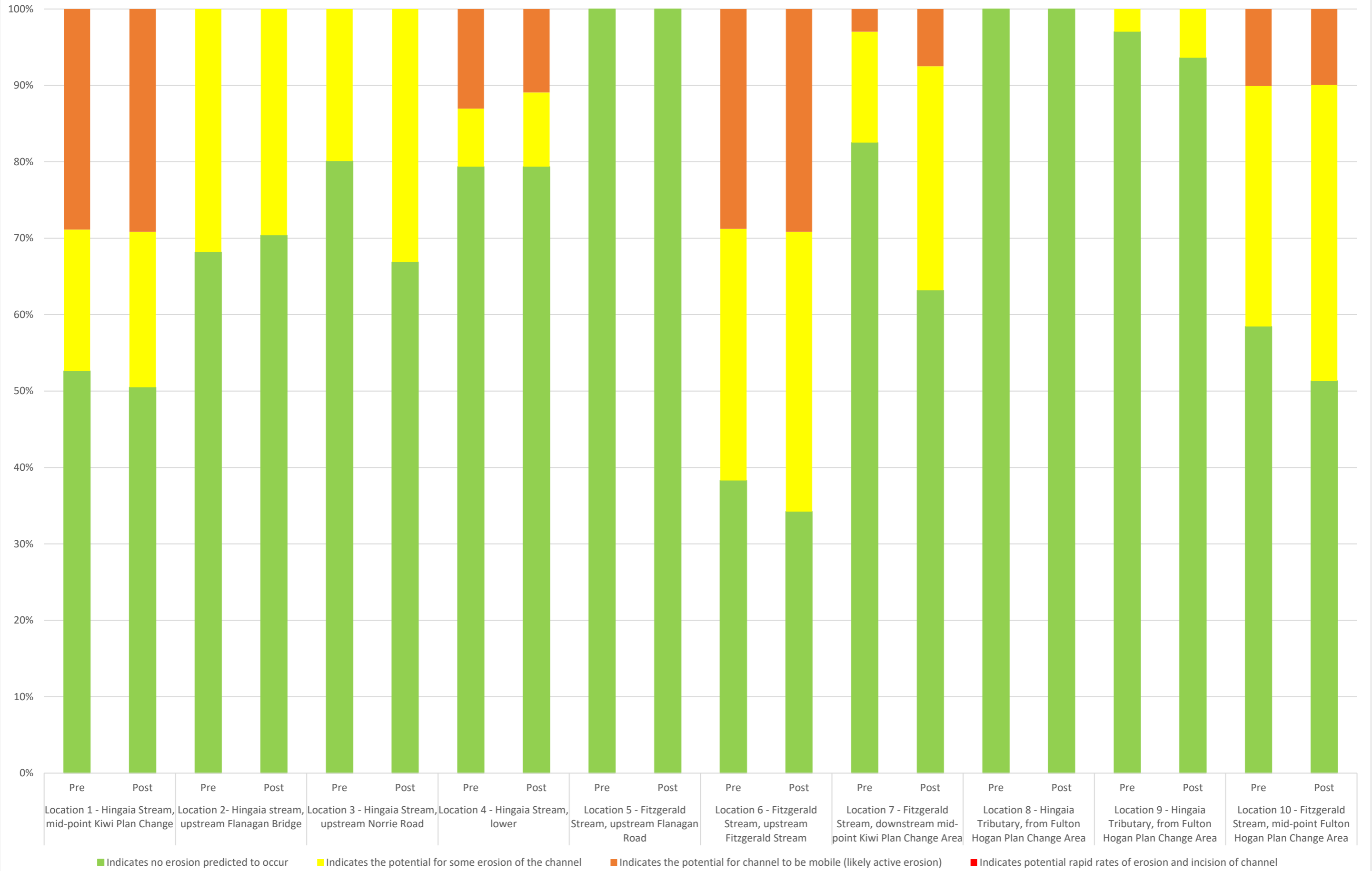
Indicates potential rapid rates of erosion and incision of channel

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Table with columns for date, time, and various numerical data points. The data is organized into a grid with multiple columns for each date, showing time-series data for each day. The columns are color-coded, and there are some highlighted cells in yellow. The grid covers dates from 2024-01-20 to 2024-02-22.

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Excess shear stress in streams during 100 Year Pre and Post Development MPD CC



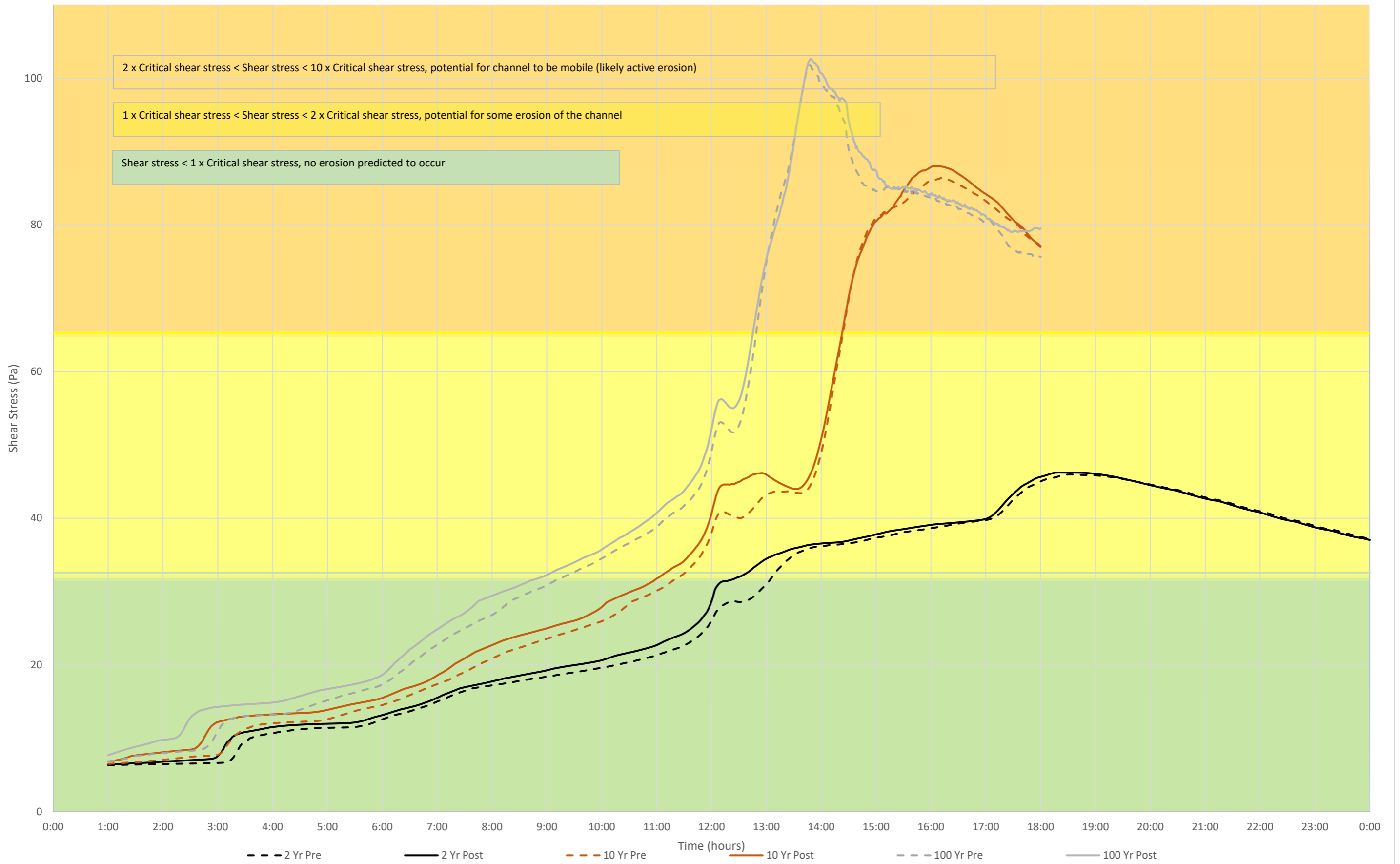
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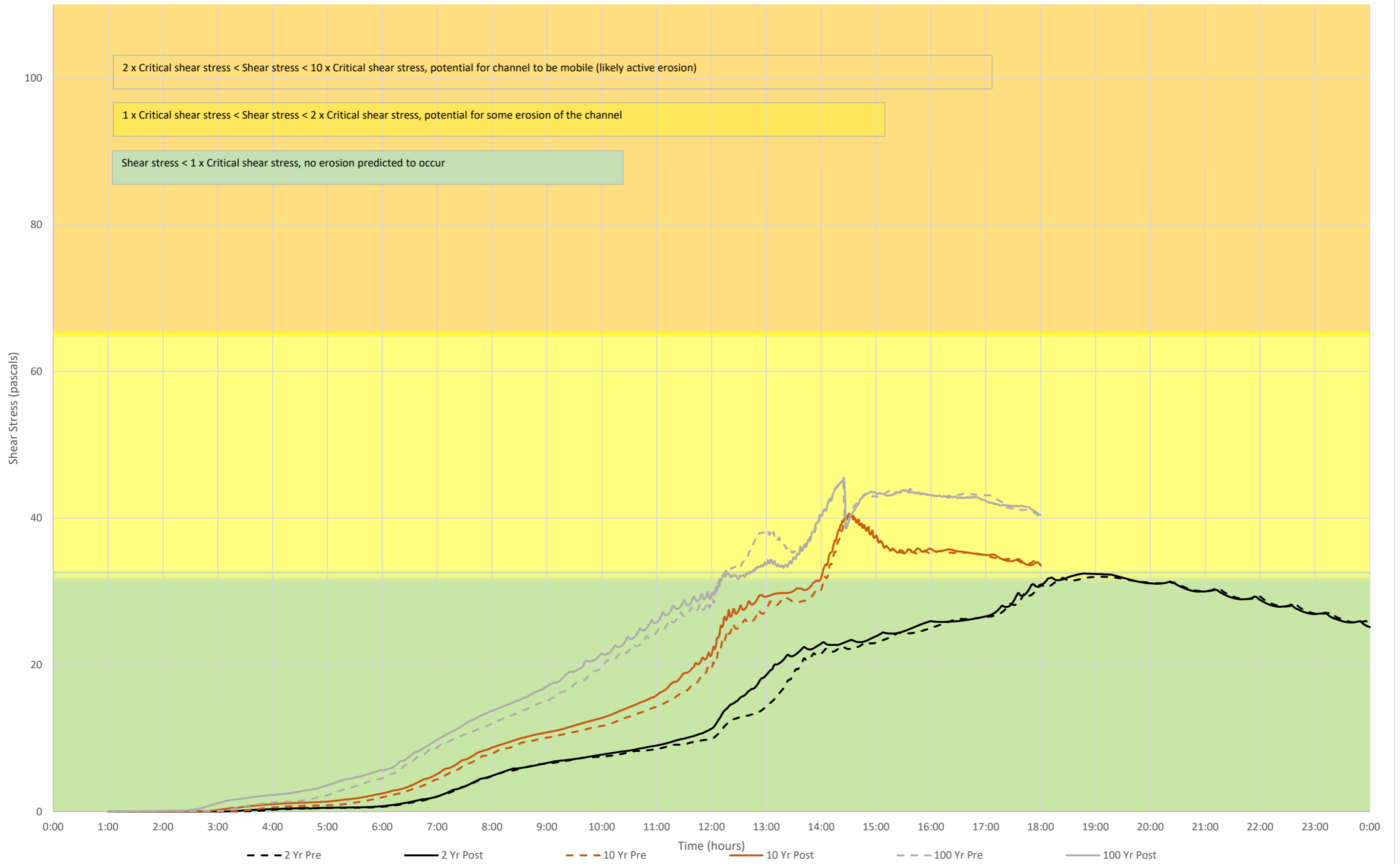
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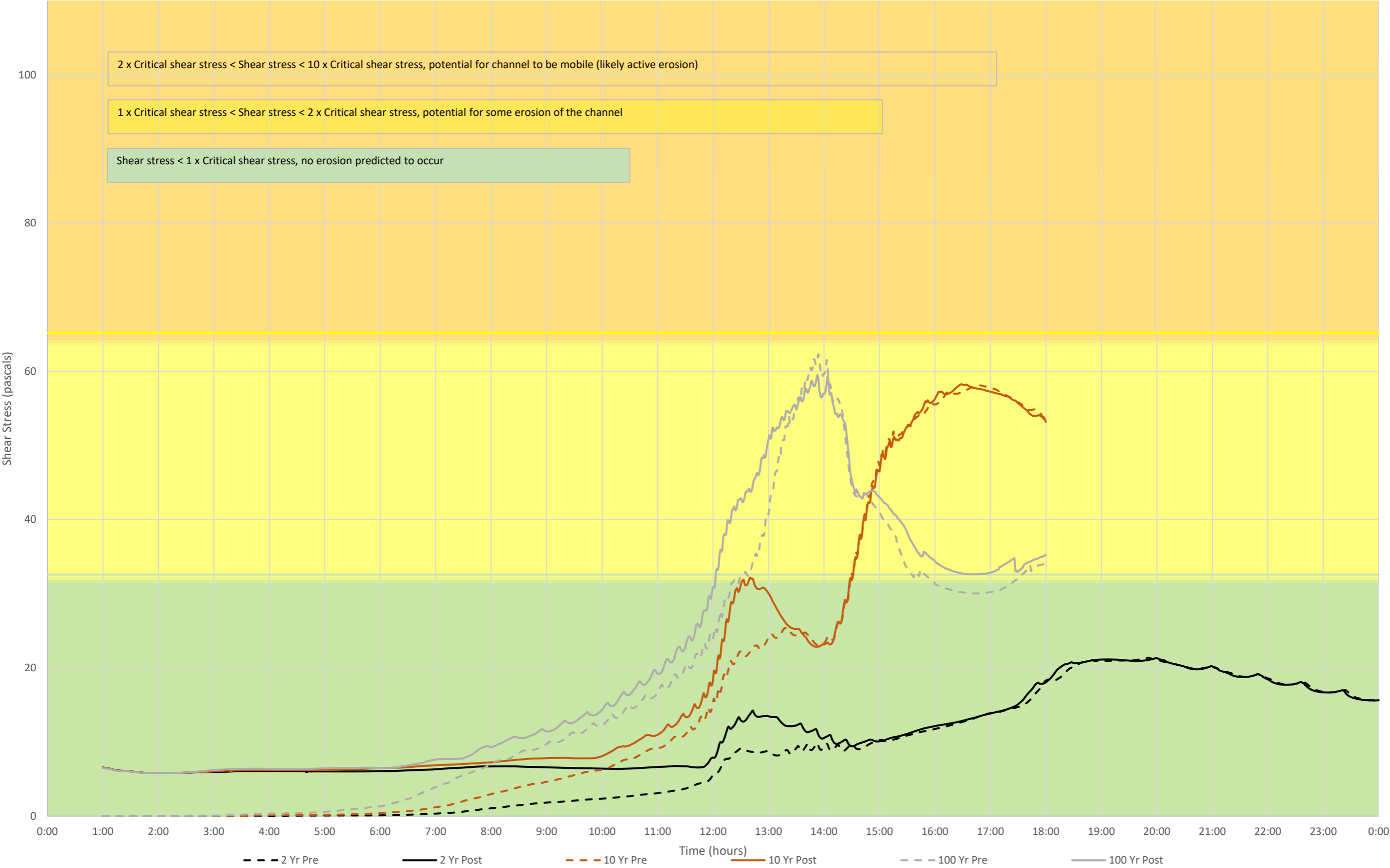
Shear Stress at Location 1 - Hingaia Stream, mid-point Kiwi Plan Change



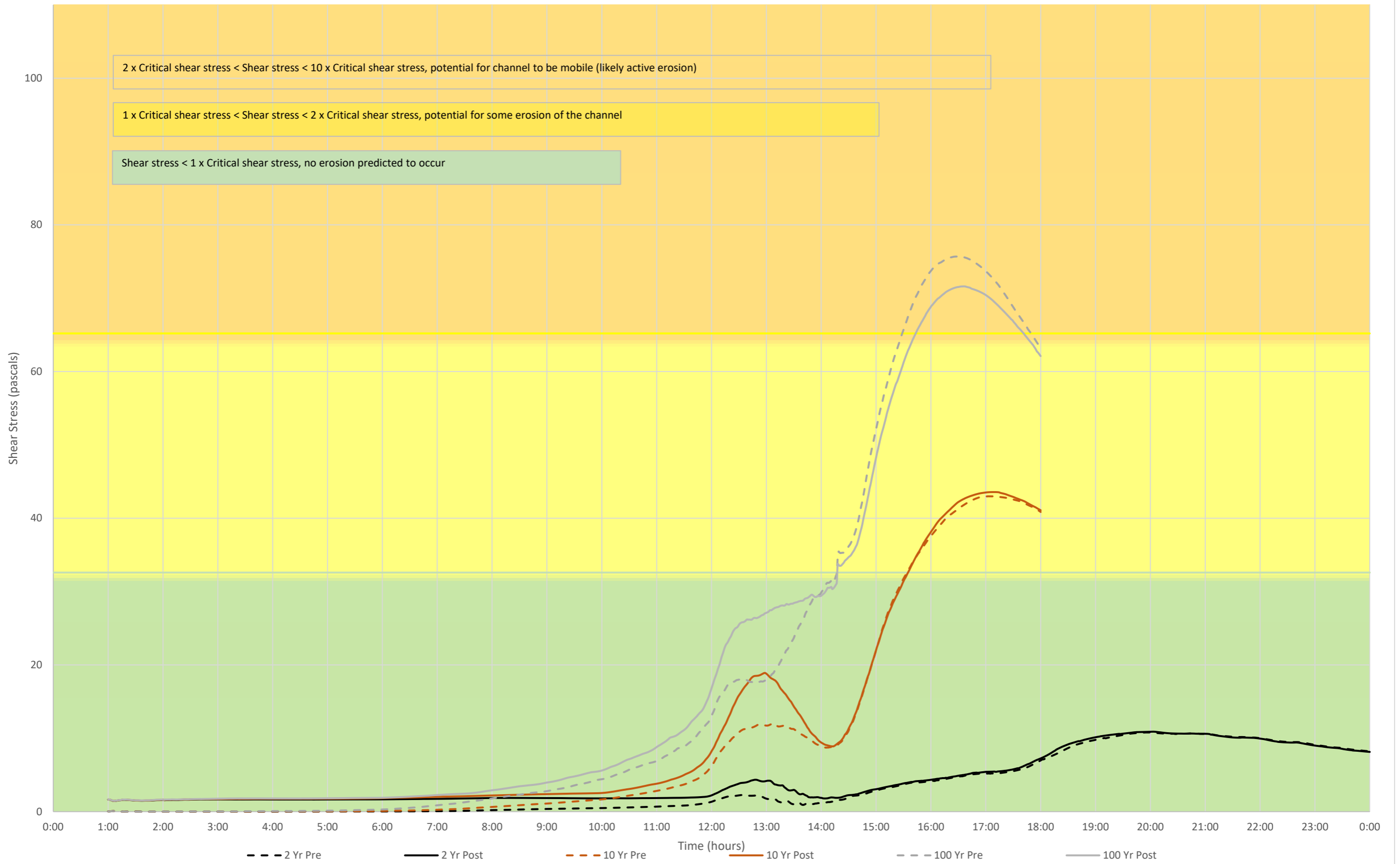
Shear Stress at Location 2 - Hingaia stream, upstream Flanagan Bridge



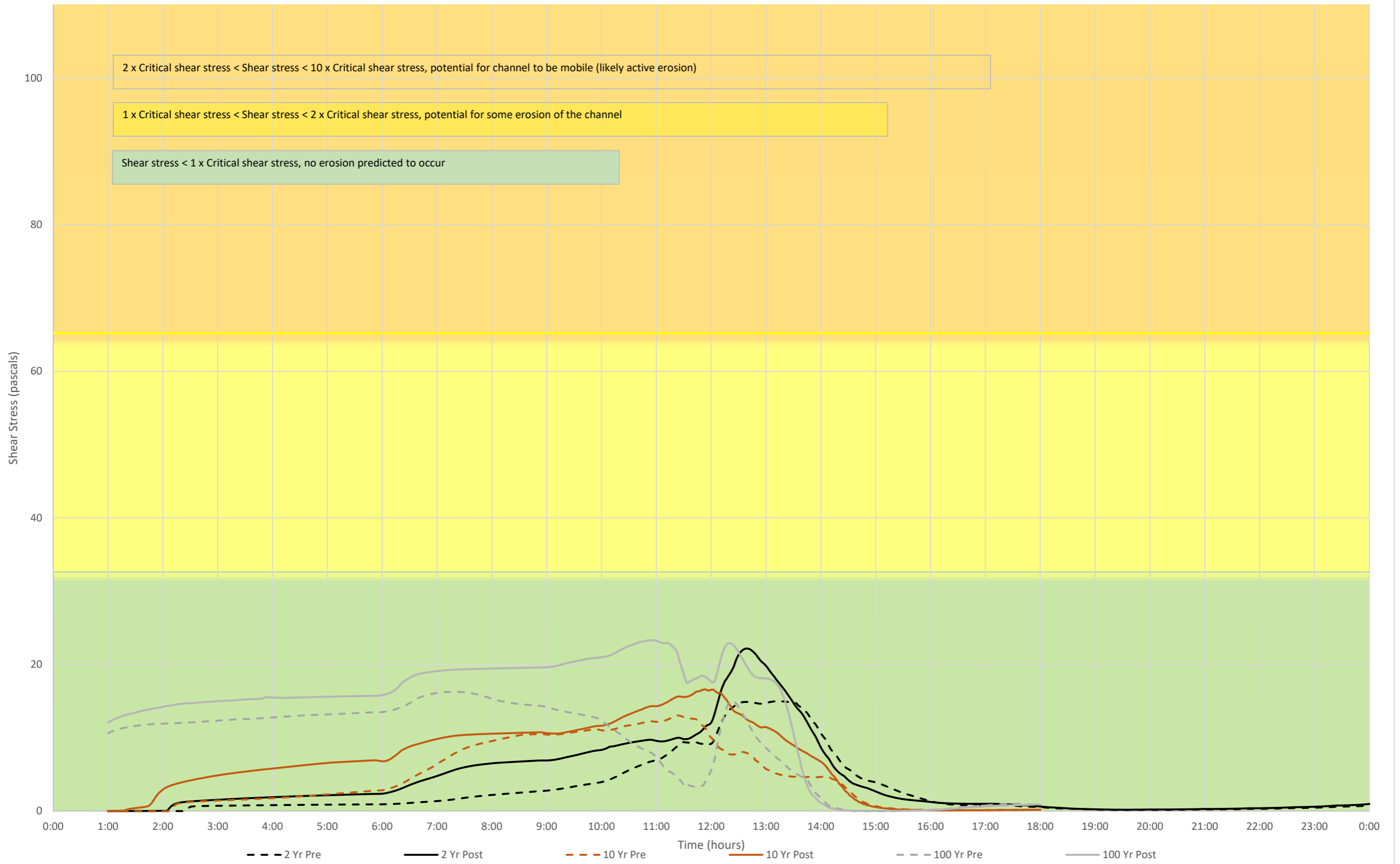
Shear Stress at Location 3 - Hingaia Stream, upstream Norrie Road



Shear Stress at Location 4 - Hingaia Stream, lower



Shear Stress at Location 5 - Fitzgerald Stream, upstream Flanagan Road



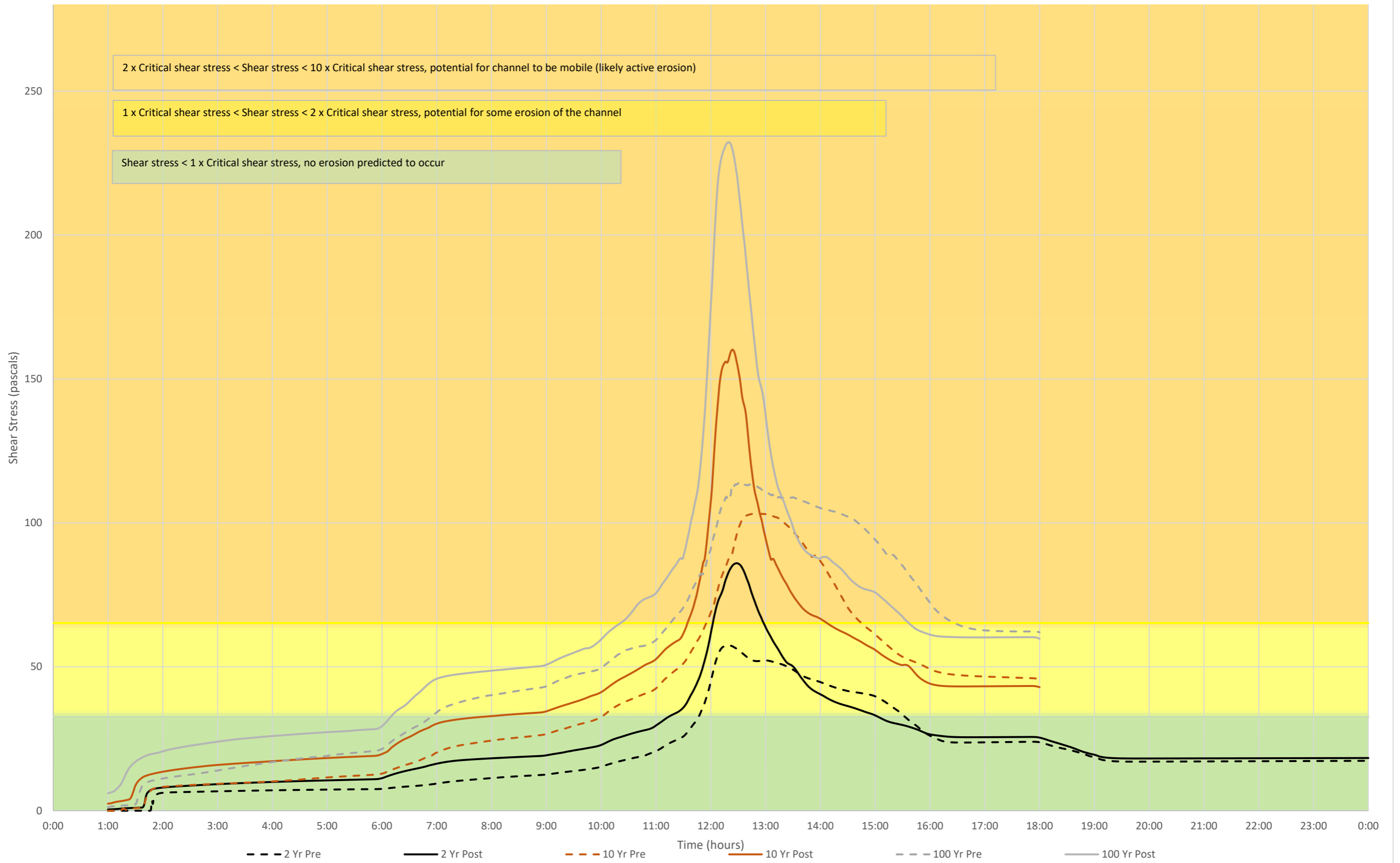
2 x Critical shear stress < Shear stress < 10 x Critical shear stress, potential for channel to be mobile (likely active erosion)

1 x Critical shear stress < Shear stress < 2 x Critical shear stress, potential for some erosion of the channel

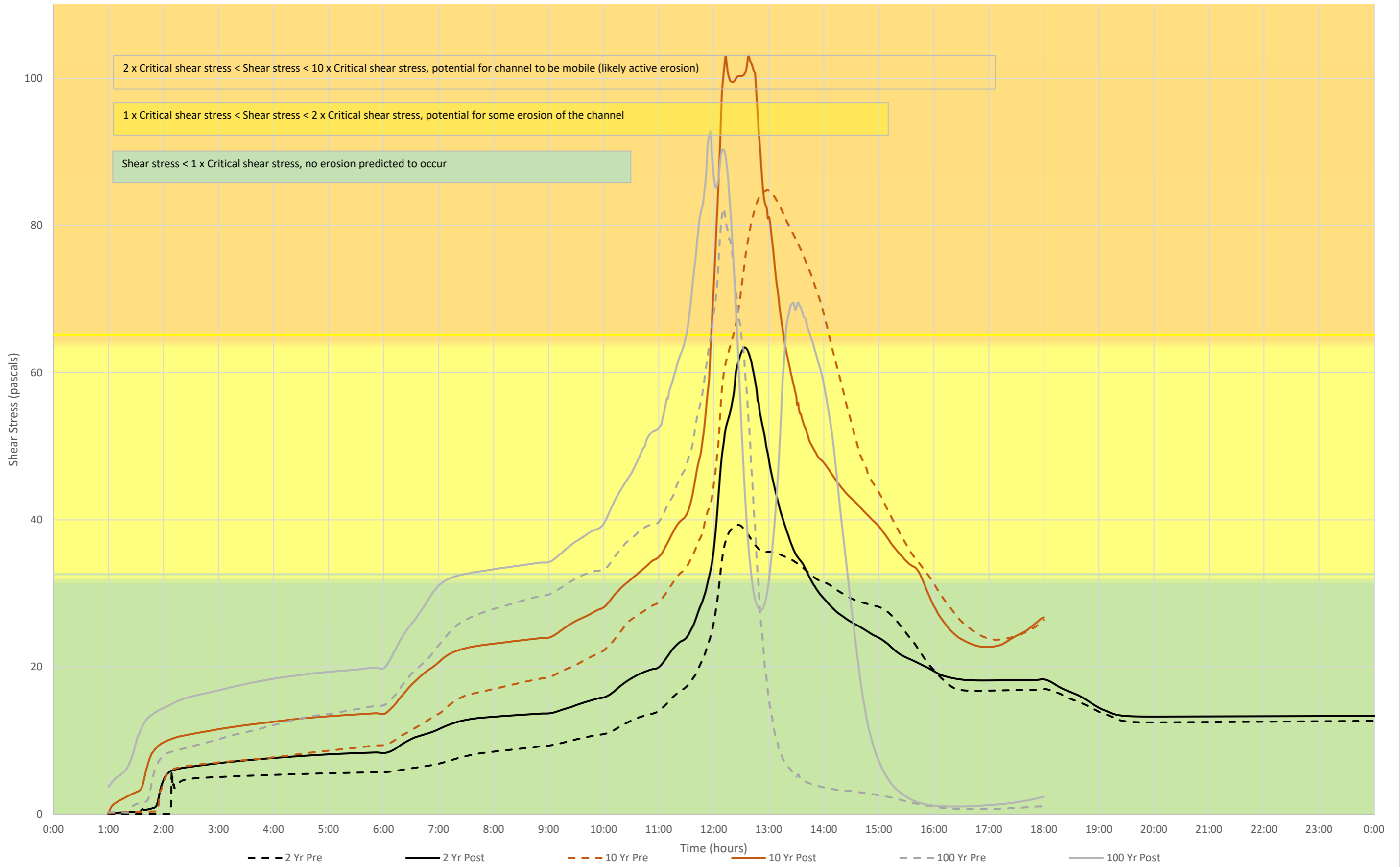
Shear stress < 1 x Critical shear stress, no erosion predicted to occur

--- 2 Yr Pre — 2 Yr Post - - - 10 Yr Pre — 10 Yr Post - - - 100 Yr Pre — 100 Yr Post

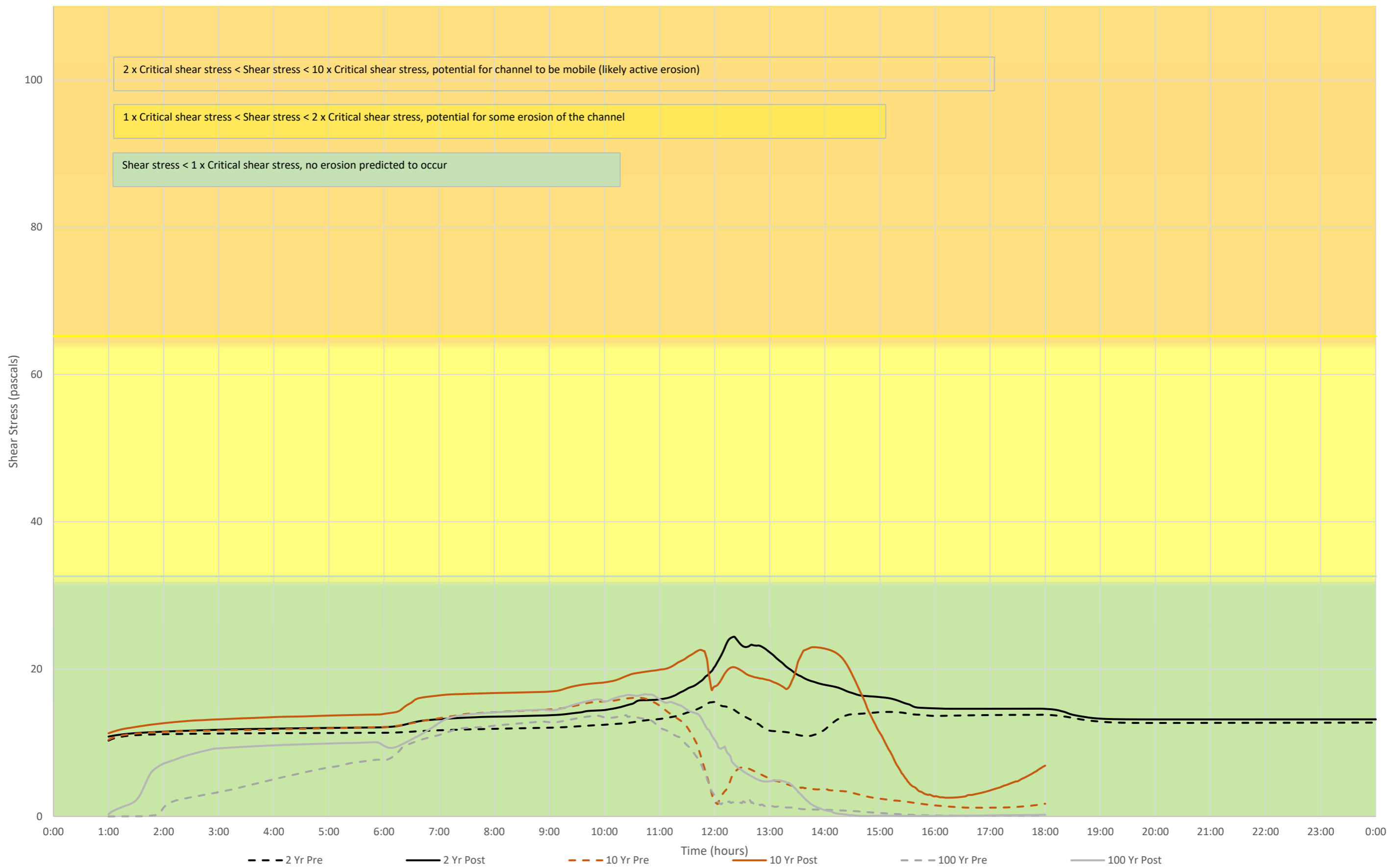
Shear Stress at Location 6 - Fitzgerald Stream, upstream Fitzgerald Stream



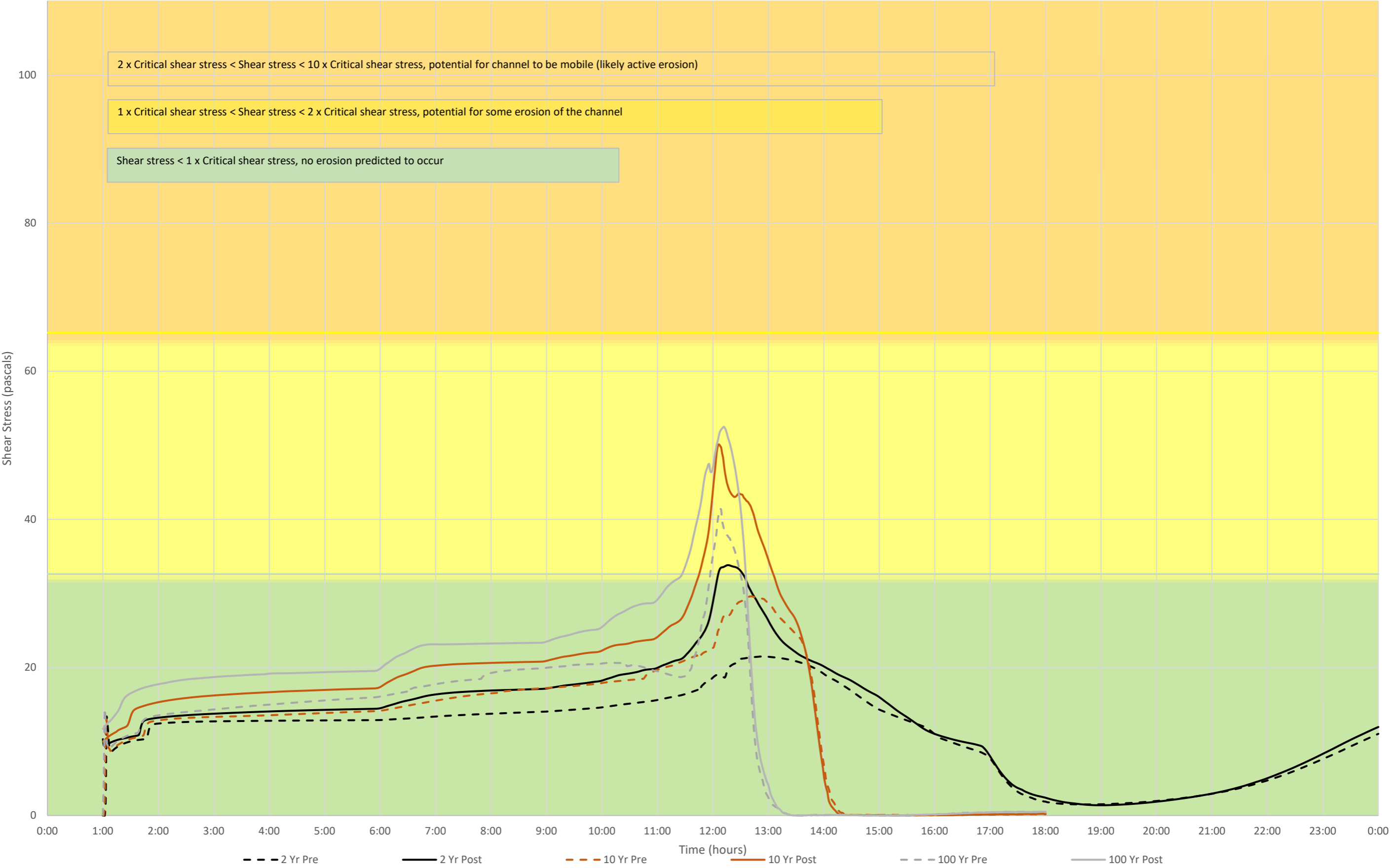
Shear Stress at Location 7 - Fitzgerald Stream, mid-point Kiwi Plan Change Area



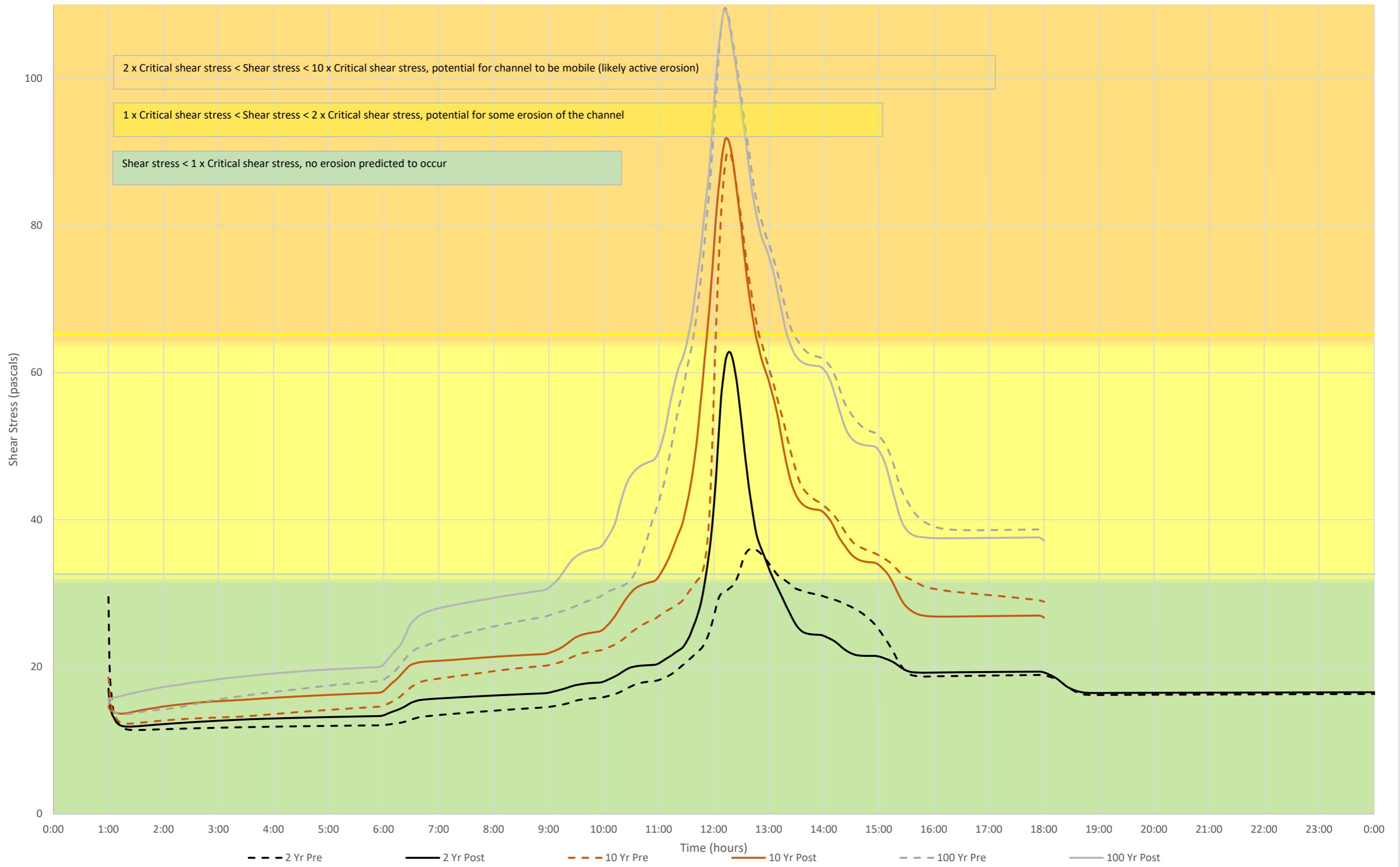
Shear Stress at Location 8 - Hingaia Tributary, from Fulton Hogan Plan Change Area



Shear Stress at Location 9 - Hingaia Tributary, from Fulton Hogan Plan Change Area



Shear Stress at Location 10 - Fitzgerald Stream, mid-point Fulton Hogan Plan Change Area



ARI event	2 year
Location	1

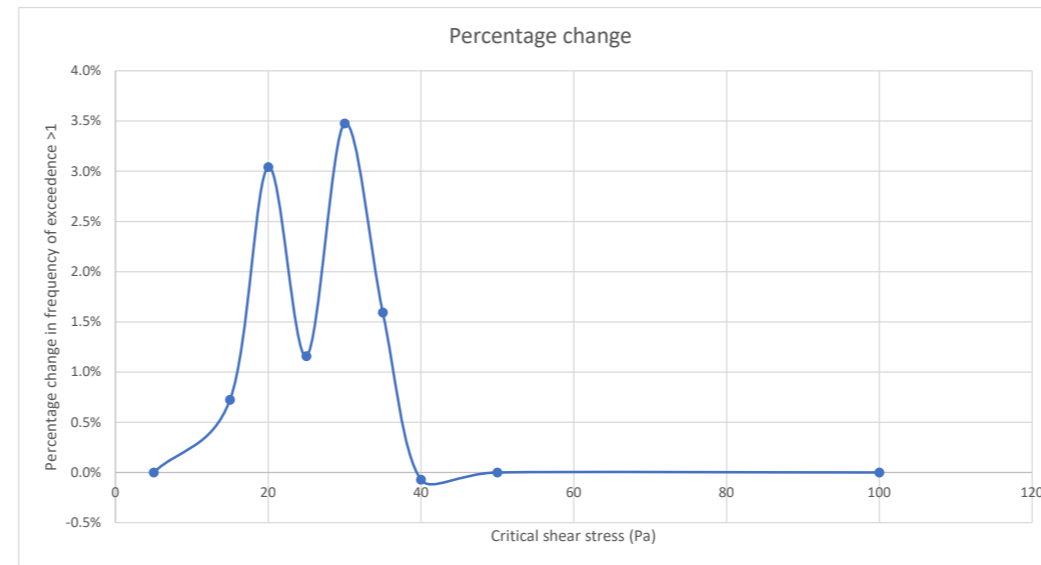
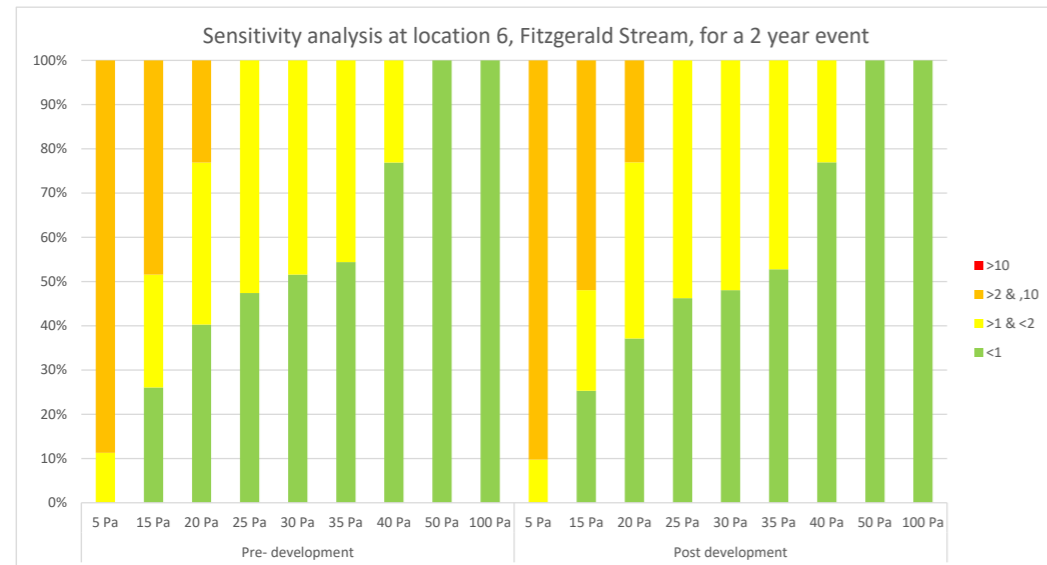
Frequency of exceedence

	Pre- development										Post development									
	5 Pa	15 Pa	20 Pa	25 Pa	30 Pa	35 Pa	40 Pa	50 Pa	100 Pa	1381	5 Pa	15 Pa	20 Pa	25 Pa	30 Pa	35 Pa	40 Pa	50 Pa	100 Pa	1381
<1	0	360	556	655	712	751	1062	1381	1381	1381	0	350	512	639	664	729	1061	1381	1381	1381
>1 & <2	156	352	506	726	669	630	319	0	0	0	135	314	549	742	717	652	318	0	0	0
>2 & ,10	1225	669	319	0	0	0	0	0	0	0	1246	717	318	0	0	0	0	0	0	0
>10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total number of events	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1379.000	1381.000	1381.000	1381.000	1379.000	1381.000	1381.000	1381.000

Change in exceedence of critical shear threshold from pre- to post-development

	Critical shear stress									
	5	15	20	25	30	35	40	50	100	1381
>1	0.0%	0.7%	3.0%	1.2%	3.5%	1.6%	-0.1%	0.0%	0.0%	0.0%

Max % change	3.5%
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ARI event	2 year
Location	6

Frequency of exceedence

	Pre-development										Post development									
	5 Pa	15 Pa	20 Pa	25 Pa	30 Pa	35 Pa	40 Pa	50 Pa	100 Pa		5 Pa	15 Pa	20 Pa	25 Pa	30 Pa	35 Pa	40 Pa	50 Pa	100 Pa	
<1	52	537	910	1099	1138	1168	1199	1300	1381	42	343	802	912	1116	1185	1236	1282	1381		
>1 & <2	321	601	289	201	243	213	182	81	0	139	773	434	370	198	150	121	99	0		
>2 & ,10	1008	243	182	81	0	0	0	0	0	1200	265	145	99	67	46	24	0	0		
>10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total number of events	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000	1381.000		

Change in exceedence of critical shear threshold from pre- to post-development

	Critical shear stress									
	5	15	20	25	30	35	40	50	100	
>1	0.7%	14.0%	7.8%	13.5%	1.6%	-1.2%	-2.7%	1.3%	0.0%	

Max % change	14.0%
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