

Ballater and Crathie Community Council Flooding Issues Group (FIG)

Ballater (RD) Ltd Flooding Action Community Team (FACT)

16th November 2023
Victoria Hall Meeting

Timeline

- 2015 Storm Frank
- 2019 RPS Study and Report
- 2020 AbCo application to Scottish Government
- February 2021 – high water event
- February 2022 – RPS Additional Study work began
- November 2022 – high water event
- June 2023 – RPS Additional Study
- October 2023 – high water event

Today

- **RPS Additional Study** – Richard Bush
- **Water flows and data** – Lucile Verrot
- **FIG workstreams** – Richard Frimston
- **FACT proposed works** – Jim Luff
- **Help!** – Neil Duncan
- **Questions and Discussion**

BCCC Flooding Issues Group (FIG)

- John Bannerman
- Richard Bush
- Neil Duncan
- Tom Flynn
- Richard Frimston
- Lucile Verrot

BRD Flooding Action Community Team

- John Bannerman
- Shaun Canniford
- Neil Duncan
- Tom Flynn
- Richard Frimston
- Jeff Hall
- Jim Luff
- Weston Main
- David Murray
- Alan Nichol
- Grant Smith
- Bill Stephen
- Wallis Riddell

BALLATER ADDITIONAL FLOOD STUDY

Feasibility Report- Technical Report

IBE1982 D03 May 2023 –

<http://ballater-fps.com/additional-supplementary-reports/>

Requested by FIG and commissioned by AbCo following changes to River Dee following Storm Frank and a subsequent high water event (Feb 2021)

Study executed by RPS with the following key objectives;

- Identify changes to flood risk resulting from changes to the River and
- Assess the potential for minor works to manage the flood risk

Main Study Phases

- Site Survey(s)
 - Existing Defences' condition assessment
 - 45 New River Profiles
 - New high resolution ground model
- Hydraulic Modelling to
 - Establish flood mechanisms
 - Compare flood extent 2018 vs 2022 surveys
 - Evaluate minor works risk management options
- Discussion, Evaluation and Reporting

2022 Fluvial Audit – Key Conclusions

- Storm Frank sediment ‘pulse’ has altered channel configuration near Ballater Golf Course, and the Dee has moved from Glen Muick towards Ballater.
- Reduced transport capacity in area just upstream of the Dee/Muick confluence has caused large alluvial deposits.
- The new channel configuration has increased erosion along the left bank in the lower section of the embankment near the 5th Tee that protects Ballater.

JUNE 2022

Reach 2 - Upstream Extent
OS NGR NO 35966 95696

AFTER RIVER
CHANGES
(2022)

Reach 2 - Downstream Extent
OS NGR NO 37041 95198

DALLIEFOUR
FARM

RIVER DEE

RIVER
MUICK

GOLF COURSE

JANUARY 2018

BEFORE RIVER
CHANGES
(2018)

DALLIEFOUR
FARM

RIVER DEE

RIVER
MUICK

GOLF COURSE

— Survey Extents (2022)

— Tributaries

Bed Substrate

— Not Surveyed

— Boulder/Cobble

— Cobble/Boulder

— Cobble

— Cobble/Gravel

— Gravel/Cobble

— Gravel

— Silt

— Alluvial Barform*

Bank Erosion

— Minor

— Moderate

— Severe

— Poaching

*Length and position of alluvial barform present were recorded in 2018, the 2022 repeat survey also mapped the area of this depositional features.

CLIENT

RPS CONSULTING UK & IRELAND

PROJECT

BALLATER GEOMORPHOLOGY

Project no. 2150185

Date 01 JUN 2022

Drawn GP

Surveyed LM & GP

Reviewed LC

0 100 200 300 400 m

Scale @ A4 - 1:5,000

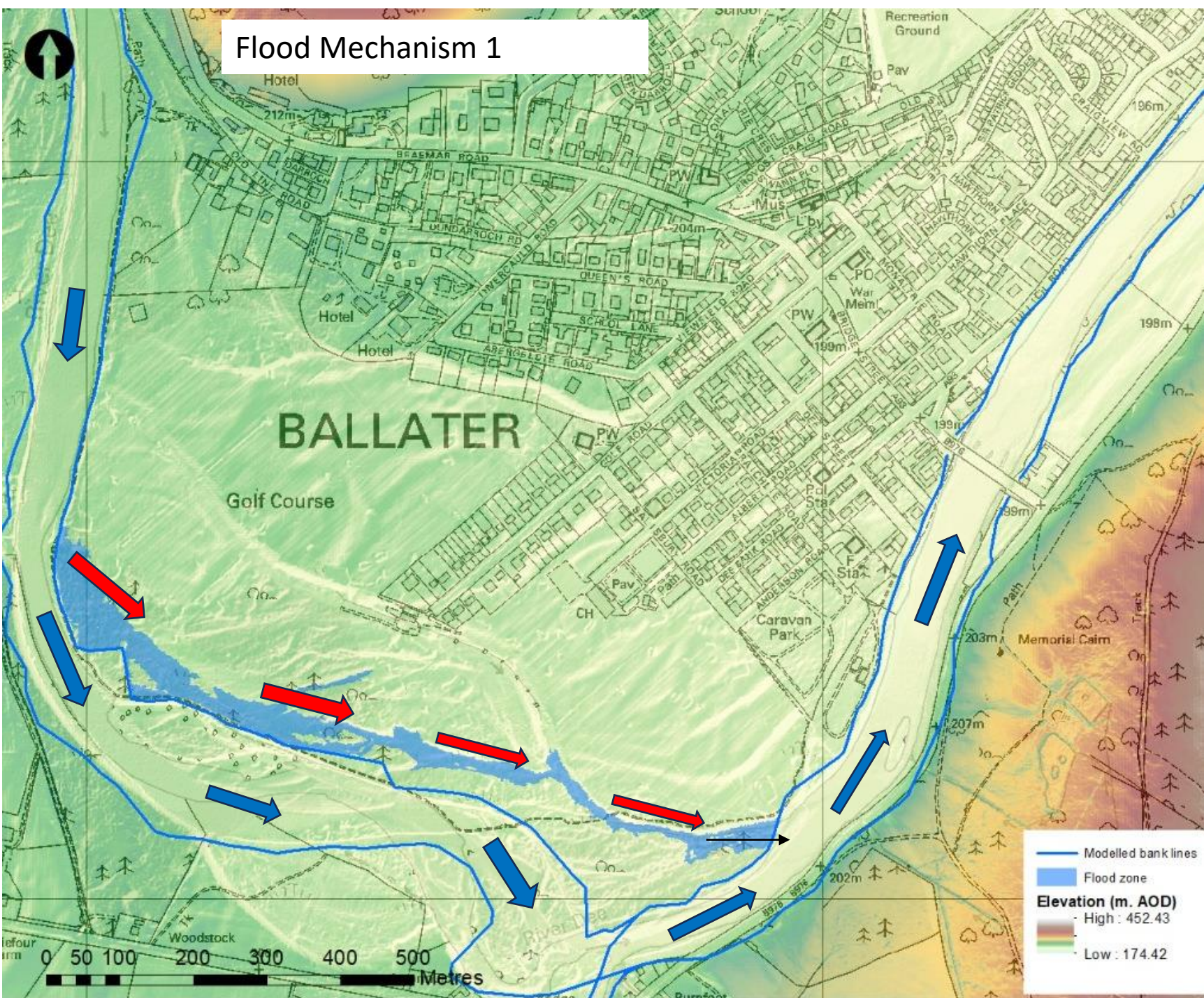
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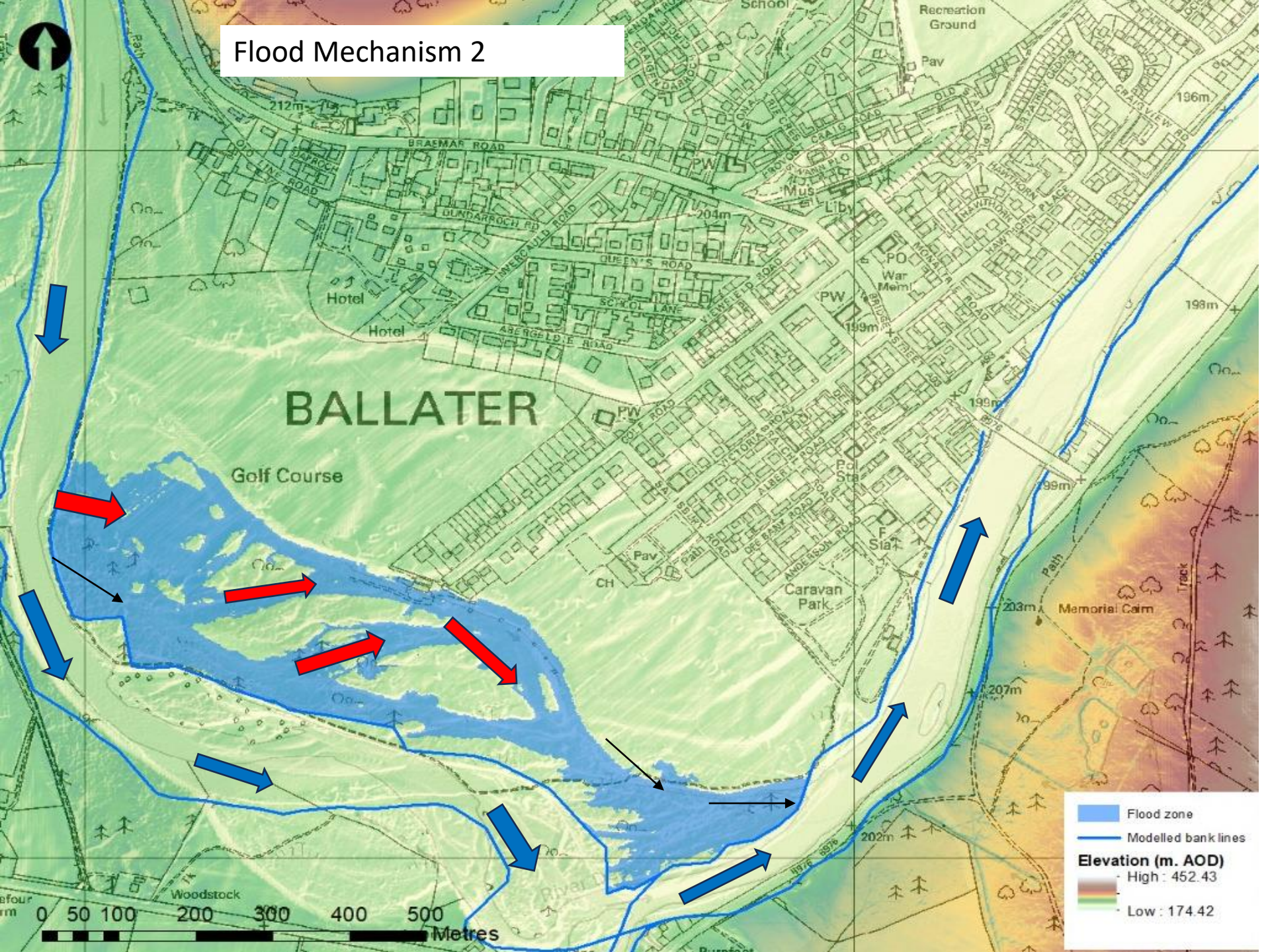
CHARACTERISTIC FLOW RATES

- SMALL – 400/450 m³/SEC -
- MEDIUM - 2 times greater flow rate
800 m³/Sec
- LARGE – Storm Frank – 3 times greater flow rate
1240 m³/sec

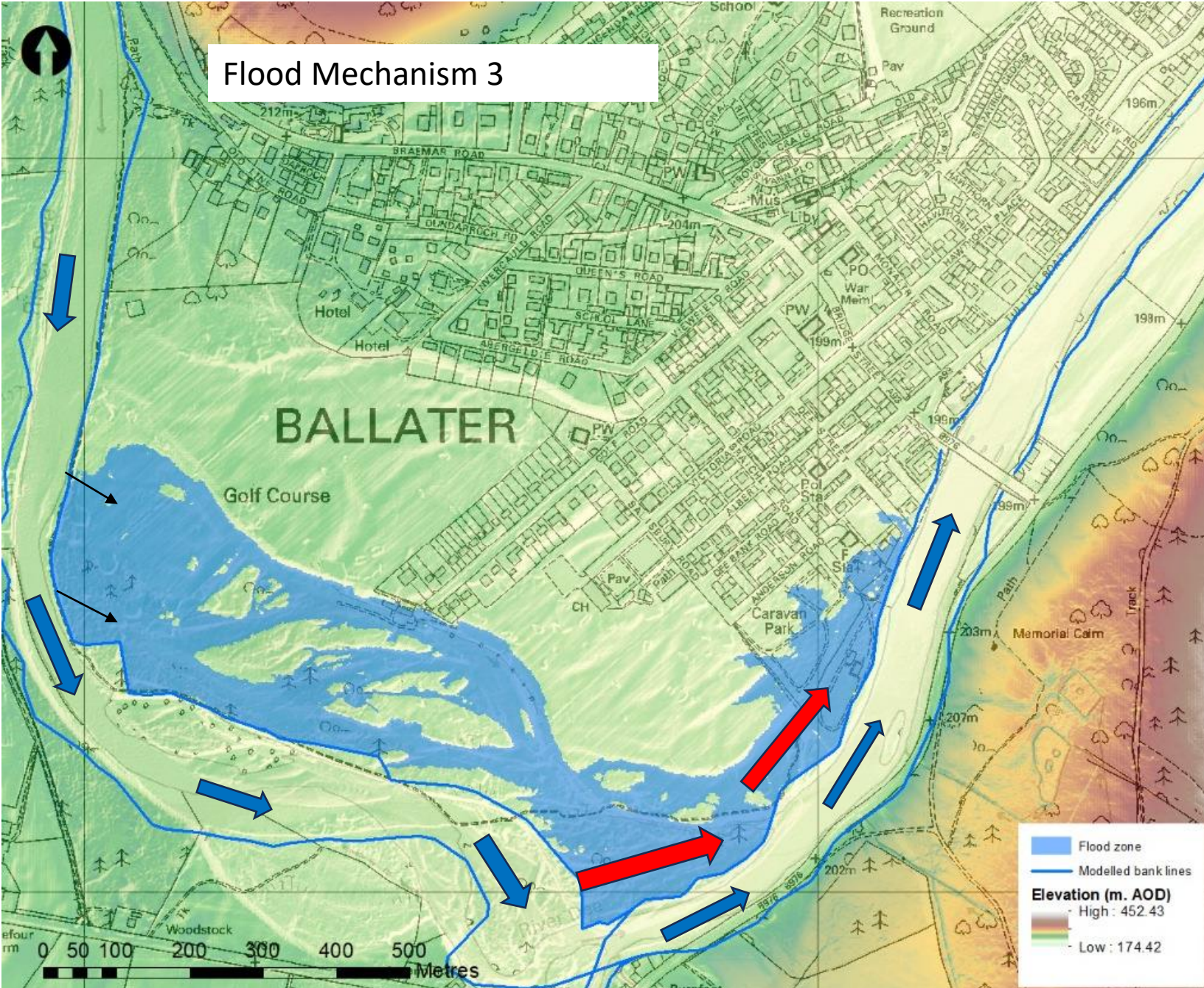
Flood Mechanism 1



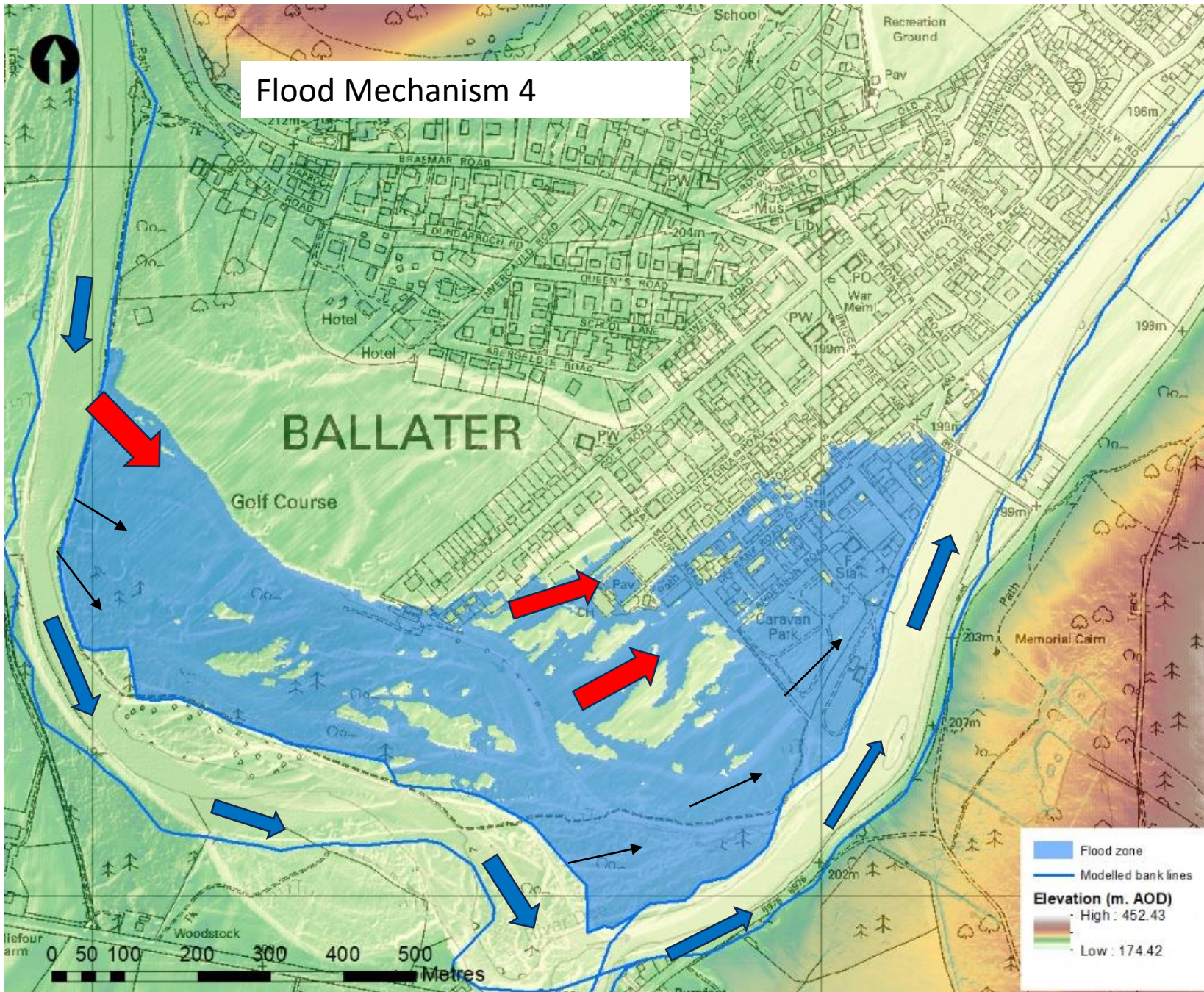
Flood Mechanism 2



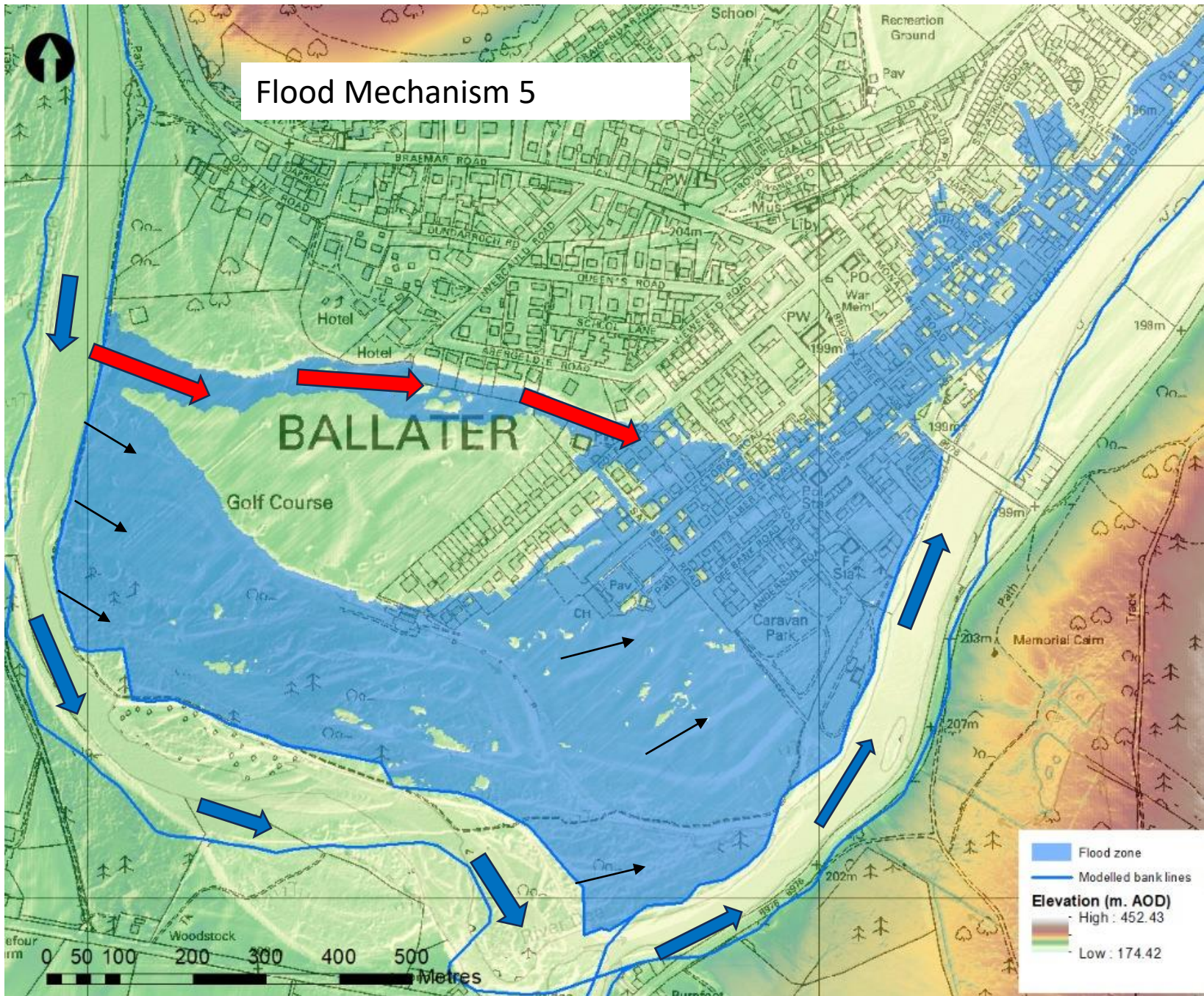
Flood Mechanism 3



Flood Mechanism 4



Flood Mechanism 5



Predicted Flood Extent 2018 vs 2022

No differences for LARGE flow rates (Storm Frank or Greater)

In MEDIUM flow rates (830 m³/sec) approximately double the number of buildings are now predicted to be affected vs 2018

Equiv Flow Rates CM3/S	Annual Av Return Period Yrs	Annual Exceedance Probability (%)	No of Buildings Affected		Difference	FLOW RATES
			2018 Survey	2022 Survey		
410	2	50	0	22	+22	SMALL
550	5	20	18	97	+79	
640	10	10	71	143	+72	MEDIUM
830	30	3.33	204	399	+195	
1100	100	1	522	562	+40	LARGE
Ref Table 6.3 BAFS - Buildings within flood extent 2018 vs 2022						

For 95% of additional buildings affected expected water depths are less than 0.6m so could potentially benefit from property level protection – (eg by fitting flood gates etc, etc)

Minor Works Flood Risk Management Options Considered

No	Option	Summary Assessment	Conclusion
1	Remove dead trees and reuse in bank reinforcement.	Re-use method supported but limited effect on flood extent	Not selected
2	Clear out Glenmuik channel.	Consistent increase in flood extent/properties affected downstream.	Not selected
3	Clear GC 'legacy' channel outlet.	Small but consistent reduction in flood extent	Concept Carried fwd to 7
4	Replacement Bund bund 200m near 5th T.	Consistent increase in flood extent.	Not selected
5	Option 1,3 and 4 Combined	Small consistent increase in flood extent	Not selected
6	North GC Bund - 210 m 1.0 m high bund from 14th T north	Limits food mechanim 5. Consistent reduction in flood extent.	Secondary option
7	Build Southern Bund (440m x 1.5m) and Deepen 330 m of GC Outlet by 0.5m	Consistent material reduction in flood extent - especially in lower village below Royal Bridge.	Best Option - Selected

1

Remove dead trees and reuse in bank reinforcement.

Re-use method supported but **limited effect** on flood extent

Not selected



2

Clear out Glenmuik channel.

Consistent **increase** in flood extent/properties affected downstream.

Not selected



3

Clear GC 'legacy' channel outlet.

Small but consistent **reduction** in flood extent

Concept Carried fwd to 7



4	Replacement Bund bund 200m near 5th T.	Consistent increase in flood extent.	Not selected
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6

North GC Bund
- 210 m 1.0 m high bund
from 14th T north

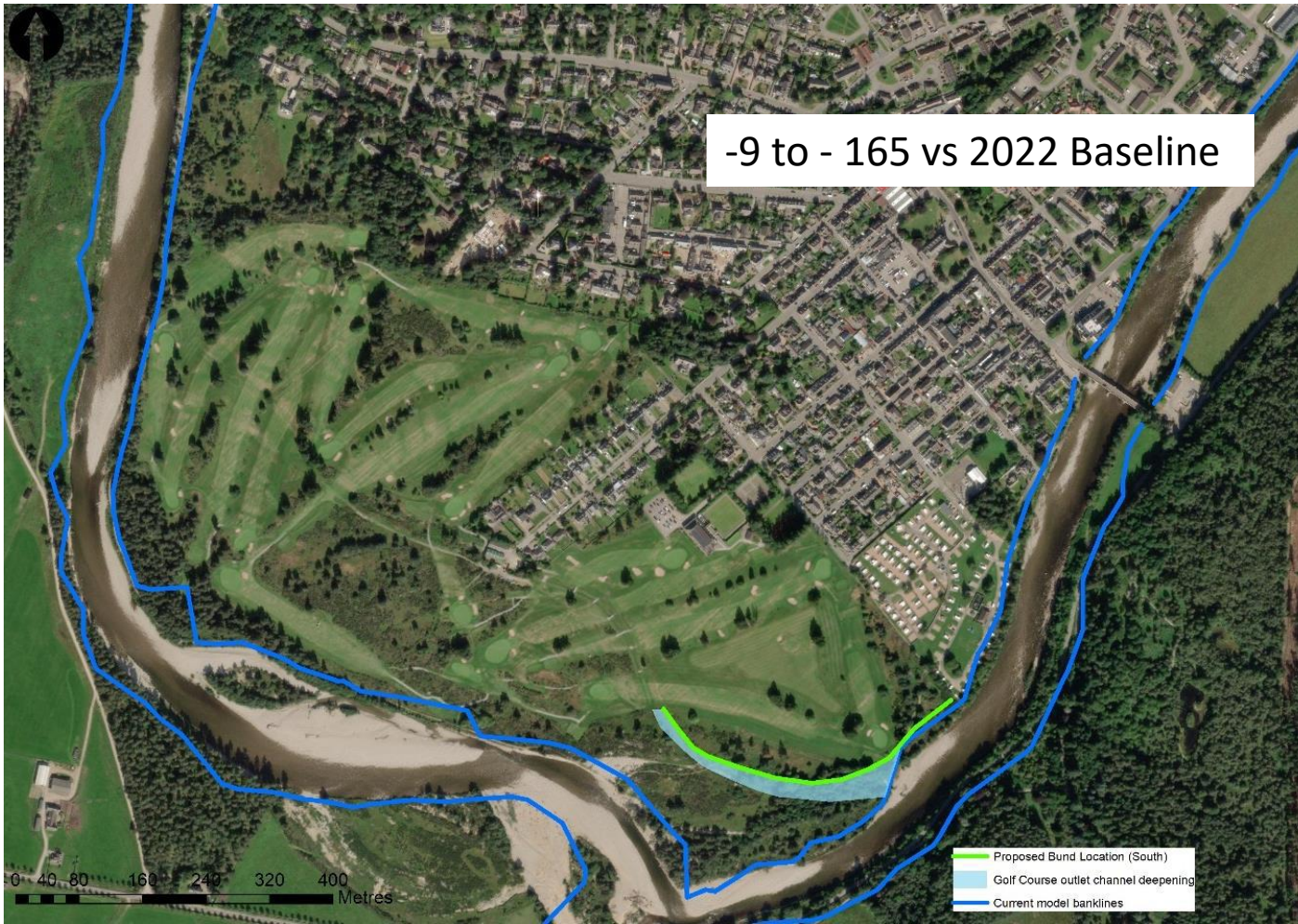
Limits food mechanim 5. Consistent **reduction**
in flood extent.

Secondary option



RECOMMENDED OPTION 7 Deepening of a 330m reach of the Golf Course outlet channel by 0.5m was simulated in conjunction with a 440m long, 1.5m high bund on the left bank.

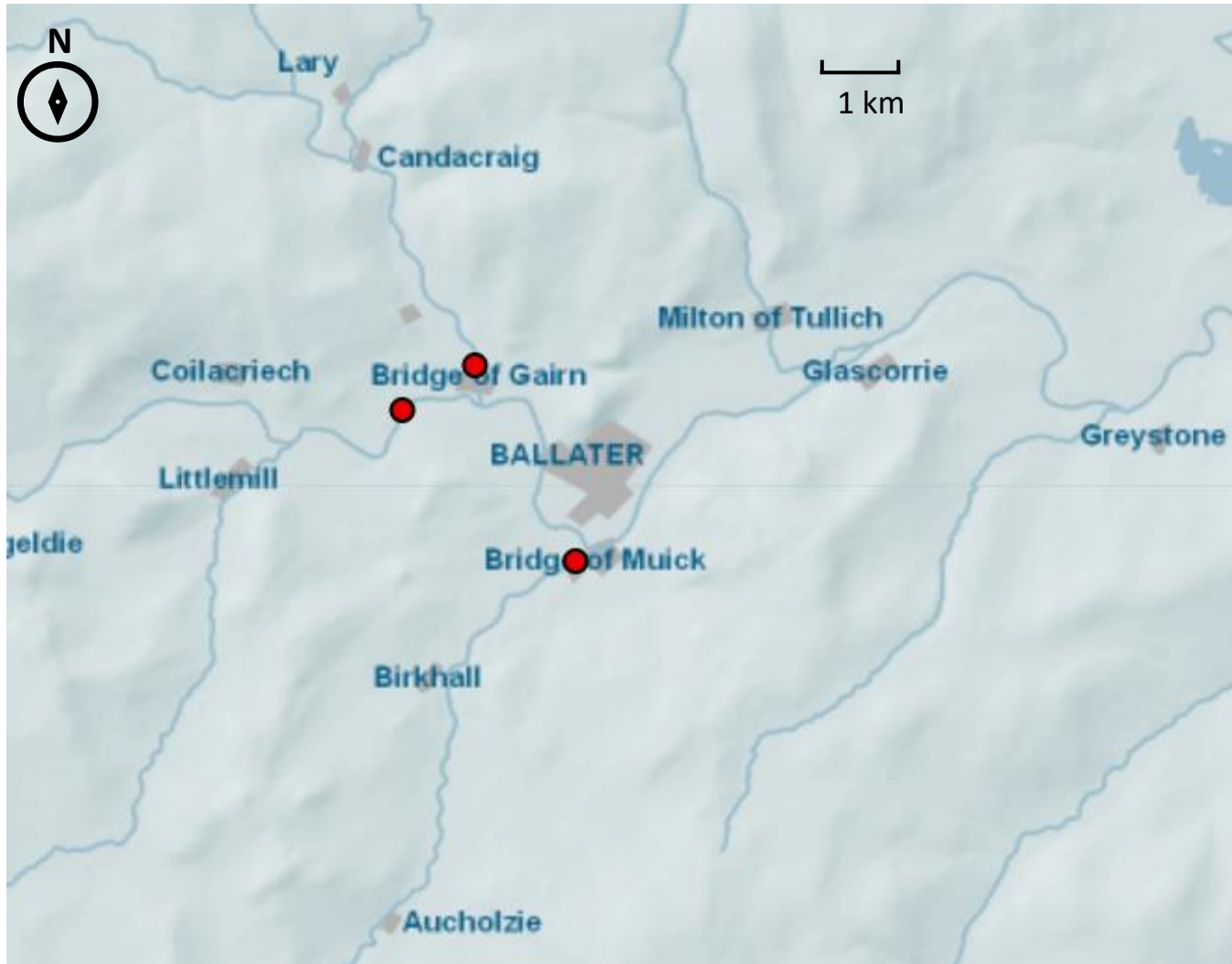
Consistent material **reduction** in flood extent - especially in lower village below Royal Bridge.



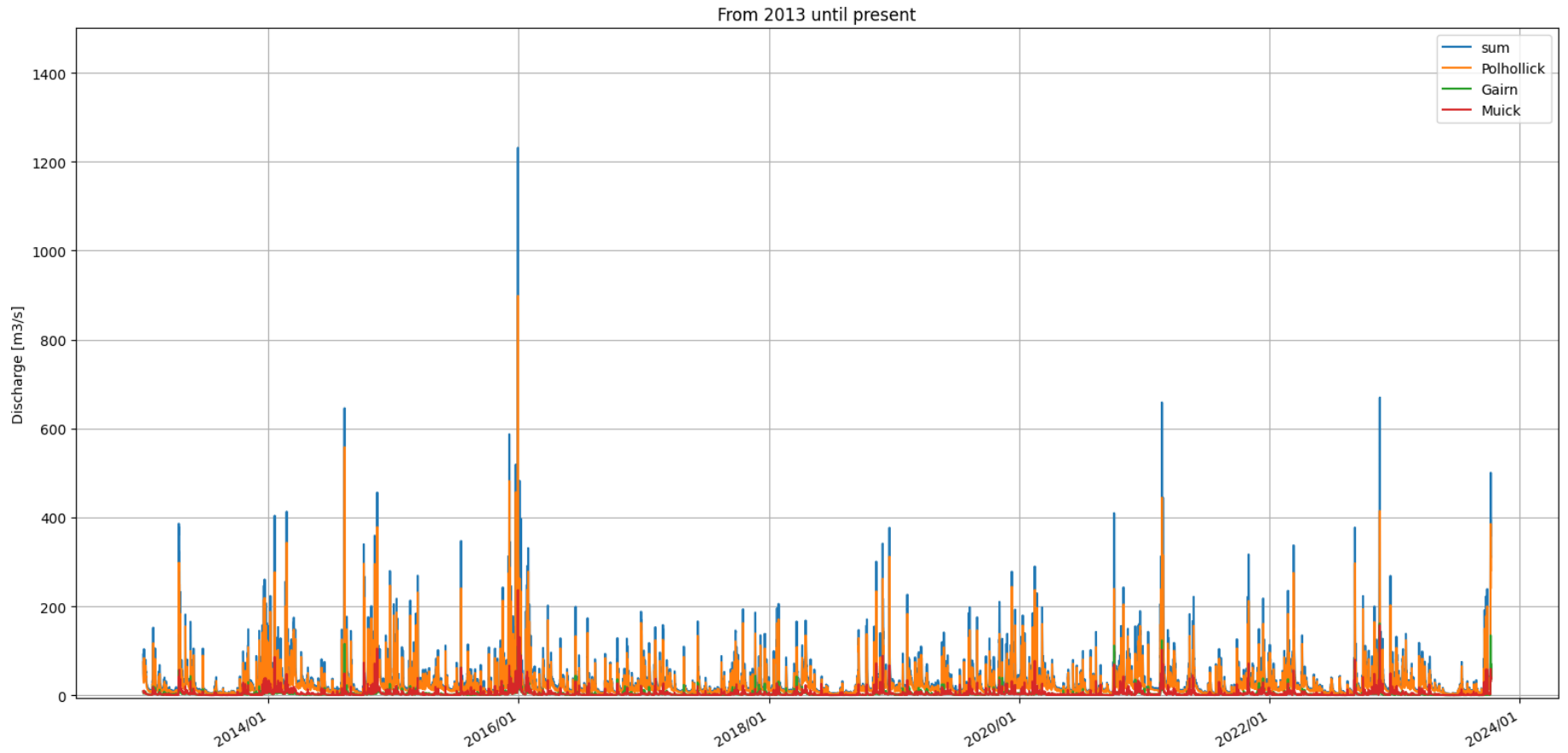
Why look at flows?

- Onset ?
- Mechanism ?
- Changes in time?

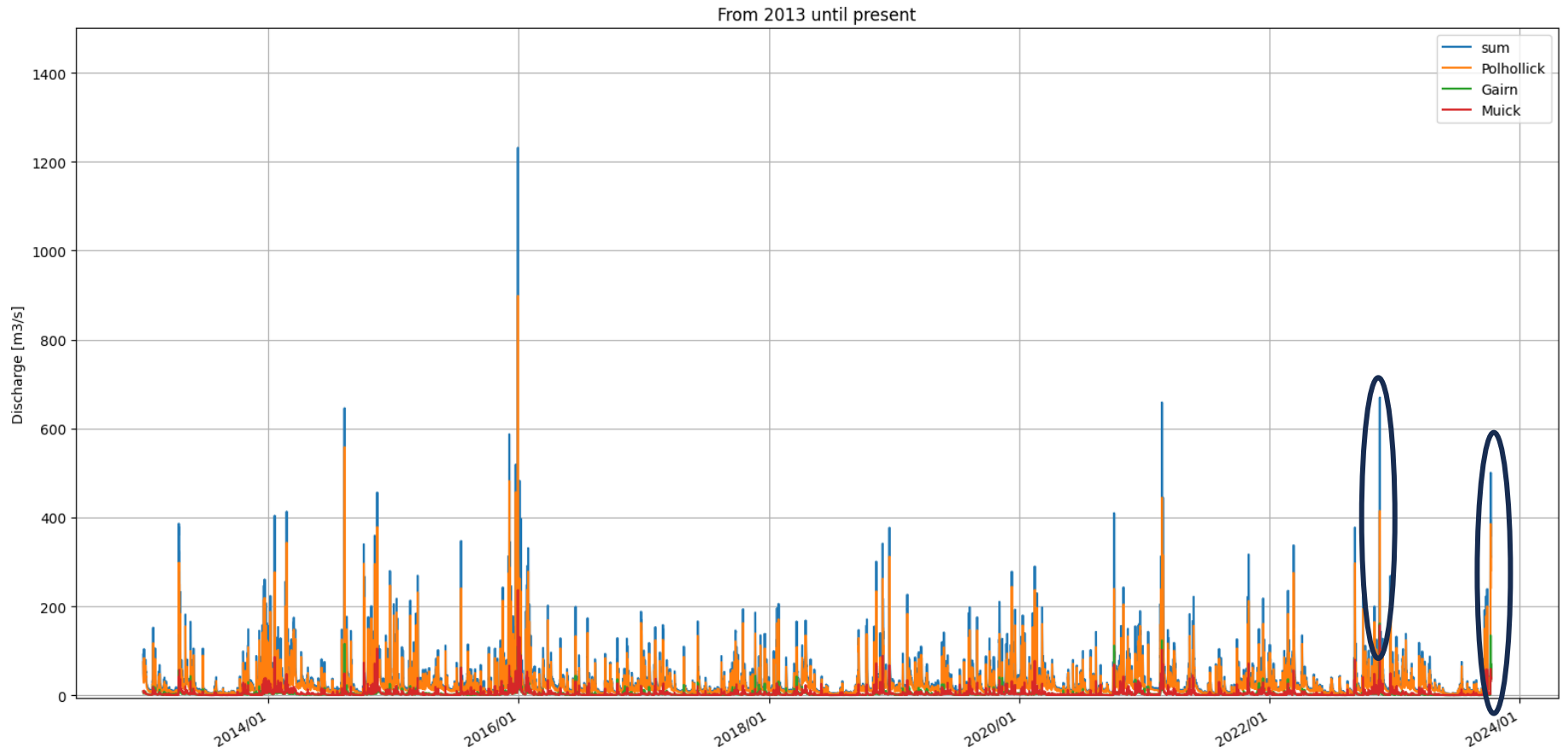
Flow Data (SEPA gauges)



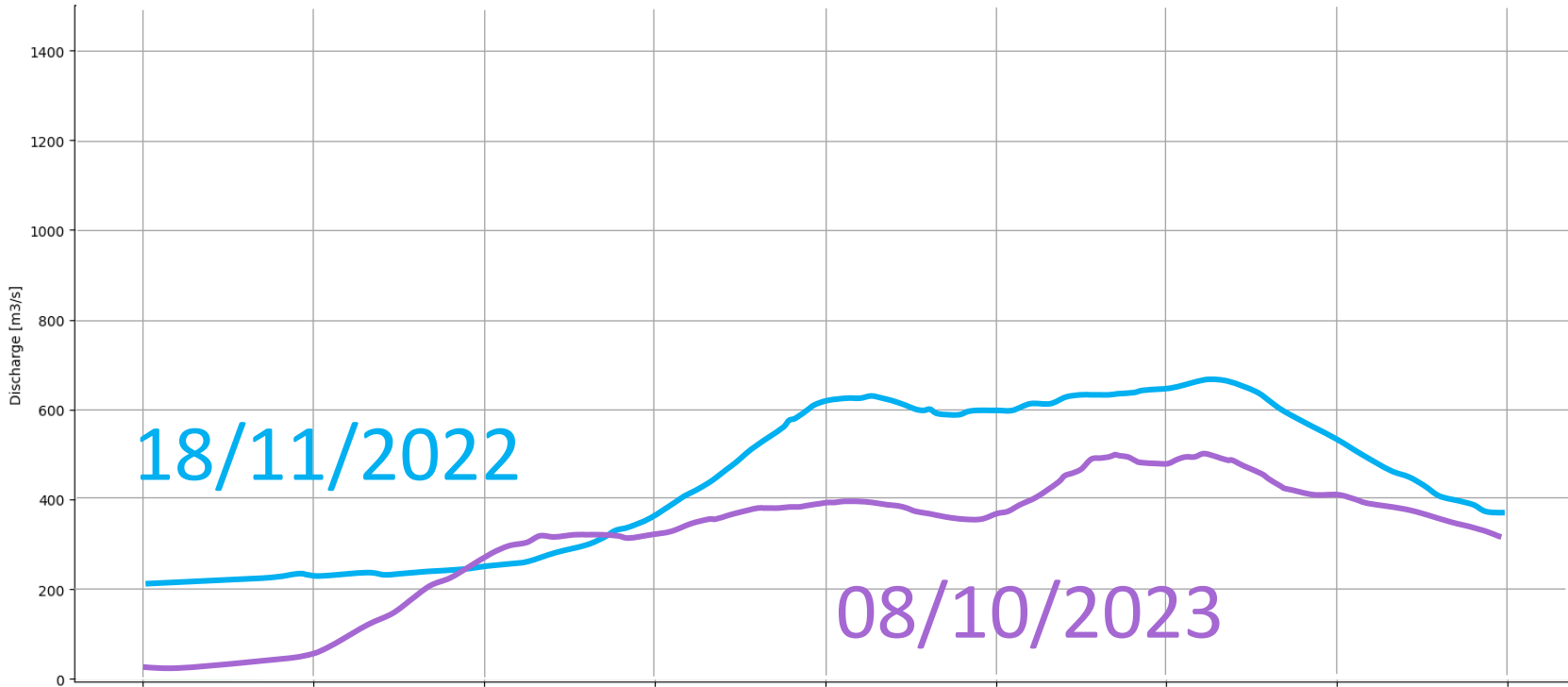
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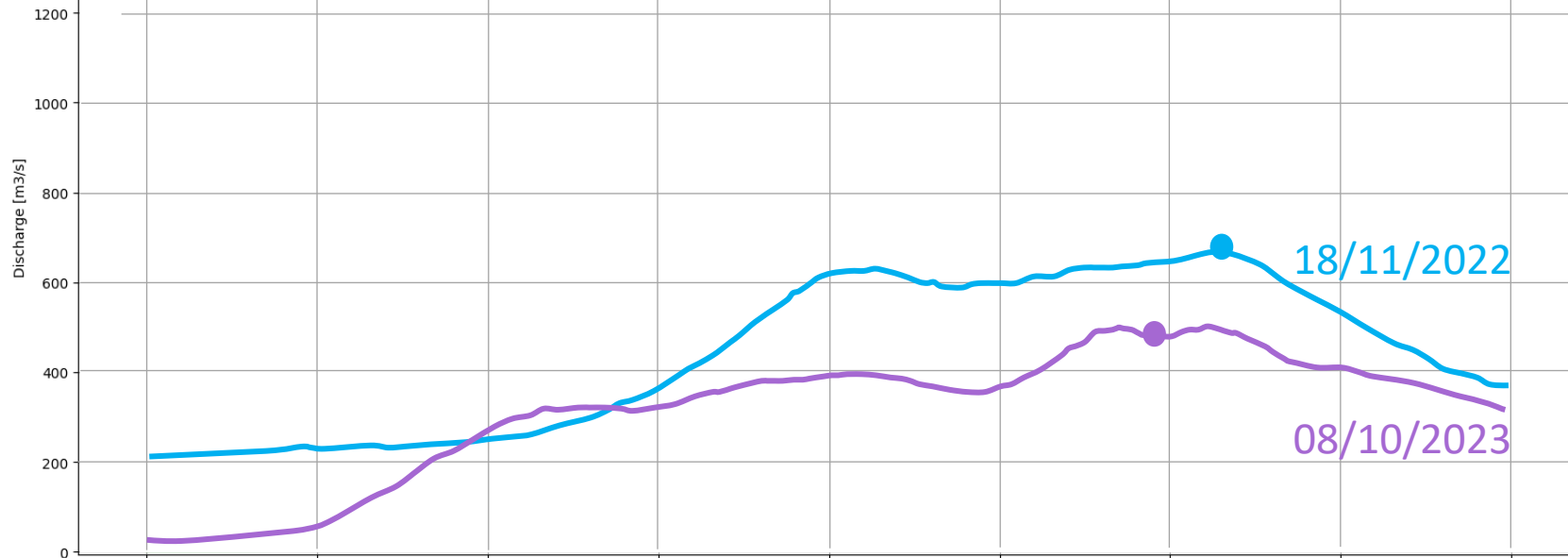
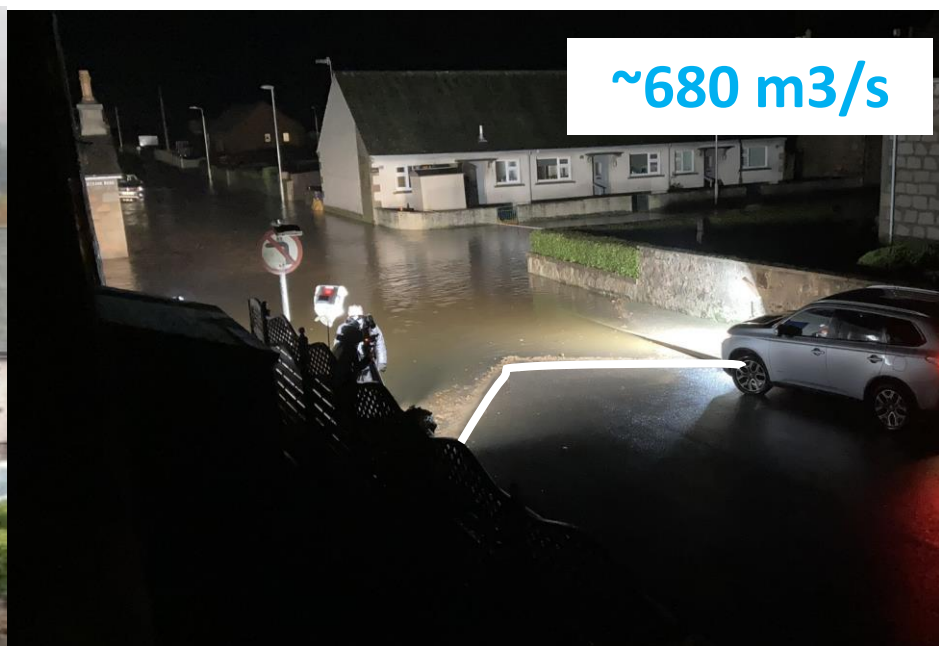
Example: comparison of two events



~500 m³/s

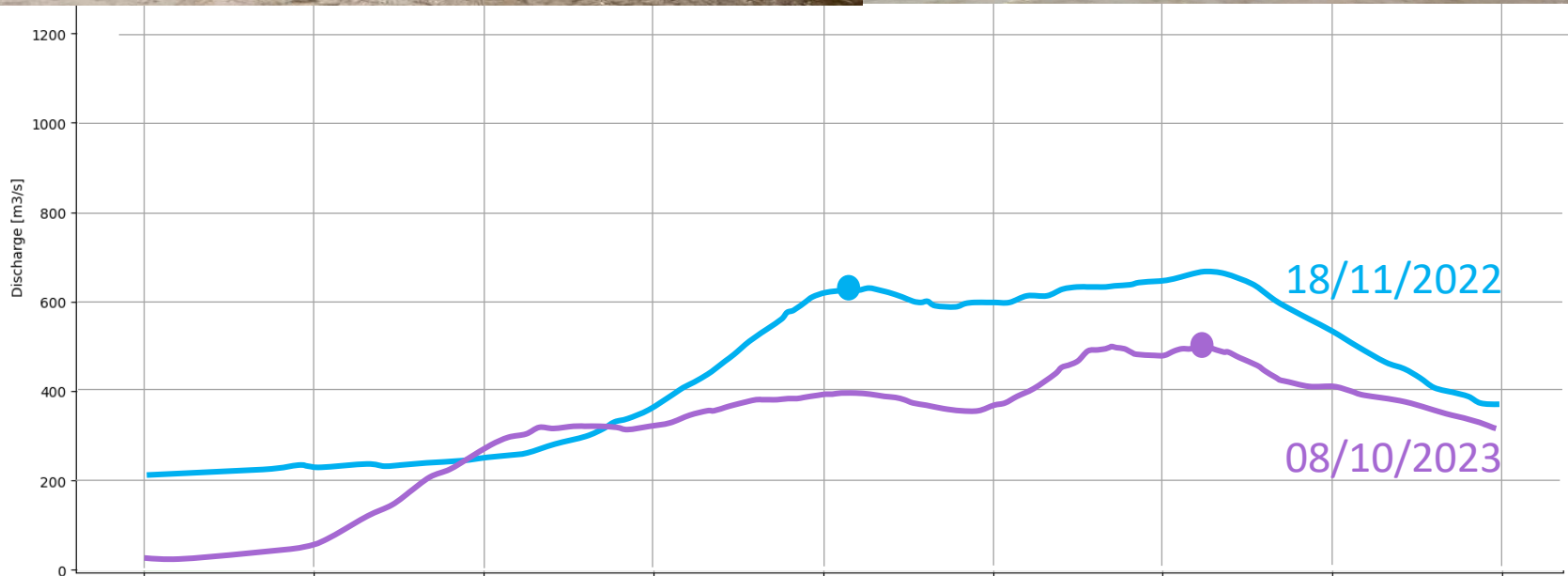


~680 m³/s



~500 m³/s

~630 m³/s



Bottom line is

- WE are the best source of information to know how the flooding works, and if it changes
- Let's gather as much evidence as possible

FIG Update

FIG is working to reduce flooding risk:

- Emergency response – with Local Fire & Rescue, the other Emergency services and the Ballater Resilience Group
- Property Level Protection – with Scottish Flood Forum
- Medium term works – working with BRD Ltd to contract with Hydrologists CBEC to advise on alternative schemes
- Long term work with CNPA to keep water upstream where possible

FACT Update

FACT is working on the two areas identified in option 7 above:

A. The Golf Course outlet channel

Work has already started on the clearing out flood debris from the Golf Course outlet channel

B. The temporary bund on the left bank.

Preparation for the deployment of a bund is starting

FACT Update

FACT Challenges

A. The Golf Course outlet channel

The Golf Course outlet channel is in a Special Area of Conservation and therefore the work that can be done at present is limited to the clearing of flood debris. Further work, such as the deepening of the channel, would need to be discussed and cleared with Nature Scotland and SEPA.

FACT Update

FACT Challenges

B. The temporary bund on the left bank.

Stakeholders:

ABC Co –

may need planning permission – have already agreed the use of the HESCO boxes

Ballater Golf Club –

already given permission to deploy HESCO boxes on their land

Caravan Park –

already given permission to access the location of the Hesco Box Deployment

SEPA –

Agreement on location of the HESCO box deployment

Permission to use river sand deposits to fill HESCO boxes

FACT Update

FACT Challenges

B. The temporary bund on the left bank.

SEPA review provided different options:

- a. SEPA now consider the end portion of the Legacy Channel to be part of the river
- b. Hesco Boxes can be installed out with 10 metres of the river with no permit
- c. The Legacy Channel embankment can be re-profiled, subject to application to SEPA. This would take at least 4 weeks for that application to be granted.
- d. The low point in the path, where the river overtops, can be repaired and filled to the same height as the grass on each side without a permit.

Hesco Jackbox



FACT Update

FACT Needs and next steps

Needs - Additional volunteers

- This is a community project - many hands make light work – all hands welcome

Next steps

- Complete costings and funding for the repair and fill the low point of the path – medium term
- Determine and get authorisation for placement of the temporary bund, complete costings and secure funding, deploy temporary bund – long term

How can you help?

- Sign up to our FACT Facebook page for the latest communications
- FACT group for planned events such as channel clearance days / post storm clean up, flood mitigation projects - all volunteers welcome
- Help a neighbour install Property Level Protection (PLP)
- Speak to a FIG member and share YOUR ideas on how to limit the effects of flooding and storms – all ideas welcome
- bcccsecretary@outlook.com
- We plan to set up a fundraiser for some of our upcoming flood mitigation projects – all donations welcome

As a Community we can make a real impact to protect all of us from flood events BUT we need your help.....😊

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