

The Environment Agency has proposed a three phase Flood Risk Management Scheme to better protect residential and business properties from flooding in the Kent catchment. We are starting our detailed design phase for Burneside, Staveley, Ings and the upstream storage locations. Below is a snapshot of some of these benefits being delivered as part of the three phase scheme;



## Background

Kendal, Burneside, Staveley, and Ings have a long history of flooding which was experienced most recently during Storm Desmond in 2015, when 2,276 homes and businesses were flooded. Since then, the Environment Agency along with Cumbria County Council, South Lakeland District Council, United Utilities, and other professional partners including the local community, identified over 60 different options to address the complex flood issues that affect the catchment. Each option was considered for their technical feasibility, economic viability, environmental sustainability, and social acceptability. The preferred option was presented at a public meeting in Kendal Town Hall on the 26th September 2018.

The preferred option takes a catchment based approach, and will be delivered in three phases. The scheme includes a combination of linear defences, improved pumping and conveyance, upstream storage, and complimentary Natural Flood Management interventions. Once the three-phase scheme is complete, 1480 homes and 1151 business in Kendal, Burneside, Staveley, and Ings will be better protected, reducing the flood risk to a 1 in 100yr standard of protection or a 1% chance of flooding in any given year.

The three phase scheme will be delivered as follows:-

**Phase One** Kendal

**Phase Two** Burneside, Staveley and Ings

**Phase Three** Upstream measures including flood storage dams and Natural Flood Management (NFM) – which involves work at Staveley, Kendal and Kentmere. Conveyance improvements are also included in this phase on Stock Beck, Kendal.

Phase One has received full planning approval to construct the scheme through the town of Kendal with construction of the scheme having started on the 15<sup>th</sup> February 2021. Phases Two and Three are subject to planning approval but we have started to gather data through a number of surveys to inform the scheme design process.

## Phase Two Summary

The proposed Flood Risk Management Scheme will protect homes and businesses in the communities of Burneside, Staveley, and Ings. The scheme will comprise of linear flood defences, flow routing improvements such as raised kerbs and localised land raising, as well as improving the flow of water where the River Gowan joins the River Kent.

We have completed the majority of the Environmental and Topographical surveys, also known as over-ground surveys, which were the first stage of data gathering. We now have a good understanding of the wildlife and habitat that is present within the river corridor as well as mapped land features, physical boundaries, and underground features.

Our next step is to undertake more intrusive investigations by carrying out a number of Trial Pits and Boreholes. These are important as they physically check the location of underground services and utilities, as well as the foundations of existing structures and ground conditions. This information will inform the outline design of the Flood Risk Management Scheme.

## Phase Three Summary

The third and final phase will be to create upstream flood storage dams complimented by Natural Flood Management Measures. It is this phase that affects the residents of Kentmere. The aim of this is to temporarily store excess flood water and slow the flow in the upper catchment and is an important element to complete the three-phase scheme to provide downstream communities with the 1 in 100yr standard of protection or a 1% chance of flooding in any given year.

Two locations for upstream storage have been identified within the Kent catchment that can provide the necessary storage capacity and can be delivered on a technical, environmental, economic and socially acceptable basis. One of the locations for storage has been identified north of Kendal at Kentrigg providing circa 1.7million m<sup>3</sup> of storage and the other location has been identified at Kentmere Tarn providing circa 1.2 million m<sup>3</sup>.

As with Phase Two, we have completed the majority of the Environmental and Topographical surveys, also known as over-ground surveys, which were the first stage of data gathering. We now have a good understanding of the wildlife and habitat that is present within the river corridor as well as mapped land features, physical boundaries, and underground features.

We are currently speaking to a number of landowners and farmers as our next step is to undertake more intrusive investigations by carrying out a number of Trial Pits (hand dug and machine dug) and Boreholes (sonic and window sample), a separate document accompanying this update provides more information. These investigations are important as they physically check the location of underground services and utilities, as well as the foundations of existing structures, and ground conditions. This information will inform the design and location of the embankments and structures needed to create the storage area.

It is this work that you will see being carried out at various sites in the valley over the coming months. The contractors are specialists in this type of work, and will keep the impact on the local community to a minimum, but if there are any issues, please contact the Environment Agency directly at the contact on the bottom of this newsletter.

## Upstream storage considerations

In addition to undertaking the data gathering activities, we are also identifying and exploring a number of considerations we need to address as we design the upstream storage, some of which directly affect the local community. These include:

- Minimising the impact on day to day life
- Minimising the visual impact, taking account of the Lake District National Park World Heritage Site context
- Maintaining natural flow regime in normal weather, so the dam structure will only come into use in the rarer, more extreme floods
- Minimising ecological impact on the River Kent Special Area of Conservation, to protect biodiversity
- Maintaining public highway access
- Minimising the disruption during the construction period
- Minimising material movements for construction, which may lead to “borrow pits” within the valley if suitable soils can be found. These are local excavations which would be landscaped after completion to blend back into the scenery

## How will the upstream storage element work?

The upstream flood storage dams will provide the necessary capacity required to temporarily hold excess flood water during storm conditions. By maximising and formalising the existing floodplain in key upstream locations, it provides the ability to reduce the amount of flood water that flows through the downstream villages and down through Kendal town. These measures, in conjunction with works to improve conveyance of water and the installation of NFM measures to hold water and slow the flow, provide a suite of effective measures.

## Key dates *(Please note that these are subject to change)*

	Start Date	End Date
Phase 2 and Phase 3 Flood Storage Areas		
Site investigation works	Feb-21	May-21
Stage A Design development	Summer 2021	Summer 2022
Stage B Detailed design	Summer 2022	Spring 2024
Planning submission	Summer 2022	Winter 2023
Construction Start	Spring 2024	2025
Phase 3 catchment drain (Stockbeck, Kendal)		
Site investigation works	Feb-21	May-21
Stage A Design development	Summer 2021	Summer 2022
Stage B Detailed design	Summer 2022	Spring 2024
Planning submission	Summer 2022	Winter 2023
Construction Start	Autumn 2024	2025

### Contact us

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[www.thefloodhub.co.uk/kendal](http://www.thefloodhub.co.uk/kendal)

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## Frequently asked questions regarding Phase Three

### **Will the storage areas act as a dam?**

Yes and No.

Yes, the storage areas will formalise the existing natural flood plain areas, using embankments and control structures just like dams.

No, in the context that the dam will only hold water during flood conditions to maximise these storage areas and to control and limit the river flows during flood conditions. During normal conditions, these existing flood plain areas can be used as they are now, mainly as farmland. The river will also have free flow at all times.

### **The area at Kentmere Tarn already floods so by storing more water, will this flood other areas in the vicinity including low lying properties and roads?**

Our intention is to manage the existing natural flood plain storage area around Kentmere Tarn by constructing embankments (to be landscaped into the local topography) and a control structure to retain flood flows and limit the pass-through flows downstream during flood events. In normal dry weather conditions the river flows will pass through the storage area within the normal river channel and as such enable existing land use practises to continue. We are able to formalise this storage area without flooding other areas which includes any properties or roads.

### **Kentmere tarn already floods so what additional capacity will creating the storage area make?**

Our baseline river model indicates that Kentmere Tarn currently stores around 200,000 cubic metres in normal circumstances. By constructing a new retaining structure/embankment we are able to increase this volume significantly, and store approximately 1.2million cubic metres of water in total.

### **How often will the storage area be utilised and will this impact the environment around it?**

Our river model requires further survey information for us to be able to progress with the detailed design work. Once we have input this topographical data into the model we will be able to provide further information on flood frequency, duration, depth and extents of flooding. This information will then be used in discussions with landowners, and to inform our Environmental Statement and Habitat Regulation Assessment work, which will assess the potential impacts on the Site of Special Scientific Interest (SSSI) and National Park.

### **Is Kentmere Reservoir not a suitable flood storage area?**

We have assessed the option of utilising Kentmere Reservoir using the four tests: Technically feasible, Economically viable, Environmentally sustainable, and Socially acceptable, none of which has proven to be favourable. Raising, and/or repairing the existing reservoir could cost around £6-8million and a new reservoir £12million. Additionally, the reservoir is too far up the catchment to significantly control flood flows enough to reduce the risk of flood in Staveley and Burnside including Kendal, which together makes this option not viable.

We have developed a great deal of information about the scheme which is available via our website link - <https://thefloodhub.co.uk/kendal/>

The information on the website includes a scheme overview, programme dates, Natural Flood Management, newsletters, and the key facts documents (example attached) which you may find particularly useful.