

# Natural Flood Management in West Cumbria

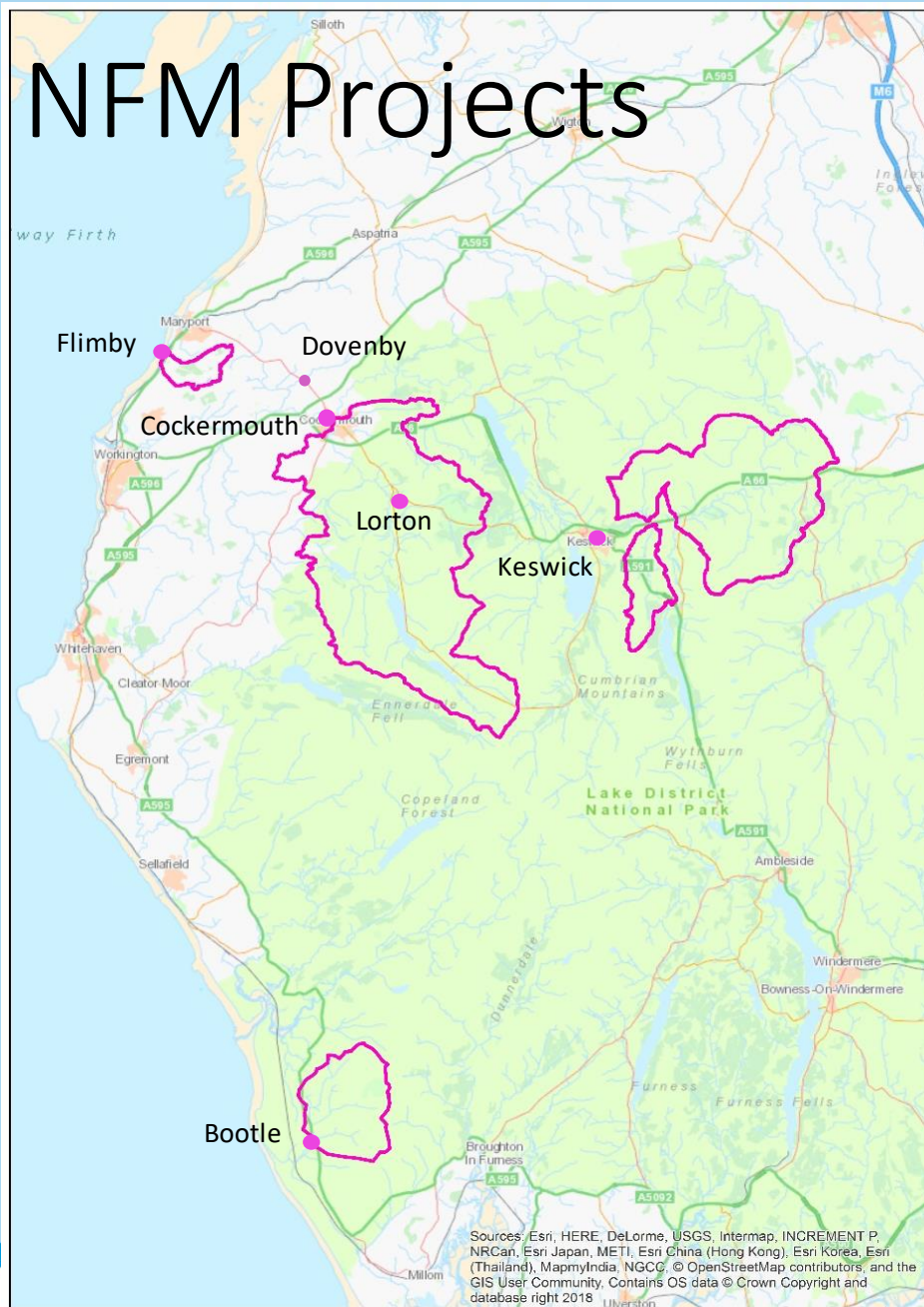
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West Cumbria Rivers Trust



# Background

- Major flood events in Cumbria in 2005, 2009 and 2015 (Storm Desmond)
- WCRT lead 6 NFM projects of differing sizes (value and catchment) across West Cumbria
- Partnership projects endorsed by West Cumbria Catchment Partnership & Cumbria Strategic Flood Partnership. Environment Agency key funder/partner.
- **£1.7M Funding**
  - £1M from £15M DEFRA NFM allocation (4 projects)
  - 1 £30K DEFRA community project
  - £600k Water Environment Grant (WEG) (“complementing” 2 DEFRA NFM projects)
  - £49K from local charitable funding
  - + Woodland Trust and other match funding

# NFM Projects



Smallest = Dovenby catchment – 1.9km<sup>2</sup>  
Largest = Cocker catchment – 130km<sup>2</sup>

## Larger catchments:

- Focus on specific tributaries
- Research to address national evidence gaps
- Demonstrating to farmers how NFM can fit within the farmed (World Heritage Site) landscape



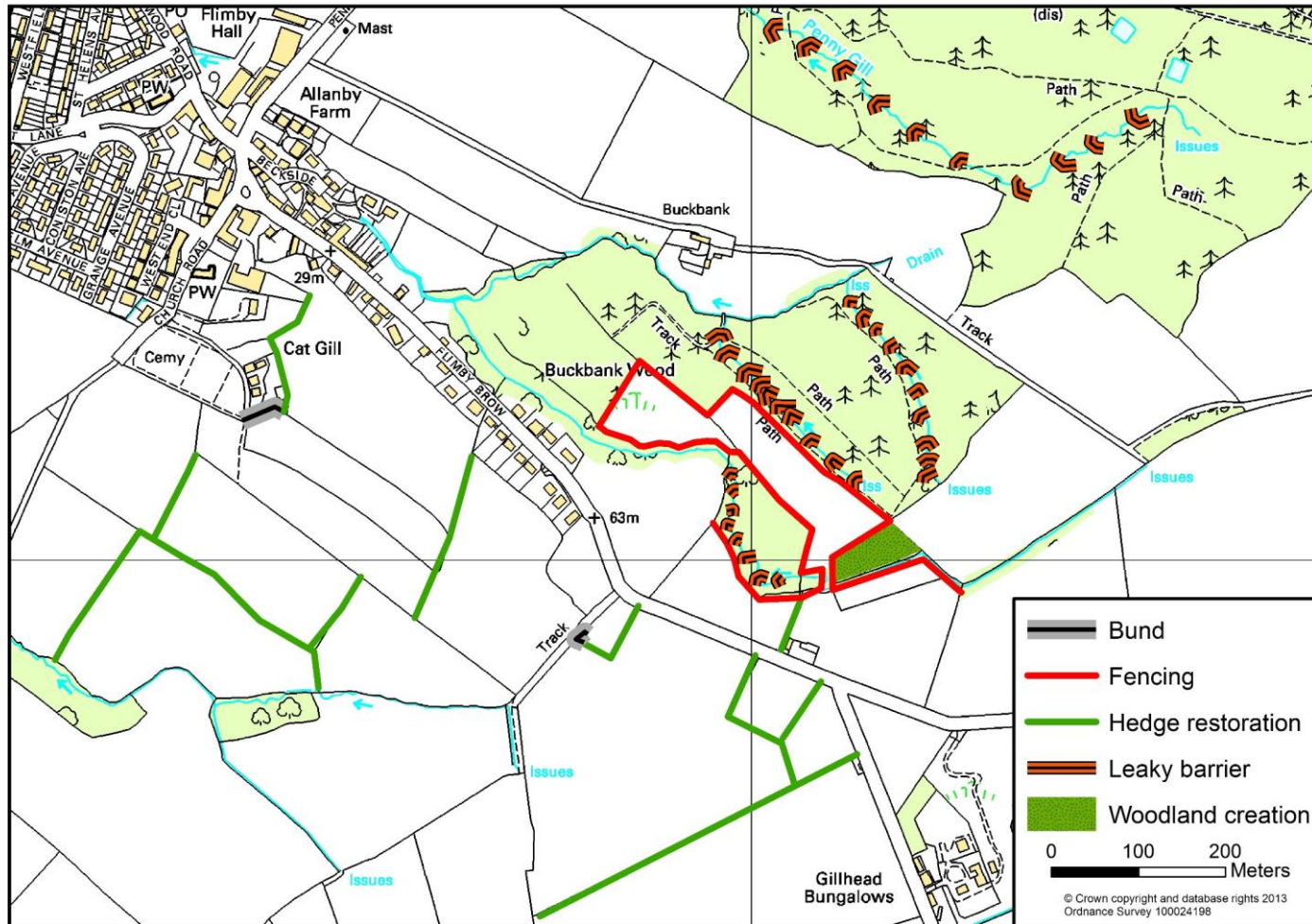
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# Project Status

- All projects started with working with farmers & landowners to produce NFM farm plans
- Flimby and Dovenby projects – delivery in progress (started last year)
- Catchments upstream of Keswick, Cockermouth and Bootle, consenting stage and delivery just starting now
- Our approach - we deliver what farmers and landowners are ultimately happy to allow us to deliver on their land **without compensation**



# Flimby



## NFM Interventions:

- Leaky barriers (in woodland)
- Water storage areas
- Hedgerow and kested hedgerow restoration
- Small area woodland creation

## Part of a wider partnership FCRM project including:

- watercourse re-routing
- upsizing culverts and drainage network through village
- SuDs
- formal water storage areas
- And more NFM...







# Long-term maintenance

- Generally, WCRT passes maintenance liability onto the landowner as part of the landowner agreement (contract)
- This works in circumstances whereby farmers are keen for the work to happen for various reasons
- In Flimby, this is the case for the bund and kested hedgerows... but not for the leaky barriers....



Strategic  
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# Long-term maintenance contd..

## Flimby leaky barriers:

- One main woodland owner, lives away. Local contact. The woodland owner was happy with us to do whatever we wanted in the woodland, as long as the local contact was happy. However, didn't want to be bogged down with paperwork.
  - Works under CS agreement therefore ruled out
  - Landowner taking responsibility for future maintenance also ruled out
- Terms of our funding agreement with DEFRA mean WCRT are responsible for future maintenance and liability.
- Working with Flimby Flood Action Group, ideal scenario would be flood action group volunteers keep an eye on the structures, report issues and undertake minor repairs if needed. However, not going all that well....
- Other options – WCRT apprentices, volunteer co-ordinator, corporate volunteers etc
- Need to prove that the structures are helping to reduce flood risk, then hopefully long term maintenance/replacement where required might be funded!



# NFM in a World Heritage Site National Park and SAC

- All the usual consents, plus Heritage Impact Assessments for all tree planting, SSSI consents, open access land etc
- Working Groups set up for all the projects but still confusion over consenting
- Local authority advice that planning permission required for all bunds, (if built using a digger). But recently clarified that can be done under agricultural permitted development rights (on farmed land).



# Main Delivery Delays / Barriers

- Agri-environment schemes – can't change, many farms in existing HLS schemes
- Common land – can't deliver on most of the open fell in the short-term
- Planning permission and other consenting
- No compensation payments or long-term maintenance payments (linked to agri schemes)
- Delivery on Forestry England land
- Not all the catchment is suitable – e.g. steep gravel & cobble tributaries coming off the fells

Delivery barriers being progressed through Catchment Partnership, Cumbria Strategic Flood Partnership, EA DEFRA NFM project manager, NW RFCC and Working Groups.



# Liability

- Falls down to WCRT
- Design liability main concern in WCRT
- Follow standard specifications (e.g. CS) where applicable, but not always possible/desirable
- Internal risk assessments guides internal requirements to deal with liability
- Higher risk projects – internal requirement for formal design through consultant with design liability
  - However...can be costly and can lead to further work and expense – e.g. ground investigations (GI) sometimes required before consultant will accept liability for a design.



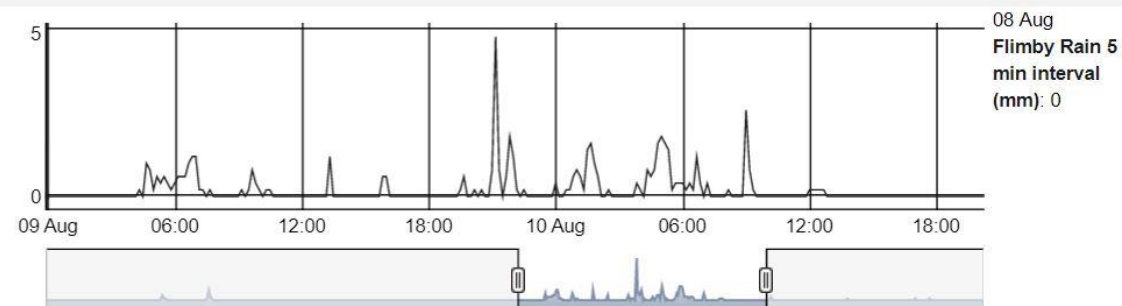
# Monitoring

A lot of focus on monitoring to address national evidence gaps, working closely with Lancaster University and NERC 'Q-NFM' Research project.

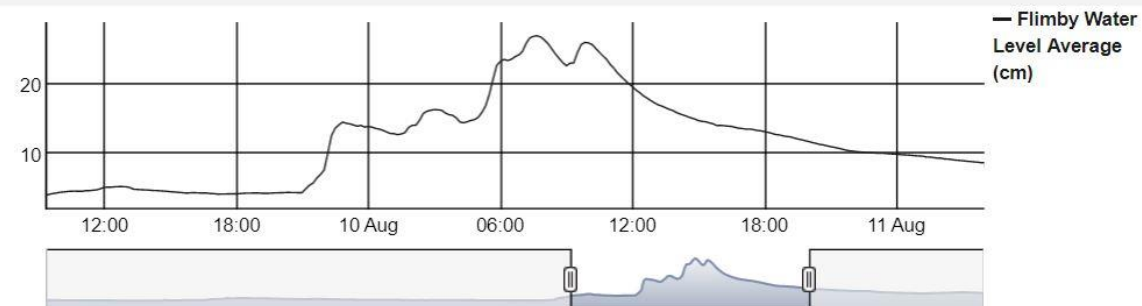
Telemetered flume at Flimby – downstream of leaky barriers on Penny Gill



Flimby Rain



Flimby Water Level Average





# Monitoring contd...

- NFM monitoring lead as part of WCRT NFM team – co-ordinates monitoring across all our projects, main point of contact with universities.
- Assessing effective storage AND the point in the hydrograph at which it comes into play
  - Water level loggers upstream and downstream of features
  - Rhodamine dye tracer (We are purchasing the kit, taking readings and Lancaster Uni will perform the analysis)
  - Flumes
  - Weather stations
- Student project assessing extent of soil compaction – using soil penetrometer
- Also night vision timelapse cameras and stage boards
- Other advantages – investigating potential for flume readings to feed into flood warnings for Flimby

# Summary

- Complex projects – difficulties at every stage, but lots of opportunities and greater than expected buy-in by farmers
- Still lots of delivery to do between now and March 2021 – watch this space!
- Still figuring out how we will maintain monitoring post project end in March 2021 - where there's a will there's a way!

**ANY QUESTIONS?**