Somerset Rivers Authority

Annual Report 2021–22

Contents

ACKNOWLEDGEMENTS: Thanks to all SRA partners and contractors who contributed to this report.

Front cover image: River Sowy-KSD enhancements (see pages 6-7).
Back cover image: Ruth and daughter planting trees at the Sparkford Ecological Land Cooperative.

At a glance

KEY POINTS FROM 2021-22

£2.831m EXTRA

spent in Somerset by Somerset Rivers Authority on flood risk reduction and greater resilience

100s

of places benefit across Somerset, including progress with major schemes in Bridgwater and Taunton

of the River Parrett between Saltmoor Pumping Station and Andersea

Bank raising begun and seven ecological enhancements completed for the River Sowy-King's Sedgemoor Drain Enhancements Scheme

hills TO levels

Natural Flood Management schemes and activities at more than 70 places countywide, including 14,000 trees and shrubs planted

More than 40 inspections of Sustainable Drainage Systems (SuDS) at new developments, works progress in Rode near Frome, Minehead study begins

Major drainage improvements in Carhampton along A39, B3191 Eastbury Road and Hill Lane to protect key West Somerset routes from flooding

More than 13,000

highways structures get extra maintenance to reduce flood risks, drains upgraded in eight places, Rimpton and Marston Magna study completed

Support for communities affected by flooding, Somerset Trails app developed, Down by the River film produced and shown in 10 places

Somerset Rivers Authority Partners & Structure

SOMERSET RIVERS AUTHORITY BOARD was made up of the following during 2021-22:

Environment Agency
Sedgemoor Creating Opportunity
NATURAL ENGLAND
MENDIP DISTRICT COUNCIL
SOMERSET County Council
South Somerset District Council
Somerset West and Taunton
Wessex Regional Flood and Coastal Committee

each represented | by **one member**

SOMERSET DRAINAGE BOARDS CONSORTIUM

Axe Brue Internal Drainage Board and **Parrett IDB** each represented by **two members**

The Board meets quarterly. Main functions: set strategy and priorities, approve budgets and programmes of work, ensure progress and encourage partnership working, be publicly accountable.

SRA MANAGEMENT GROUP

Senior officers from SRA partners meet every six weeks.
Main functions: support Board, develop policy, oversee SRA Technical Group.

SRA TECHNICAL GROUP

Officers from SRA partners and bodies such as Wessex Water, Somerset Catchment Partnership and the Farming & Wildlife Advisory Group SouthWest meet every six weeks.
Main functions: identify and assess flooding problems, provide advice and guidance, prepare proposals, manage and deliver SRA initiatives.

SRA JOINT SCRUTINY PANEL

The Panel meets twice a year. Each council has two representatives, the IDBs one each. Main function: scrutiny.

Somerset's 20 Year Flood Action Plan and the SRA

The Somerset Levels & Moors Flood Action Plan was published in March 2014, at the end of that winter's massive floods.

Those floods brought misery and devastation to many, they closed 81 roads and cost Somerset an estimated £148 million.

Directly or indirectly, everybody in Somerset was affected.

When Somerset Rivers Authority (SRA) was launched on 31 January 2015 the Flood Action Plan was widened to include the whole of Somerset. The SRA oversees the Flood Action Plan. It has six main objectives, over 20 years:

1. Reduce the frequency, depth and duration of flooding.
2. Maintain access for communities and business.
3. Increase resilience to flooding for families, agriculture, businesses, communities, and wildlife.
4. Make the most of the special characteristics of Somerset (with internationally important biodiversity, environment and cultural heritage).
5. Ensure strategic road and rail connectivity, both within Somerset and through the county to the South West peninsula.
6. Promote business confidence and growth.

All actions in the SRA's annual Enhanced Programmes are scored against these objectives.

Activities in 2021-22

Somerset Rivers Authority is leading a revamp of Somerset's 20 Year Flood Action Plan, working with consultants WSP. The point of drawing up a Flood Action Plan in 2014 was to bring different organisations and people together, so together they could do more. More to reduce local flood risks, more to make local communities stronger, more to respond to local priorities in ways they could not otherwise do.

Since 2014, a lot has been achieved (see p.51). A lot has also changed. For example, dealing with climate change is more of a priority for many people than it was eight years ago. Several SRA partners (the county council and the four district councils) have declared climate emergencies. More places have flooded. Next year a new Somerset Council starts.

The time is therefore right to discuss what needs doing next. In 2021-22 the SRA began consulting partners and stakeholders about future local priorities. In autumn 2022 people across Somerset will be asked for their views about what should be done to give Somerset more protection from flooding and greater resilience. A revamped plan will be approved by the SRA Board and published in March 2023.

W1 DREDGING & RIVER MANAGEMENT

Somerset Rivers Authority spends more on Dredging and River Management than it does on any other workstream. Some projects are designed and delivered for the SRA by a variety of partners and contractors. Some projects are led by SRA partners - or other bodies such as the National Trust - and the SRA helps to pay for them. Most of the projects in this section are complex, which means they generally take more than a year to deliver. It is often said that if some things were easy, somebody else would already have done them.

Baldr and Havik

DREDGING

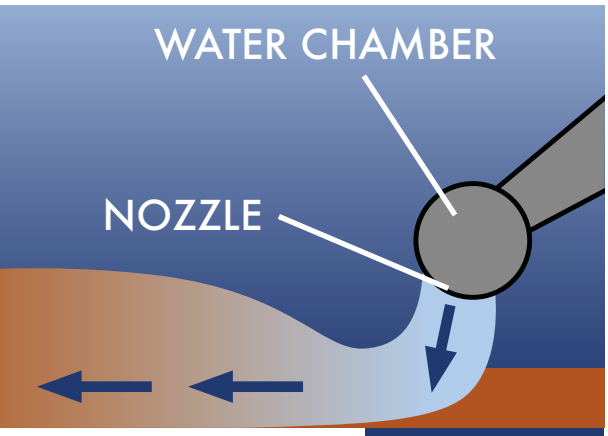
Maintenance dredging in January 2022 covered 3.75km (2.33miles) of the River Parrett between Saltmoor Pumping Station and Andersea. It was organised for Somerset Rivers Authority (SRA) by the Parrett Internal Drainage Board (IDB), working as a partner in the SRA. The Parrett IDB liaised closely with the Environment Agency and Natural England, and again deployed water injection dredging specialists Van Oord.

Between 2017 and 2021, the Parrett was dredged by Van Oord's vessel Borr. In 2022, Baldr was used instead.

Baldr is a newer and smaller craft than Borr, built specially by Van Oord to serve places like the River Parrett. Baldr does not have its own propulsion system. Instead, it is driven and manoeuvred by the tug boat Havik. Three advantages of this arrangement are that Baldr can access places Borr cannot; it can operate at lower water levels; and at the start and finish of jobs, it can be lifted in and out of the water by a smaller – and therefore cheaper – crane.

Craning at Dunball

MAJOR PROJECTS
1. Dredging and silt monitoring



WID principle

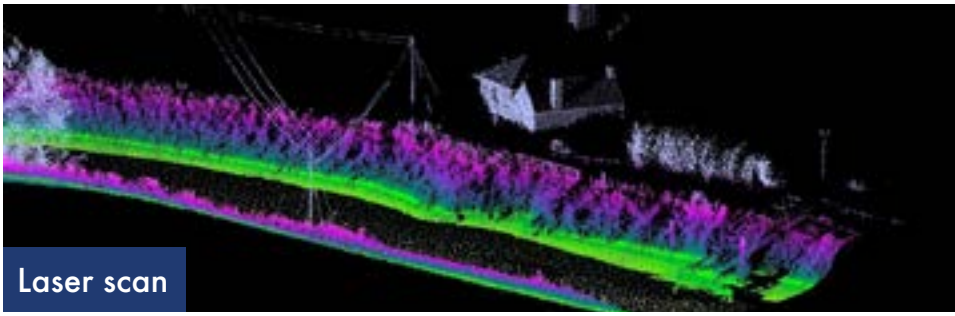
In the water, Baldr operates in a similar way to Borr. It has a dredging bar with nozzles through which a high volume of water is pumped out, so it forces sediments off the river bed and they disperse through natural processes, downstream as the tide goes out.

The Parrett IDB watched Baldr working on the Parrett in summer 2021, clearing silt from around Combwich Wharf for EDF. As part of a continuous push for operational improvements, they decided to see how Baldr would fare doing maintenance dredging for the SRA.

The exercise was successful. More than 20,000m^3 of consolidated silt deposits were removed from the Parrett. However, while Baldr is lighter and nimbler than Borr, it is also less powerful, so which vessel will return for maintenance dredging this coming winter has not yet been decided. A lot depends on water levels in the river.

The purpose of water injection dredging is to help maintain the benefits of all the dredging that has been done along the Parrett since the floods of 2013-14. Parrett maintenance dredging reduces flood risks for properties, and helps to reduce the risks of agricultural damages, which tend to be worst from spring and summer floods (as seen in 2012).


Combwich


Laser scan

SILT MONITORING

The Parrett IDB has continued silt monitoring along 12.15 kilometres (7.55 miles) of the Parrett and 3.35 kilometres (2.08 miles) of the Tone to help shape the SRA's dredging programme. Since 2016, surveys have been carried out twice a year, at the end of summer when silt deposition tends to have reached its annual peak, and at the end of winter when silt levels are low because of natural processes of scouring. Through building up a detailed picture of seasonal and year-on-year trends in siltation, the SRA and its partners' long-term ambition is to get a better understanding than anybody has ever had before of how the tidal River Parrett-River Tone system really works.

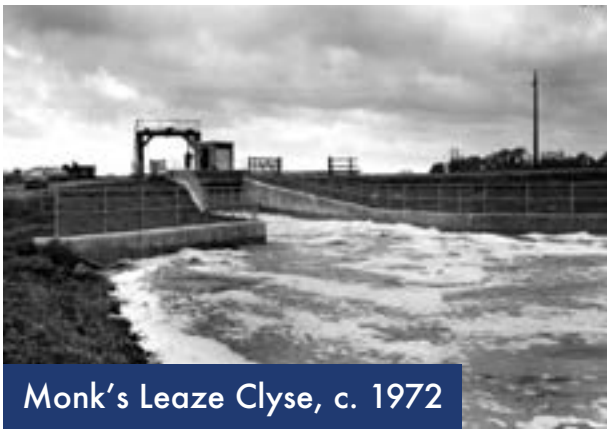
MAJOR PROJECTS
2. River Sowy/King's Sedgemoor Drain enchancements

A major project to increase the capacity of key parts of the River Sowy and King's Sedgemoor Drain (KSD) through work in these rivers' channels and on their banks. Sowy-KSD works have been delivered for Somerset Rivers Authority (SRA) by the Environment Agency, as a partner in the SRA, since 2015.

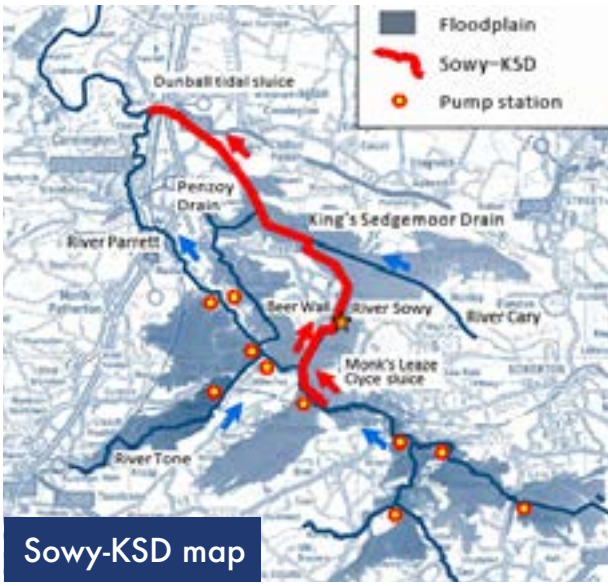
The SRA has used Growth Deal funding from the Heart of the South West Local Enterprise Partnership to pay for these works, supplemented with money raised directly for the SRA through council tax.

The River Sowy was created in 1969-72 as a River Parrett Flood Relief Channel. It branches off the Parrett through Monk's Leaze Clyse sluice near Aller, down to the KSD near Greylake, which then rejoins the Parrett through Dunball Sluice north of Bridgwater. Monk's Leaze Clyse and Dunball Sluice are owned and operated by the Environment Agency.

The ultimate aim of all the Sowy-KSD enhancements of the last few years has been to increase the amount of water that can flow down through the system, under conditions managed by the Environment Agency, working with local partners, and thereby help to reduce flood risks across 150 square miles.



Monk's Leaze Clyse, c. 1972



Sowy-KSD map

Activities in 2021-22

Following a successful public consultation in summer 2021 on additions to the Sowy-KSD's scheme's Environmental Statement, works were carried out in September and October. Sowy-KSD earth-moving works can generally only be done in late summer or autumn. One big reason is to avoid disturbing legally-protected birds which breed in the spring or early summer, and feed over the winter on local wetlands. Another reason is that wet winter weather can make it almost impossible to work in soft peaty ground with heavy machinery.

Works in September and October included filling low spots in the banks of the upper Sowy, upstream of Beer Wall on the A372 near Othery, and raising 1.32km of the right bank of the lower Sowy, downstream of Beer Wall. The eventual aim of these activities is to increase the river's capacity to carry water.

(Photos above right): tracked dumper trucks moving material across soft, peaty ground; tracked dumper trucks running in clay for bank core; filling peat soil over clay core; completed embankment.

MAJOR PROJECTS

2. River Sowy/King's Sedgemoor Drain enchancements

Sowy ecological enhancement

Five out of seven planned ecological enhancements were also excavated. These enhancements consist of features such as different shelves along parts of the riverbank and smaller parallel channels, to create an enlivening variety of flows and more diverse habitats for wildlife.

The SRA Board was told in December 2021 that progress had been delayed by a range of problems, such as Covid-19, wet weather and especially a shortage of skilled plant drivers.

In March 2022, the last two ecological enhancements were excavated and planting was done around the five previously excavated.

Other works across different times of year consisted of vegetation clearance and the installation of temporary fencing, to keep livestock away from areas being improved.

Bank-raising is due to resume in July 2022 and finish by the end of October.

Important side-stream structures at Parchey, Cossington and Chilton will also be upgraded in the autumn to match the increased capacity of the KSD and provide the same relative level of flood defence as before.

ADDITIONAL WORKS

In March 2022, the SRA Board agreed to allocate up to £200,000 for 'design and preparation' work on three outfalls into King's Sedgemoor Drain downstream of Parchey Bridge, namely Chedzoy Tilting Weir, KSD Back Ditch, and Level Rhyne. The Board's move followed discussions between the Environment Agency and the Parrett Internal Drainage Board (IDB) about the need to make modifications to these outfalls an extra part of the current phase of Sowy-KSD works. The concern is that if more water comes down through the Sowy-KSD system, then water will flow back out through these outfalls, as they are currently constituted, instead of being kept in the main river channel. SRA Board members were asked to take more decisions about the outfalls at their meeting in July 2022.

Surveying Functionally Linked Land

To help Somerset Rivers Authority (SRA) and its partners streamline flood risk management projects on the Somerset Levels and Moors, Natural England is developing a Strategic Approach to Mitigation.

Mitigation means actions that must be taken – by law – to offset any unavoidably negative effects that projects will have, considered individually and in combination.

A Strategic Approach to Mitigation will help to:

- reduce costs and risks
- enable projects to go ahead
- secure environmental benefits
- support local community, farming, business and tourism interests
- satisfy local and national policies

Activities in 2021-22

In March 2021, the SRA Board approved a bid from Natural England for two years' funding for developing and implementing a Strategic Approach to Mitigation for the SRA, with four main interlocking strands:

1. Developing a methodology for mapping wider wetland areas, especially Functionally Linked Land (FLL) of critical importance to wintering birds

This project is nearly finished. After a third round of winter habitat and wetland bird surveys in February 2022, most key areas have been covered. Natural England's Geographic Information System (GIS) team have produced maps and tables that show the quantity and quality of areas of land that are functionally linked to the Somerset Levels and Moors Special Protection Area (SPA). A forthcoming report will be shared with SRA partners so its contents can be used to help improve water level management in areas of Functionally Linked Land.

2. Developing a protocol for monitoring the condition of the Somerset wetlands

Natural England has begun examining ways in which water level telemetry data could be better used, with a view to discussing findings with the Environment Agency and Somerset Drainage Boards Consortium (SDBC). It has secured support in principle from the Environment Agency, SDBC and RSPB for this project. A joint working group is to be set up to help pinpoint and solve problems with water level management and habitat condition for the benefit of the Special Protection Area. Bird data analysis work is also due to be commissioned from the British Trust for Ornithology to ensure that a monitoring programme is based on the most accurate and up-to-date bird data.

The purpose of moves 1 and 2 is to establish a baseline against which it will be easier to detect environmental changes. Several important benefits will result from this endeavour. For example, more accurate and up to date information about sensitive locations will help the SRA and its partners to produce legally compliant schemes more quickly, at a lower cost. Critically important works could also be fast-tracked, because with the right kinds of understanding, mitigation activities could be agreed more swiftly and done upfront.

3. Initiating the updating of Water Level Management Plans and establishing operational protocols including a set of Environmental Trigger points across Somerset

Natural England has been working with SDBC on a brief for the production of a research report contextualising water level management on the Somerset Levels and Moors. The aim is to ensure that Water Level Management Plans are updated in ways that take into account all relevant factors, such as flood water storage, climate change, water quality, peat restoration, requirements for protected sites and agri-environment schemes.

4. Developing alternative solutions to the current suite of Raised Water Level Areas

Natural England has held positive discussions about this project with Somerset Rivers Authority, the Environment Agency, Somerset Drainage Boards Consortium, the RSPB and Somerset Wildlife Trust. Following a group meeting at Moorlinch in October 2021, recommendations for action are being developed. The results of research commissioned by the RSPB into alternative water level management scenarios for Moorlinch SSSI and West Moor SSSI are also being analysed.

The purpose of moves 3 and 4 is to ensure that the Somerset Levels and Moors Special Protection Area is in a better condition, and therefore more resilient to any potential impacts of future schemes.

Constructive conversations are being held about land being used for several functions and how this could be organised and paid for. Somerset Rivers Authority as a partnership is helping various initiatives to bear fruit. See, for example, the increasing number and vigour of the Moor Associations described in the W5 section of this report.

Artist's impression of the Bridgwater Tidal Barrier

Bridgwater Tidal Barrier is a major project led by the Environment Agency and Sedgemoor District Council, with support from Somerset Rivers Authority (SRA). Its purpose is to reduce flood risks to more than 11,300 homes and 1,500 businesses.

The project has three main elements: a tidal barrier across the River Parrett between Express Park and Chilton Trinity; 4.3 kilometres (2.67 miles) of new flood defence banks and 2.8 kilometres (1.74 miles) of raised banks downstream at Chilton Trinity, Combwich and Pawlett; and fish and eel passage improvements at 12 sites upstream of the barrier.

The SRA put £2million of Growth Deal money from the Heart of the South West Local Enterprise Partnership towards project costs, up to the application for the Transport and Works Act Order (TWAO) needed to build all the project's main elements. A TWAO application was submitted to the Department for Environment, Food and Rural Affairs (Defra) in December 2019.

Activities in 2021-22

In January 2022, it was announced that the Secretary of State at Defra had approved the TWAO for the Bridgwater Tidal Barrier project.

The Environment Agency now has the necessary legal powers to proceed, although before each element of the project can be built many complex planning conditions have to be met.

The £100 million Barrier project will be funded by central government and by local partnership funding. In March 2022, the SRA Board agreed to put a further £490,000 towards the local funding required, on top of £300,000 given in March 2021.

The Environment Agency has appointed Atkins as consultants, Kier as contractors to complete detailed designs.

It is hoped to start preliminary works at the Barrier site in 2022-23, so it is ready for use in 2026. All project elements are due to completed by 2029.

Ongoing investigations

In January 2022, the Environment Agency investigated ground and archaeological features near Chilton Trinity on the western bank of the Parrett, where an old brickworks will be affected by Barrier construction. New information was acquired about underground voids that will need to be tackled. Archaeological open days at the site attracted many enthusiastic visitors.

Other activities have included topgraphical surveys on foot and by drone; discussions with local landowners; early ecological surveys; and fun and informative sessions with local schools about the Barrier, flooding and climate change. The Barrier will directly reduce flood risks for four schools.

The Environment Agency has been striving to reduce the carbon impact of this project, and seeing extra funds for landscaping and environmental improvements.

A farthing

Map of Taunton showing flooding extent in 2019

Map of Taunton showing flooding extent in 2119

The main purpose of Taunton Strategic Flood Alleviation Improvements Scheme (TSFAIS) is to reduce flood risks from the River Tone and its complex network of tributaries, particularly the Galmington, Sherford and Mill streams.

The scheme is led by Somerset West and Taunton Council (SWTC) and the Environment Agency. It has been part-funded since 2016 by Somerset Rivers Authority (SRA). In 2016-17, the SRA contributed Growth Deal funding from the Heart of the South West Local Enterprise Partnership.

SWTC estimates that a single major flood could cost Taunton's economy up to £50million. 1,031 properties in Taunton are currently at risk, including homes, health centres, emergency services, North Town Primary School, electricity substations, sports facilities and much more. By 2118, because of climate change, the number is expected to rise to 2,548.

Activities in 2021-22

The current TSFAIS priority is to improve Taunton's short and medium-term capacity to manage flooding. Two initial schemes have been progressing:

1. River Tone Left Bank Flood Defences – raising low spots from Frieze Hill to Town Bridge. This will benefit around 508 homes, businesses and facilities such as the police station and council offices, BT exchange and French Weir surgery, plus the A3027 and A3088.

A Collaborative Agreement between SWTC and the Environment Agency has been signed and contractors Binnies have been appointed to work on detailed designs, consents, and permissions. It is hoped to submit a planning application in summer 2023 and start construction in 2023-24.

2. Raise Firepool Lock gates and River Tone defences. The plan is to raise Firepool Lock gates and the area around them, and to construct a flood defence up to 750m long between the River Tone and the Bridgwater to Taunton Canal, from Firepool Lock to the A358 Obridge Viaduct. The aim is to prevent Tone floodwater from entering the Canal, because that will reduce the risks of floodwater overtopping into Maiden Brook and then Allen Brook in Bathpool, and that will benefit approximately 219 properties (Priorswood and Crown Industrial Estates and Bathpool).

A contract for work on detailed designs, consents and permissions was let to WSP in August 2021. Studies into matters such as ecology, heritage and landscape have been progressing, initial concept designs have been produced and early meetings with stakeholders have been held. It is hoped to secure planning permission in 2022 and start building in 2023.

RIVER BRUE MODELLING

The aim of this project is to get a better understanding of flood risks associated with the River Brue, by studying how much water it conveys, and the ways in which water moves – and is moved – around its lowland catchment. Existing Brue modelling is judged by SRA partners to be out of date.

In December 2021, the SRA Board therefore agreed to fund an update. Local contractor Andy Wallis of AW Water Engineering Ltd has been commissioned to manage Brue modelling activities for the SRA, using consultants WSP. WSP are working with a project steering group, which includes representatives from the SRA, the Environment Agency, Somerset Drainage Boards Consortium and Somerset Catchment Partnership.

Other stakeholders will be involved from October 2022, once some draft outputs are available. Discussions will be held about flood-related issues such as conveyance, maintenance, resilience and adaptation, with a view to establishing a set of preferred outcomes for the River Brue catchment.

It is estimated that fresh modelling will be completed by January 2023. Once it has been completed, an updated river model will be a valuable asset that could be used by any organisation wishing to develop plans for the River Brue.

SAMPFORD BRETT FLOOD ALLEVIATION CULVERT WORKS

A long culvert goes through the centre of Sampford Brett, under the main road, past the church and village hall, and down to the Doniford Stream. The culvert takes excess water from a small but fast-flowing village stream.

The culvert was built in 1992 in response to numerous cases of flooding and it has reduced historic flood risks. However, various incidents in the 2010s prompted concerns about its maintenance and capacity. In 2019-20 – as a special one-off case – the culvert was desilted for the SRA, to restore its capacity to carry water.

In 2021-22, the SRA funded several improvements around the culvert's outfall pipe into the Doniford Stream *(pictured)*, where there were problems with silting-up, backflow and erosion.

DE-SILTING OF STRUCTURES

Works were carried out in 2021-22 at four locations, led by Somerset County Council as a partner in the SRA.

Sedgemoor

Cheddar, on a culverted watercourse which goes under Labourham Way off the A371. Work began towards the end of the 2020-21 financial year and was finished in 2021-22.

Chilton Trinity, where Reedmoor Rhyne goes under Saltlands Lane, between the A39 and the sewage works.

South Somerset

Perry Street before

Perry Street after

Perry Street, under the B3167 a short distance south-west of Holway (pictured above).

East Stoke, where Wellhams Brook goes under Marsh Lane, not far from the busy A3088.

East Stoke before

East Stoke after

RIVER ALLER 'STAGE ZERO'

On its Holnicote estate in West Somerset, the National Trust has set aside land at Selworthy Farm for the trial of an innovative approach to river restoration and habitat improvement. The Trust wants part of the River Aller to flow more naturally, through branching out from being just a single channel to becoming a more complex and dynamic system. It's an ambition inspired by the success of so-called 'Stage Zero' techniques in the US state of Oregon. The River Aller scheme will be the first time that such techniques have been tried on a main river in England. The scheme is part-funded by the SRA, and follows on from more than a dozen earlier activities also part-funded by the SRA in the National Trust's Riverlands Porlock Vale Streams project, which in turn is part of the EU's Co-Adapt project funded through the Interreg 2 Seas programme.

Benefits are expected to include:

- reduced risks of flooding because of slower flow and the river having more capacity
- reduced risks of drought
- healthier soils
- richer and lusher sward for summer grazing
- bigger and better habitats
- improvements to the special characteristics of Exmoor

Activities in 2021-22

A planning application for this scheme was registered with Exmoor National Park Authority on 28 October 2021. Reference number 6/29/21/119, local parishes Luccombe, and Selworthy and Minehead Without. The application's 32 documents are full of interest. Notable respondents (13 in total) include Porlock Parish Council, Luccombe Parish Council, a neighbour, and the Exmoor Rivers and Streams Group. The scheme is part of the same Porlock Vale Streams initiative as Tivington Farm (see below).

TIVINGTON FARM: RIVER ALLER UPPER CATCHMENT FLOODPLAIN RESTORATION

This scheme has been designed to help restore and re-naturalise 125 hectares of land at Tivington Farm on the National Trust's Holnicote estate in West Somerset. The idea is that drainage ditches and short sections of headwater streams should become part of a more complex, diverse and dynamic system of wetlands, flushes, pools and branched-out channels. As with the National Trust's ambitions for the River Aller downstream at Selworthy Farm, this scheme has been inspired by the success of 'Stage Zero' techniques in producing numerous benefits for people, wildlife and landscapes.

Gains here are expected to include reduced flood risks for nearly 100 properties downstream in places such as Allerford and Bossington, and reduced flooding of the A39 between Porlock and Minehead, several B roads and smaller lanes.

This Riverlands Porlock Vale Streams project is part-funded by the EU's Interreg 2 Seas programme and by the Environment Agency. Match-funding has been given by the SRA for works including modelling and design.

Tivington Farm Activities in 2021-22

A planning application for this scheme was registered with Exmoor National Park Authority on 2 February 2022. Reference number 6/29/22/01, local parishes Selworthy and Minehead Without, and Wootton Courtenay. The application contains 73 documents with lots of interesting details. Respondents (seven in total) include neighbours and Selworthy and Minehead Without parish council.

DULVERTON WEIR AND LEAT

The weir across the River Barle in Dulverton, and the Leat that loops off it, are both eroded and damaged. Somerset West and Taunton Council owns the weir and Leat and wants to see them repaired and improved. As a partner in Somerset Rivers Authority (SRA), the council has been investigating how best this goal might be achieved. The weir and Leat help to regulate flows of water in and around Dulverton. (The sluice gates at the head of the Leat form part of an Environment Agency flood defence scheme).

During 2021-22, SRA funding was used to commission an ecological survey from Westcountry Rivers Trust (WRT). WRT produced a detailed 87-page report making 18 recommendations. For example, it suggested designing a multi-species technical fish pass on the right hand bank, with an upstream deflector. Species known to live downstream of the weir include lamprey, brown/sea trout, European eel, Atlantic salmon, bullhead, stone loach and grayling. It is likely they would go upstream if they could get there.

Using SRA funding, the council also commissioned Mann Williams (Consulting Structural and Civil Engineers) to produce detailed designs for reconstructing the Weir.

Dulverton Leat Trust has agreed in principle to lease the Weir and Leat, once they are restored, and to pay for their future maintenance.

LANGPORT FLOW STATION

In 2019 the Board of Somerset Rivers Authority approved an Environment Agency bid for funding for a permanent flow station in the River Parrett in Langport. In 2020, ground investigation works were completed and the flow station was designed. In 2021, it was due to be built but construction was postponed until the start of 2022 because of problems arising from the coronavirus pandemic. In January 2022, work again had to be deferred because it was not possible to move a hugely heavy piling rig on site, as the access route was too wet.

Langport flow station is now due to be built in August-September 2022. It will measure how much water is going down the Parrett from a catchment of approximately 770 square kilometres (478 square miles). Used in combination with data from existing gauges at Chiselborough, Yeovil, Donyatt and Stathe, information from Langport flow station will help to make several important systems work better – flood warning systems, for example.

W2 LAND MANAGEMENT INCLUDING NATURAL FLOOD MANAGEMENT (NFM)

Planting at Pitney

Somerset Rivers Authority funds many Natural Flood Management (NFM) activities across Somerset. All sorts of different techniques may be used, singly or in combination. All share the aim of reducing local flood risks, by slowing the flow of water down through catchments in ways that work with nature.

This workstream is led for the SRA by the Farming & Wildlife Advisory Group SouthWest (FWAG SW). It is known for its sophistication, strong partnership working and dogged attention to local detail. Measures taken to slow the flow of water down through catchments generally go under the popular local branding of Hills to Levels. A catch-all approach makes it easier for partners to get involved, and to contribute match-funding so that more can be achieved. Many examples of different techniques and match-funding follow in this W2 section.

About Natural Flood Management (NFM)

As people often ask what 'NFM' means in practice, and how it works, take as an example creating a bank across the slope of a field and then planting a hedge on top. The bank acts as a physical barrier. The hedge takes up water through its roots. Together they reduce the run-off of surface water into watercourses downstream.

Moreover, by stopping sediment from sloping off, the bank helps to keep soil in a field – and out of a stream or drain or river – which has positive implications for water quality. Meanwhile, the hedge provides a corridor for wildlife. Together, such benefits advance the objectives of Somerset's 20 Year Flood Action Plan.

CAPITAL GRANT SCHEMES

Schemes begun or completed in 2021-22.

Mendip

In the SRA's Enhanced Programme of works for 2021-22, part of the funding allocated to Hills to Levels was earmarked for NFM activities in Mendip. This was to enable Mendip District Council's flood risk consultant to follow up on SRA-funded work done previously to analyse Mendip sub-catchments' flooding problems, assess where things could most usefully be done that were not being done by others, and fix those gaps by developing ideas and encouraging people and organisations to act together. FWAG SW has been helping matters to progress, as with these two schemes in the Frome area in 2021-22.

CAPITAL GRANT SCHEMES BEGUN OR COMPLETED IN 2021-22

Marston Park

A floodplain restoration scheme is being developed on part of the Marston Park estate near Frome, between Tuckmarsh Lane and Thickthorn Wood. Its main aims are to reduce downstream flood risks by slowing the flow of water, increase biodiversity and improve water quality.

Activities so far have included water level monitoring, an initial ecological survey by FWAG SW, a site walkover with an archaeologist from South West Heritage Trust and a topographical survey. Because Marston Park and Garden are Grade II Listed, and there is evidence within part of the site of a medieval shrunken settlement, only small-scale marsh and floodplain restoration works are being proposed.

This scheme is being led for the SRA by Mendip District Council's flood risk consultant, following on from some initial work done by FWAG SW as part of the Somerset Frome Project initiated by the Somerset Frome Partnership.

It is hoped to carry out works in autumn 2022.

Witham Friary

A scheme to restore parts of the floodplain along Hermitage Stream at Holt Farm, Witham Friary, about halfway between Frome and Bruton. Hermitage Stream is a tributary of the River Frome. Works in autumn 2021 comprised:

- Lowering sections of the riverbank to let more water out on to the floodplain
- Creating leaky woody dams in the stream to help divert water out on to the floodplain
- Creating shallow scrapes to hold more water on the floodplain
- Using timber to roughen-up the floodplain and slow the flow of water

In late October 2021 – before the whole scheme was completed – monitoring after very heavy rain showed water being held back. The purpose of slowing the flow downstream is to reduce flood risks in Witham Friary and down towards Frome and the A362 at Wallbridge. Other benefits include better water quality, because of a reduction in the movement of sediments, and a wider, more varied corridor of wetland habitat for wildlife.

This scheme was jointly funded by Mendip District Council and Somerset Rivers Authority, as part of both the Somerset Frome Project and Hills to Levels. It was designed by Hydro-Morph Ltd and FWAG SW, with groundworks done by local contractors.

Scrape with timber

Scrape with timber

CAPITAL GRANT SCHEMES BEGUN OR COMPLETED IN 2021-22

Somerset West and Taunton

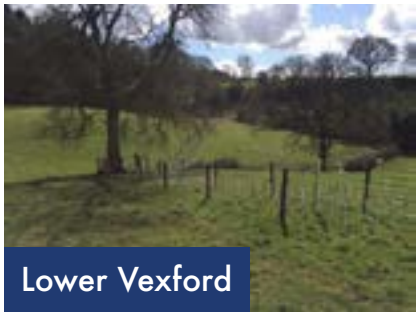

Lower Lovelynch

Lower Lovelynch, near Milverton, Hillfarrance Brook, a scheme designed to reduce flooding and the amount of soil deposited on a troublesome corner on the B3187 between Wellington and Milverton. Too much water from an uncontained spring was flowing down onto the road. Works consisted of four main elements:

1. Digging a ditch to contain and divert water into an existing culvert to take water into an existing drainage pipe.
2. Cutting grips to re-direct water onto grassland to slow its flow, allow for infiltration into the ground and for sediment to settle.
3. Extending an existing grassland area and installing a silt trap.
4. Installing raised banks to intercept and slow run-off, and stabilising those banks with hedge planting.


Lower Lovelynch

Lower Vexford, Yeaw Farm, Doniford Stream tributary, 330 metres of hedgerow have been planted along the contours of quite a steeply sloping field, to help slow the flow of water and reduce flood risks downstream. One 20-metre section was planted in triple-row formation to provide a thicker barrier to a stream that rises after heavy rain. This whole scheme was also designed to help improve water quality and create new habitats for wildlife.


Lower Vexford

Luxborough, Chargot estate, upper Washford catchment. Two schemes were combined here to manage arable field run-off and water from a spring, and slow their flow downstream through three main interlinked measures. In order of descent down the hillside, and in simple terms: 1) quite a large pond was created and connected to a new field drain which flows down into 2) an extended and restored silt trap which drains into 3) another large new pond which drains down into a swale.


Luxborough

The SRA paid 21.6% of the cost of these two schemes, which were designed as part of the Hills to Levels Multiple Benefits Project led by the Environment Agency and FWAG SW. The Multiple Benefits Project is otherwise funded through the Environment Agency's Water Environment Improvement programme. The Project's purpose is to demonstrate that multiple benefits can be delivered by working with natural processes and natural flood management techniques across small catchments such as the upper Washford. Here on the Chargot estate, for example, the lower pond was designed to have a base level of water for the benefit of wildlife. The landowner is thinking of paying for further refinements such as a manually controlled sluice structure.

The schemes' main elements can be seen in this video, which includes interviews with Angelique McBride of FWAG SW and landowner Caleb Sutton, from 2 minutes 37 seconds (2:37") to 3:49": https://youtu.be/HuIivbT7a1Y

CAPITAL GRANT SCHEMES BEGUN OR COMPLETED IN 2021-22

Roadwater, in a wet field by The Old Mineral Line coming into Roadwater, below Road Wood, a bunded scrape has been created to hold more water for longer before it reaches the Washford River. Materials excavated during the making of the scrape were used to build up the bund. The landowner paid for the scrape to be fitted with pond liner up to a certain level, so that it can hold some water all-year round, but also take excess floodwater when need be.


Roadwater


West Bagborough


West Bagborough

West Bagborough, Crossways Farm, Back Stream catchment. An existing field corner pond has been de-silted and enlarged, and its outlet re-fashioned, so the pond can now store more water, in a more controlled way, during periods of heavy rain.

Associated works in this small but sophisticated scheme included:

- creating a hedgebank uphill from the pond to intercept and slow surface water run-off
- creating a ditch to capture more field run-off and drain into the pond
- coppicing the south-west hedgebank along the pond to let in more light and reduce leaf litter

Between 2017 and 2021, the SRA has funded several other schemes in and around the parish of West Bagborough to help reduce flood risks.

South Somerset

Stoney Stoke, Lush's Farm, 1125 trees, 450 shrubs and 892 metres of hedgerow have been planted across a sloping valley side, down which water flows into the River Pitt. Slowing the flow of this runoff will help to reduce flood risks downstream, and – by trapping sediment and reducing erosion – to improve water quality. As the new trees, shrubs and hedgerow adjoin a recently created strip of woodland, they also extend a wildlife corridor for species including bats, birds, small mammals and invertebrates. The SRA gave a grant for just under 68% of the costs of this scheme. Other funding came via the Environment Agency's Brue Catchment Priority Project.


Lush's Farm

HIGHWAYS REFERRALS

In 'Highways referrals' SRA partners look for answers to highway flooding problems in better management of land nearby. Cases generally involve Somerset County Council's Highways Department and the Farming & Wildlife Advisory Group SouthWest (FWAG SW), with the former referring problems on to the latter. Highways officers may be told about matters by various sources – for example, residents or parish councils – or they may spot issues themselves, when they are out and about. (As indeed may FWAG SW advisers).

In 2021-22, FWAG SW were asked to investigate reports of surface water run-off in eight places:

Mendip

Bathway near Chewton Mendip, Cheddar Road and A39 crossroads.

Somerset West and Taunton

Kilve, A39, 200 metres east of Sea Lane.

South Somerset

Blackford, Manor Farm Road; **Castle Cary**, Torbay Road; **Chard**, St Mary's Close; **Charlton Horethorne**, Blackford Road; **East Coker**, Green Lane and Holywell crossroads; **West Coker**, Gooseacre Lane and A30.

Cases have a range of different outcomes. At Blackford, for example, issues reported with mud were judged to have been a strange one-off, as the land in question was well-cultivated and in good condition. At Bathway, Charlton Horethorne and Kilve, advisers discussed detailed suggestions for improvements. At Kilve, for example, the site in question sits at the foot of a long, steeply sloping field. When it was visited, it had very recently been re-seeded. Temporary filter fencing was proposed as a way of reducing surface water run-off and sedimentation, before re-assessing later. At Castle Cary, Chard, East Coker and West Coker, matters are still being looked at.

In two other places – **Carhampton**, near Orchard Close and **South Petherton**, Whitfield Lane and Carey's Hollow – a FWAG SW adviser returned to see how matters were progressing after visits in previous years. In Carhampton, fresh plans have been drawn up for a swale and bund to slow water and a ditch to collect water, and one farmer has agreed to take further measures to reduce run-off from land above.

In South Petherton, landowners have previously taken various measures to try to reduce run-off onto roads, but the situation is complicated by soils in this area being very sandy and light, and Carey's Hollow being an extremely sunken lane, up to 10 metres below its adjoining fields. More recently, the farmer has agreed to install a buffer strip, and has discussed ideas to further slow run-off, such as planting cover crops in fields that would otherwise be left bare over the winter.

SOIL VISITS

Better soil husbandry helps to reduce the run-off of surface water. Keeping soil in good health also brings obvious benefits to farmers. One visit was made this year to Ham Hill Farm, on heavy Denchworth clay north of Combe St Nicholas, near the A303, where it was suggested that a few more spring cultivations could be tried to improve the infiltration of water into the soil. The farmer is interested in joining one of the Government's new Environmental Land Management Schemes (ELMS), the Sustainable Farming Incentive.

ONLINE NATURAL FLOOD MANAGEMENT (NFM) AUCTIONS

W2


Stawell

Every year since 2018 Somerset Rivers Authority (SRA) has given grants to successful bidders for works to help stop flooding. Somerset farmers are invited to bid via an auctions website (www.naturebid.org.uk) for Natural Flood Management (NFM) measures which they believe would work well on their land.

In 2021 NFM measures on offer included better maize management, grassland subsoiling and grassland slitting, and hedge planting. The aim of all these measures is to help slow the flow of water down through catchments, while delivering other benefits. For example, grassland subsoiling and slitting aerate the ground so that more rainwater can filter in. They also improve the soil.

The auctions are organised for the SRA by the Farming & Wildlife Advisory Group SouthWest (FWAG SW). They are reverse auctions. In conventional auctions, bids go up until the highest one wins. In reverse auctions, people who submit lower bids are triumphant.

All bids are checked by FWAG SW advisers, before and after proposed works are done, to make sure firstly that they will have good effects in suitable locations, then that they have been done to a good standard.

Farmers say they like the auctions system because it is quick and easy to use, and involves very little paperwork. Another part of its appeal for all concerned is that it draws on farmers' and landowners' unrivalled knowledge of their own land.

A few grand totals: grants were given for better maize management on 519.24 hectares (enough space to park about 192,400 cars), for winter cover crops on 127.07 hectares (47,100 cars), for buffers on 2.91 hectares (1,080 cars), for grassland subsoiling and slitting on 175.12 hectares (64,900 cars) and for 605.68 metres of hedgerow planting.

A note on maize management: water running off from compacted maize ground can contribute to localised flooding. Problems can be minimised by encouraging the infiltration of water through soil. Useful techniques include drilling and cultivating fields with a winter cereal or ryegrass, after maize has been harvested. Establishing green cover helps to intercept rainfall and protect the soil surface.

To get the grants they bid for, farmers have to cut their maize before 1 October. This rule is intended to allow for more time, after harvesting, for run-off reduction works to be carried out. If works are left too late, then the soil can simply become too wet for success.

ONLINE NATURAL FLOOD MANAGEMENT (NFM) AUCTIONS

Sharpshaw Farm

Asham View

2021-22 AUCTION ACTIVITIES

For ease of reading many separate auction bids have been amalgamated into total hectarages.

Mendip

Downhead, Green Farm, 3.4 hectares of maize management in a field south of Battlefields Wood near Downhead, 3.54 hectares of grassland slitting in a field east of Battlefields Wood; parishes Doulting, Leigh-on-Mendip; watercourses Whatley Brook source to confluence with Mells River, Somerset Frome.

Chantry, Asham View, 21.5 hectares of grassland slitting between Leigh upon Mendip and Tadhill; parish Mells; watercourse Buckland Brook source to confluence with Mells River; catchment Somerset Frome.

Nunney, Sharpshaw Farm, 32.73 hectares of maize management and 0.40 hectares of grass buffer strip at the boundary of a field; parishes Nunney and Selwood; watercourse Nunney Brook source to confluence with Mells River; catchment Somerset Frome.

Trudoxhill, Sunnyside Farm, 5.3 hectares of maize management on land east of Trudoxhill; parish Trudoxhill; watercourse Frome source to confluence with Maiden Bradley Brook; catchment Somerset Frome.

West Bradley, Bridge Farm, 23.47 hectares of grassland subsoiling in the parishes of Baltonsborough and West Bradley; watercourses Coxbridge Brook and Brue (Tootle Bridge to Clyse Hole); catchment Brue.

Witham Friary and Cranmore, New Manor Farm, 18.14 hectares of maize management, 72.6 hectares of grassland slitting; parishes Doulting, Postelbury; watercourses Frome – source to confluence with Maiden Bradley Brook, Whatley Brook source to confluence with Mells River; catchment Somerset Frome.

ONLINE NATURAL FLOOD MANAGEMENT (NFM) AUCTIONS

Sedgemoor

Pedwell, Redlands Farm, 34.31 hectares of grassland slitting; parish Ashcott; watercourses 18 Feet Rhyne and King's Sedgemoor Drain Henley Sluice to mouth; catchment Parrett.

Rhode near North Petherton, Rhode Farm, 18.8 hectares of winter cover crops; parish North Petherton; watercourses Hamp Brook and Stockmoor Rhyne; catchment Parrett.

Stawell, Manor Farm, 23.25 hectares of cover crops at Pendon Hill and land at Righton's Grave; parish Stawell; watercourse Level Rhyne and Pendon Rhyne, King's Sedgemoor Drain from Henley Sluice to mouth; catchment Parrett.

Stretcholt, land near Sealey Cottage, 106.65 metres of hedge planting; parish Pawlett; watercourse River Parrett; catchment Parrett.

Stawell

Sedgemoor *and* Somerset West and Taunton

Otterhampton, Manor Farm, 131.84 hectares of maize management at several locations across the parishes of Cannington, Wembdon, North Petherton, Oake, Milverton and Nynehead; watercourses Fiddington Brook, Cannington Brook (Lower), North Moor Main Drain, Tone (Willington to Taunton), Hillfarrance Brook; catchments Tone and Parrett.

West Monkton, Quantock Farm, 74.29 hectares of maize management and two buffer strips totalling 0.42 hectares were established at the bottom of two sloping fields; parishes North Petherton, West Monkton; watercourses Petherton Stream, North Moor Main Drain, Tone downstream of Taunton, Allen Brook (Maiden Brook); catchment Tone and Parrett.

Somerset West and Taunton

Assorted locations, Slough Court, 65.4 hectares of maize management, 8.6 hectares of grassland slitting; parishes Burrowbridge, Durston, North Curry, Stoke St Gregory; watercourses King's Sedgemoor Drain (Henley Sluice to mouth), North Moor Main Drain, River Parrett, River Tone downstream of Taunton, West Sedgemoor Main Drain; catchments Tone and Parrett.

Blagdon Hill, Woodram Farm, 6 hectares of maize management in fields at Blagdon Hill and Blagdon Old School; parish Pitminster; watercourse Sherford Stream; catchment Tone.

Cheddon Fitzpaine, Hestercombe Farm, 7.16 hectares of maize management and a 0.31 hectare buffer strip at a sloped field margin; parish Cheddon Fitzpaine; watercourse Allen Brook (Maiden Brook); catchment Tone.

Dunster, Lower Marsh Farm, and land at Old Cleeve, 37.2 hectares of maize management and 33.2 hectares of winter crops; parishes Dunster and Old Cleeve; watercourses Pill and Avill; catchment West Somerset Streams.

ONLINE NATURAL FLOOD MANAGEMENT (NFM) AUCTIONS

Somerset West and Taunton (continued)

Lydeard St Lawrence, Higher Vexford Farm, 78.44 hectares of maize management at various locations in parishes of Elworthy, Fitzhead and Stogumber, Elworthy; watercourses Hillfarrance Brook, Doniford Stream and Halse Water; catchments Tone, West Somerset Streams.

Pinksmoor near Wellington, Pinksmoor Farm, 69.4 metres of hedge planting on banks in a good cross-slope location and the bottom of a sloped field; parish Wellington Without; watercourse upper Tone; catchment Tone.

Rumwell, Ritherdens Farm, 51.82 hectares of winter cover crops on land east of Hele and north of Castleman's Hill; parishes Bradford on Tone, Bishop's Hull and Trull; watercourses Hele Brook, Sherford Stream, River Tone; catchment Tone.

Bryants Farm

Staplegrove, Smokey Farm, 123.07 metres of hedge planting on banks; parish Kingston St Mary; watercourse tributary of Back Stream; catchment Tone.

Tolland, Little Parks Farm, 131.56 metres of hedge planting across a large, sweeping slope; parish Brompton Ralph; watercourse Halse; catchment Tone.

Wellington, Bryants Farm, 6.09 hectares of maize management, 0.19 hectares of two buffers to intercept run-off; parishes Wellington Without, West Buckland; watercourse Haywards Water; catchment Tone.

Newlands Farm

Wellisford near Wellington, Newlands Farm, 11.1 hectares of grassland subsoiling; parishes Langford Budville, Stawley, Wellington Without; watercourse upper Tone; catchment Tone.

West Monkton, Prockters Farm, 10.32 hectares of maize management; parish West Monkton; watercourse Allen Brook (Maiden Brook); catchment Tone.

South Somerset

Bower Hinton near Martock, Bower Hinton Farm, 1.42 hectares of buffers to intercept run-off from high-risk cops in sloping fields; parish Martock; watercourse Parrett (Lopen Brook to River Isle); catchment Parrett.

Ilminster, Hurcott Farm, 3 filter fences installed in the form of both fabric filter fencing and coir rolls and a 0.17 hectare buffer strip; parishes Seavington St Mary and Whitelackington; watercourses Lopen Brook, Lam Brook and River Isle upper to confluence with Cad Brook; catchment Parrett.

North Barrow near Yeovil, Firtree Farm, 175 metres of hedgerow planted; parish North Barrow; watercourse River Cary source to confluence with King's Sedgemoor Drain; catchment Parrett.

SOMERSET TREES FOR WATER ACTION FUND

Carrot Hill Farm, Spargrove

SOMERSET TREES FOR WATER ACTION FUND

This Fund for tree and hedge planting helps people across Somerset to reduce local flood risks arising from surface water run-off. It's designed to suit small sites where local knowledge and expert analysis suggest that planting will make a difference. On top of grants given by Somerset Rivers Authority (SRA), free trees and shrubs worth £20,000 are supplied by the Woodland Trust. Planting is usually carried out by landowners themselves and many local volunteers.

The project is led by Reimagining the Levels, working in collaboration with the Farming & Wildlife Advisory Group SouthWest (FWAG SW). It is popular with participants.

Mendip

Butleigh, 2 Rood Cottage, Kingweston Road, 212 trees, 123 shrubs; **North Wootton**, Mead Lane Field, 350 trees, 350 shrubs, 155 metres (m) stock proof fencing; **Parbrook**, Withial Farm, 375 trees and 375 shrubs in two strips; **Shepton Mallet**, Windsor Hill House, Windsor Hill, 200 trees, 200 shrubs; **Spargrove**, Carrot Hill Farm, 440 trees, 440 shrubs; **Walton**, Windmill Hill, 15 trees, 140m hedgerow; **Westbury sub Mendip**, Nottley Field, 75 trees and 75 shrubs; **Westbury sub Mendip**, Shepherd's Barn Field, Lynchcombe Lane, 125 trees, 125 shrubs; **Westhay**, Sunnyside Farm, 75 trees, 75 shrubs, 15 hedgerow trees, 140m hedge planting; **West Pennard**, Southtown Farm, 175 trees, 175 shrubs, 38m of hedging; **Witham Friary**, Iron Mills Farm, 190 trees, 190 shrubs; **Wookey**, Wookey Farm, 175 trees, 175 shrubs.

SOMERSET TREES FOR WATER ACTION FUND

Sedgemoor

Ashcott, Potato Cottage, 200 trees, 200 shrubs, 92m stock proof fence; **Middle Stoughton near Wedmore**, Bear House Farm, 100 trees, 100 shrubs, 100m fencing; **Moorlinch**, Hams Barton, 350 trees, 350 shrubs, 180m stock proof fencing; **Moorlinch**, Spring Farm, 50 trees, 50 shrubs; **North Newton**, Hedging Lane (Hope Nature Project), 220 trees, 220 shrubs.

South Somerset

Ash, Hurst Drove, Witcombe Lane, 95 trees, 95 shrubs; **Barrington**, Hill Farm, 685 trees, 175m hedge planting; **Compton Dundon**, Peak Lane (Compton Dundon bridleway), 15 trees, 140 metres hedge planting; **Curry Rivel**, Curry Woods Conservation Trust land near the highest point of the parish, 240 trees and 160 shrubs; **Henley**, Tutnell House, 40 trees, 40 shrubs, 30m triple row hedge; **Hornsbury Hill near Chard**, Northayes Farm, 75 trees, 75 shrubs; **Isle Brewers**, Isle Brewers Lane, 550 trees, 550 shrubs, 25 hedgerow trees, 648m of fencing; **Knole**, Twelve Acre Farm, second phase, 176 trees, 150 shrubs, 265m of hedge; **Knole**, West Knole House, 3 trees, 86m hedging; **Langport**, Merricks Farm, 350 trees, 50 shrubs; **Langport**, Park Lane Farmhouse, 30 trees, 30 shrubs; **Pitney**, The Old Stables, land from Park Lane up to Pitney Wood, second phase 175 trees, 175 shrubs, 110m of stock proof fencing; **Queen Camel**, The Nook, 100 trees, 90 shrubs, 65m fencing; **Sparkford**, Sparkford Hill Lane, 8 trees, 80m hedge planting.

Somerset West and Taunton

Bishops Lydeard, Eastcombe Farm, 700 trees, 120 shrubs, 160m hedge planting; **Bradford-on-Tone**, Tone Green, 85 trees, 85 shrubs; **Gotton**, Pengotton, 65 trees and 65 shrubs; **Holywell Lake**, Triangle Field, 27 trees and 9 shrubs; **Kingston St Mary**, Beacons Close Farm, 150 trees, 150 shrubs, 150m fencing; **Kingston St Mary**, field off Parsonage Lane, 160 trees and 160 shrubs; **North Curry**, Newport Hill Cottage, near Banana Cottage, 35 trees, 35 shrubs; **Stoke St Gregory**, Williams Hall, 2 trees and 120m of hedge.


Windsor Hill


Kingston St Mary


North Newton


Merricks Farm

NATURAL FLOOD MANAGEMENT (NFM) FOR DONIFORD CATCHMENT FARMS

W2

In March 2021, the Board of Somerset Rivers Authority agreed to fund a joint initiative by the Farming & Wildlife Advisory Group SouthWest (FWAG SW) and the Wildfowl & Wetlands Trust (WWT) to help tackle flooding problems across the catchment of the Doniford Stream in West Somerset. FWAG SW and WWT had been working together on a Green Recovery Challenge Fund project in the parishes of Bicknoller, Elworthy, Sampford Brett and Stogumber. One aim of getting extra funding from the SRA was to enable more work with farmers and landowners, including some Natural Flood Management (NFM) measures.

NFM work in 2021-22 has included four schemes:

Bicknoller Combe: Materials cut at the base of the combe were hauled uphill by an Ardennes heavy horse, and four leaky woody dams were installed in the combe stream. The stream runs through common land grazed by cattle, sheep and wild animals such as deer. The dams' purpose is to help slow the flow of water down to Bicknoller, as heavy rain has often been known to cause flash flooding there.

Bicknoller Combe

Stogumber, Vellow Farm Wood: A 200-metre cross-slope hedge was planted, and fencing erected to protect it from grazing animals. The hedge intercepts surface water and provides an extended corridor for wildlife from the wood.

Triscombe, Triscombe Farm: A 130-metre cross-slope hedge was planted including four trees. Fencing was put up to protect the hedge from grazing horses, and a small gate was fitted. The hedge intercepts surface water run-off and for wildlife connects two boundary hedges already there.

Vellow Farm Wood

Williton: In the corner of a field behind homes on the A358 Tower Hill in Williton, a 135-metre hedgebank and swale were created to intercept surface water run-off towards properties. Fencing was put up, with a gate fitted to enable access for future swale de-silting.

Williton

W3 URBAN WATER MANAGEMENT

The main aims of Somerset Rivers Authority's Urban Water Management workstream are to reduce local flood risks, and to make places better to live and work.

Activities in 2021-22 have included drainage surveys in Shepton Mallet, water management system modelling and the installation of a new field drain in Rode, research in and around Minehead, and more than 40 inspections of Sustainable Drainage Systems (SuDS) on new Somerset developments.

When it rains, SuDS help to control the run-off of water from hard surfaces like roads, roofs and pavements. SuDS use techniques inspired by nature – such as permeable paving and plants and ponds – to absorb water and hold it back. SuDS can make places greener and more attractive, healthier for people and better for wildlife, with less pollution.

SUDS INSPECTIONS

Very few formal SuDS inspection processes are in place across England: Somerset is ahead in checking new developments. Sites are inspected at various points, either through pro-active engagement with developers, or by following up notifications from local planning authorities.

The main aims are to ensure that SuDS are built in accordance with the exact designs that were approved by local planning authorities, and that they work as they are meant to work. Local planning authorities have the power to enforce changes to constructed SuDS schemes, and where necessary they use this power.

SuDS inspectors check schemes for compliance against 16 different criteria. Scores are generally best for water quantity, design requirements, health and safety, and system blockages. They are more middling for water quality and structural components, and they are lower for biodiversity, materials, vegetation and future maintenance arrangements. Future maintenance arrangements are a recurrent weakness.

Future maintenance arrangements are of particular concern because there is generally a delay in the handing over of SuDS assets to an adopting authority, such as Wessex Water or a management company. SuDS inspectors believe that one effect of this delay is to reduce the level and the quality of the maintenance undertaken. If site maintenance is neglected, SuDS designs can be compromised and long-term performance affected. Systems may get blocked, flood storage capacity may be reduced. It is important for all stakeholders, particularly local residents, that developers fulfill their planning obligations.

Mendip

Shepton Mallet, Tadley Acres.

Sedgemoor

Ashcott, Bath Road; **Axbridge**, land off Cheddar Road; **Berrow**, Rose Tree Paddock; **Brent Knoll**, Brent Street; **Bridgwater**, Black Horse Inn, Rhode Lane, and Durleigh Road; **Burnham-on-Sea**, Olivier Close, Wallace Wells Road; **Cannington**, Southbrook Close; **Cheddar**, land at Holwell Lane; **Chilton Polden**, Hayne Walk; **Durleigh**, off Haygrove Road; **East Huntspill**, Hackness Farm; **Mark**, Northwick Road; Puriton, Site B; **Wedmore**, Blackford Road and Cross Farm; **Woolavington**, Crockers Hill.

URBAN WATER MANAGEMENT SUDS INSPECTIONS

Somerset West and Taunton

Bishops Lydeard, Taunton Road; **Comeytrowe**, Phase 1; **Cotford St Luke**, Dene Road; **Creech St Michael**, Nyde Lane, land south of Hyde Lane, West View Gardens; **Henlade**, Stoke Road; **Monkton Heathfield**, extensively, including Birds Farm, land off Milton Hill, and Farriers Green; **North Curry**, Knapp Lane; **Taunton**, Nerrols Farm and Richmond Court; **Stogursey**, Farringdon Hill Lane; **Stoke St Gregory**, land adjacent to Willey Road; **Williton**, land to the east of Aller Mead Way; **Wellington**, Cades Farm, Jurston Farm, Longforth Farm; **Wiveliscombe**, Style Road.

Stoke St Gregory Detention Basin

South Somerset

Broadway, Tanyard; **Chard**, land off Touchstone Lane; **Ilton**, Court Farm; **Langport**, Parrett Gardens.

OTHER SUDS PROJECTS

Some SuDS projects that SRA partners hoped to advance during 2021-22 have been delayed. For example, at Somerset West and Taunton Council's Coal Orchard development in Taunton, where it was planned to put trees in tree pits as SRA-funded additional SuDS, the site developers went into administration. The publication of SRA-funded Somerset-specific SuDS guidance has also been deferred, because of staff shortages in Somerset County Council's Flood and Water Management section, and procedural complications to do with the launch and adoption of the guidance arising from the reorganisation of local government in Somerset and the move towards a single unitary authority.

ACTIVITIES IN RODE NEAR FROME

The main aims of this project are to reduce flood risks to more than 25 properties and nine roads in Rode, and to enhance parts of the local environment through techniques of Natural Flood Management (NFM).

This project grew out of an earlier SRA-funded programme of investigations into sub-catchments across Mendip that could benefit from extra maintenance. It is being delivered for the SRA by Mendip District Council's flood risk consultant working with other SRA partners and contractors.

Early on, the team conversed with villagers to glean their local knowledge, and listen to their concerns and aspirations for this project. In March 2021, CCTV and topographical surveys were carried out.

Seymour Court Farm

URBAN WATER MANAGEMENT ACTIVITIES FOR 2021-22

Rode Activities in 2021-22

Drawing on earlier phases of research, the project team has been building a computer model to enable testing of the capacity of Rode's drains and watercourses, and to help assess the long-term benefits of different possibilities for action.

The team has also been working closely with landowners, discussing what could be done in watercourses upstream to help slow the flow of water and minimise the amounts of sediment being carried downstream. One result has been that at Seymour Court Farm in autumn 2021 a new field drain was installed between Green Park Pond and Green Park Lane. More improvements are planned in autumn 2022 to make better use of flood attenuation ponds upstream and enhance the river corridor.

In spring 2021 it was discovered that a section of culverted watercourse beneath Lower Street has a timber frame which holds up the pavement. Vehicle movements here have led to a small collapse, so temporary safety barriers have been put in place. The old wood will need to be replaced with stronger materials. In the meantime, the site is being monitored by Somerset County Council's Highways Department and Mendip's team continue to liaise with villagers.

Periton Cross, Minehead

MINEHEAD 25-YEAR FLOOD ACTION PLAN

Many properties and businesses in Minehead are at risk of flooding, and flood risk management authorities are concerned about new developments putting extra pressure on drainage systems already struggling to cope. Climate change makes flooding more likely.

In March 2021, the Board of Somerset Rivers Authority (SRA) agreed to fund the development of a 25-year action plan for tackling flood risks from all sources in and around Minehead. Somerset County Council and Wessex Water are also putting money into this project. Partners contributing local expertise are Somerset West and Taunton Council, the Environment Agency and the Parrett Internal Drainage Board.

During 2021-22, partners agreed that Wessex Water should take the lead in developing a 2D Integrated Catchment Model to get a better understanding of local surface water flood risks. Relevant information has been collected and collated, for example about Minehead's current drainage infrastructure, and partners discussed and decided what areas most needed attention and surveying. Activities in 2022-23 will include investigations, model-building, analyses and determined efforts to find the best ways of giving Minehead greater flood protection and resilience.


Croscombe

RIVER SHEPPEY CATCHMENT ACTION PLAN

Somerset Rivers Authority awarded Mendip District Council funding for a study of the catchments of Croscombe and Shepton Mallet, after flooding there in October 2020. Twenty-six properties flooded internally and many roads including the A371 were submerged and made impassable. SRA partners' aim is to understand more about how flooding arises, so that plans can be devised for reducing flood risks and making places more resilient to flooding.

Information about flooding problems in Croscombe, Shepton Mallet and places in-between such as Bowlish is being reviewed by Mendip's flood risk consultant working together with other SRA partners and contractors. Local people and organisations are being consulted. Surveys have begun.

In December 2021, CCTV surveys were carried out in Croscombe along with drainage maintenance activities such as vegetation clearance and jetting. More work is being planned for the second half of 2022.

In February and March 2022, surveys focused on Collett Park, Coombe Lane culvert, Little Brooks Lane and the grounds of Whitstone School in Shepton Mallet. Despite some difficulties with access, because of debris or the way structures were designed, a lot was learned. The drainage network around Little Brooks Lane, for example, is not what was expected. The surveys identified some locations where repairs are needed.

Further investigations are planned for other parts of Shepton Mallet including Leg Square, Martins Lane and St Peter's Road. Some areas will require jetting and the use of a gully sucker. Costed plans for action are expected by the end of 2022.

W4 RESILIENT INFRASTRUCTURE

Two of the six main objectives in Somerset's 20 Year Flood Action Plan relate directly to making Somerset's infrastructure more resilient. One is to 'Maintain access for communities and business', another is to 'Ensure strategic road and rail connectivity, both within Somerset and through the county to the South West peninsula'.

Both these targets stem from the frustrations of 2013-14, when floods closed 81 roads, often for long periods. Countless people suffered difficulties. Businesses lost time and money. 86% of Somerset businesses were badly hit, costing the local economy up to £15 million.

As it oversees the Flood Action Plan, Somerset Rivers Authority therefore deals with highways as well as waterways. Extra maintenance works funded by the SRA benefit many places where roads are prone to flooding. Drainage improvements and detailed studies also help to keep people moving along safer roads.

A39

Hill Lane

CARHAMPTON

For many years the A39 at Carhampton Cross regularly flooded so badly it was dangerous or impossible to drive through. As the A39 is the main road serving West Somerset, widespread disruption resulted for residents, businesses and visitors.

Problems were made worse by water cascading down from Carhampton Cross, regularly flooding the B3191 Eastbury Road, and hitting people's homes. Drainage systems were simply overwhelmed by the amount of water pouring off land nearby.

Somerset Rivers Authority therefore teamed up with Somerset County Council's Highways Department for a series of major drainage upgrades. Works were carried out by contractors Skanska (now known as Milestone) in October and November 2021.

SRA-funded improvements along the A39, B3191 and nearby Hill Lane included bigger pipes, better gullies, and new water control features such as concrete chambers and a catch-pit. Somerset County Council paid for extensive road resurfacing.

All these works were very well tested in torrential rain on Boxing Day 2021, when the county council's local highways service manager Kevin Bridgwater happened to be driving through on his way to a seasonal family get-together. In the past, he said, Carhampton Cross would have been deluged. Now to his delight, he did not even see a puddle - and he drove up and down Hill Lane, the A39, and Eastbury Road to check. Several residents have approached him at social events to say 'thank you' for the excellent job done.

"There isn't a negative to it," said Mr Bridgwater.

KINGSTON ST MARY

SRA-funded drainage improvements were installed down Lodes Lane in Kingston St Mary in April 2021. In recent years, properties in the village have flooded many times because the old Lodes Lane drainage system could not cope with the large amounts of water coming down from the Quantocks.

In 2020-21, Somerset County Council's Highways Department made – and paid for – the necessary preparations. These included clearance, jetting, and CCTV surveying of the lane's drainage system; identification of buried services; detailed design and specification; pre-works licences and temporary road closure orders. The SRA paid for the actual works, which accounted for the bulk of the costs of this scheme.

WEST CAMEL

A scheme to reduce flood risks for residents and road users in the Urgashay Road area of West Camel in South Somerset. Seven properties there were known to be affected by surface water flooding.

SRA-funded drainage improvements included:

- installing or replacing about 350m of highway drainage
- re-constructing five gullies
- building a new gully with a silt trap
- building a headwall fitted with a trash screen for connection into an existing ditch
- tidying up some small lengths of ditch

These works were designed and delivered for the SRA by Somerset County Council's Highways Department in autumn 2021, with the Taunton gang from contractors Skanska (now Milestone).

West Camel (and below)

CULVERT INSPECTIONS AND REMEDIAL WORKS IN INTERNAL DRAINAGE BOARD (IDB) AREAS

Previously for the SRA, the Axe Brue and Parrett Internal Drainage Boards (IDBs) inspected more than 700 of the most vulnerable and strategically important culverts in the Somerset Levels & Moors.

One problematic culvert was along the south side of Northwick Road near Mark, roughly 600 metres west of the junction with Baggs Lane. On the north side of this stretch of road are non-viewed rhynes (which do not get the same IDB maintenance as Viewed Rhynes). Water from these non-viewed rhynes was topping over Northwick Road into Northwick Rhyne, on the south side of the road, and the culvert was too small to cope with this.

In February 2022, for the SRA, the Axe Brue IDB replaced it, to improve the conveyance of water, reduce local flooding and lessen disruption to residents and road users.

RESILIENT INFRASTRUCTURE ACTIVITIES FOR 2020-21


Chadmead

CHADMEAD

Somerset County Council's Rights of Way Department asked the SRA for a one-off grant for fixing an unstable section of the bank of Bankland Stream, where it runs alongside part of the track that connects Northmoor Corner and Kitches Lane in Chadmead. The SRA approved this request, because although the track is classified as a public footpath, it has previously been used, and may be used in future, as a vehicular access route to and from Chadmead in times of flood. The owners of adjoining land were consulted, a scheme specification was prepared, and, in summer 2021, L8 interlocking trench sheets were installed, and the top of the bank was reprofiled *(pictured)*. A few remaining improvements – such as levelling and surfacing 13 metres of the route – are due to be completed in summer 2022. The SRA is paying for this work with the remains of a grant originally given towards Somerset's 20 Year Flood Action Plan by what used to be the Department for Communities and Local Government (DCLG), now the Department for Levelling Up, Housing and Communities (DLUHC).

ASSET UPGRADES AT FREQUENTLY JETTED SITES

Since 2016, SRA funding has allowed for extra pro-active drain jetting at many places, 125 in 2021-22. Some drains have had to be jetted many times, which indicates intrinsic problems that it makes sense to fix. Hence SRA-funded asset upgrades.

Mendip

Chilcompton, Broadway/Wells Road, reconstructed existing highway gullies, installed new highway gullies, raised existing carriageway kerbing.

Ditcheat, Ditcheat Hill, provided new highway gullies, installed a formalised road-edge drainage channel.

South Somerset

Bruton, Frome Road/Cuckoo Hill/ Bruton Road, repaired – and where need be replaced – sections of the existing drainage system.

Castle Cary, South Cary Lane, cleansed roadside ditch, refitted existing trash screen, constructed and installed a small gabion basket wall to prevent scouring of the roadside bank.

Cucklington, Long Hill, repaired – and where need be replaced – sections of the existing drainage system.

ENHANCED MAINTENANCE 2021-22

Four programmes of enhanced maintenance were organised for Somerset Rivers Authority by Somerset County Council's Highways Department. The aim is to keep roads open, make them safer, preserve access for communities, and safeguard properties from flooding. These works benefit residents, businesses and visitors, in line with the objectives of Somerset's 20 Year Flood Action Plan.

GULLY-EMPTYING

Somerset County Council's Highways Department empties gullies in areas most susceptible to flooding once a year. For 13,622 of the highest-risk gullies countywide (too many to list individually), the SRA funded a second round of emptying, six months after the first. So in 2021-22, 13,622 gullies were emptied twice.

DRAIN JETTING

125 drains were jetted for the SRA in 2021-22, by district as follows:

- 22 in Mendip
- 36 in Sedgemoor
- 33 in Somerset West and Taunton
- 34 in South Somerset

Under existing budgets, Somerset County Council's Highways Department can only afford to jet drains when a bad blockage has occurred. SRA funding allows for earlier preventative maintenance at locations known to suffer problems with flooding. Final selections of drains for jetting are made using local knowledge and professional judgement.

Mendip

Meare, Glastonbury Road/St Mary's Road; **Rodney Stoke**, Bay Lane, Brangay Lane, New Road, Stoke Street, Wells Road; **Street**, Westway; **Walton**, Berhill (x2), Long Lane, Mildred Road, Quarry Batch (x3), South Street, Veal Lane, Walton High Road; **Westbury**, Westfield Lane; **Wookey**, Barrow Causeway/Wells Road, Bleadney Batch, Vicarage Road, Wells Road.

Sedgemoor

Axbridge, Parkfield Road; **Ashcott**, Taunton Road; Badgworth, Bristol Road/Turnpike Road; Bawdrip, Bath Road; **Broomfield**, Rose Hill; **Burnham-on-Sea and Highbridge**, Stoddens Road; **Catcott**, Manor Road; **Chapel Allerton**, Stone Allerton Drove; **Cheddar**, Axbridge Road/ Tweentown, Shipham Road; **Chilton Polden**, Broadway; **Durleigh**, Enmore Road; **East Huntspill**, Old Withy Road; **Edington**, Broadmead Lane; **Greinton**, Taunton Road; **Lympsham**, Rectory Way; **Lyng**, Main Road; **Mark**, Mark Road/The Causeway; **North Petherton**, Boomer Lane, Church Walk, High Street; **Shapwick**, Church Road, Kent Lane, Lippets Way; **Shipham**, Bristol Road, Broadway; **Stawell**, Stawell Road; **Thurloxton**, Church Road; **Wedmore**, Blackford Road/Pilcorn Street, Coldnose, Combe Batch/Wells Road, Lane from Dungeon to Crate Farm, Glanville Road, Mudgley Road/Billings Hill, Sand Road, Wells Road.

Somerset West and Taunton

Bicknoller, Taunton Road; **Bishop's Hull**, Silk Mills Road; **Bishop's Lydeard**, Minehead Road (x2); **Bradford-on-Tone**, Hele Road, Oake Road; **Comeytrowe**, Jeffreys Way; **Huish Champflower**, Tanners Hill; **Kingston St Mary**, Church Lane, Park Lane, Yarford Road; **Langford Budville**, Harpford Farm Lane, Runnington Lane; **Milverton**, Wiveliscombe Road; **Norton Fitzwarren**, Minehead Road, Wiveliscombe Road; **North Curry**, Queen Square (x2); **Oake**, Bradford Road, Oake Road, Wiveliscombe Road; **Stawley**, Greenham Road (x2); **Old Cleeve**, Roadwater to White Horse pub; **Stogumber**, Hartrow Gate Cross to Ashbeer Hill; **Taunton**, Farm View, **Highlands**; Wellington, Alexandra Road, Hoyles Road, Mantle Street; **West Buckland**, Silver Street; **Wiveliscombe**, Hartswell, Jews Lane.

South Somerset

Ashill, Ashill bypass; **Bratton Seymour**, Cattle Hill, Holbrook Roundabout to Jack White's Gibbet; **Charlton Horethorne**, Bugle Farm Lane; **Chard Town**, Coker Way, Crewkerne Road, Crimchard, Furnham Road, Glynswood (x2), Tatworth Road; **Combe St Nicholas**, Eleighwater; **Henstridge**, Lime Kiln Lane; **Keinton Mandeville**, High Street/Castle Street; **Kingsdon**, Lower Road, Rocky Hill; **Langport**, Bow Street/Cheapside; **Marston Magna**, Camel Street/Marston Road; **Mudford**, Mudford Sock; **North Cadbury**, Hearn Lane, Parish Hill; **Somerton**, Langport Road, South Hill/Sutton Road, West Street to Behind Berry; **Stoke Trister**, Riding Gate to Bayford Lane; **Tatworth & Forton**, Lower Coombses, Station Road, Waterlake Road; **Yeovil**, Reckleford, Reckleford Triangle, Sherborne Road, Wyndham Street; **Yeovilton**, Bridgehampton Road, Stockwitch Lane.

TRASH SCREEN CLEARING

Most of the county's trash screens are situated in Somerset West and Taunton. Eight were cleared in the following parishes: **Dunster**, Ellicombe Lane (between Dunster and Alcombe); **Kingston St Mary**, Pickney Lane (between Pickney and Nailsbourne); **Minehead**, Brook Street (Alcombe), Manor Road (Alcombe); **Staplegrove**, Whitmore Lane; **West Buckland**, Wellington Road; **Wiveliscombe**, North Street; **Wootton Courtenay**, Burrow Road.

SILT TRAP EMPTYING

More was done in South Somerset than in other districts. Somerset County Council's Highways Department says this was because "the availability of resources to order and deliver works was a real issue in 2021-22 across the service".

Mendip

Rodney Stoke, Butts Lane, Hill Lane, New Road; **Wookey**, Yarley Hill.

Sedgemoor

Wedmore, Orchard Close.

Somerset West and Taunton

Kingston St Mary, Kingston Road.

SILT TRAP EMPTYING (CONTINUED)

South Somerset

Allowenshay, Ludney Lane; **Barrington**, Bonnings Lane, Shelway Lane (x2); **Brewham**, Kingsettle Hill; **Castle Cary**, Coopers Ash Lane (x2), Foxcombe Hill; **Chard Town**, Chardstock Lane (x3), Laurel Gardens (x2), Tatworth Road (x1), Urban footpath (x3); **Charlton Mackrell**, Somerton Lane; **Combe St Nicholas**, Stoopers Hill; **Compton Pauncefoot**, New Road; **Corton Denham**, Corton Denham Road, Ridge Lane; **Cudworth**, Cudworth Hill; **East Chinnock**, Chinnock Hollow; **East Coker**, Higher Burton (x2); **Henstridge**, Furge Lane; **Long Sutton**, Batts Lane; **Merriott**, Moorlands Road; **Milborne Port**, Sherborne Road; **Mudford**, Droveway Lane (x2); **North Cadbury**, Cary Road; **Odcombe**, Woodhouse Lane; **Pitcombe**, Pitcombe Rock; **Pitney**, Marsh Lane; **Shepton Beauchamp**, Great Lane (x2), Love Lane; **Shepton Montague**, Horns Lane (x2); **South Cadbury**, Buckland Lane; **South Petherton**, Long Lane, Whitfield Lane; **Tatworth and Forton**, Paradise Lane, Pop Lane (x2); **West Coker**, A30 West Coker; **Whitestaunton**, Howley Road, Mill Lane.

RIMPTON AND MARSTON MAGNA STUDY

Records show that 18 properties and several roads in the South Somerset village of Rimpton have been affected by flooding, while roads suffering in nearby Marston Magna include the A359. One common factor is the Mill Stream, which flows west through Rimpton and then alongside and under the A359 in Marston Magna, near the church and village hall.

Somerset Rivers Authority therefore agreed to fund a survey of the Mill Stream catchment, to identify improvements and strategies that would reduce flood risks to people's homes and local roads. Somerset County Council's Highways Department commissioned consultants WSP. They reviewed all publicly-available information about relevant matters, and consulted officers from Somerset County Council (SCC, as the Lead Local Flood Authority) and the Parrett Internal Drainage Board (IDB). A WSP site visit with SCC and IDB representatives focused particularly on watercourses and structural controls such as bridges and culverts.

A report was produced with six appendices, making 97 pages in total. Three options for improvements were recommended for Rimpton, five for Marston Magna (with two further possibilities there, depending upon the results of monitoring). The suggested options cover matters such as dredging and de-silting, infrastructure replacement and installation, and creating flood storage and flood diversion features.

WSP also stressed the importance of regular maintenance. All options are now being considered by Somerset County Council.

W5 BUILDING LOCAL RESILIENCE


Emma Giffard


Dawn James

This workstream is mostly about people. During 2021-22, therefore, it was inevitably affected by concerns about coronavirus and by pandemic restrictions. The impact of Covid-19 is why Somerset's annual Community Resilience event was held online (again), and why popular film screenings got pushed back from autumn 2021 to February-March 2022.

However, there were still many more in-person get-togethers than there were in the year before. The SRA's community engagement officers Emma Giffard and Dawn James were able to do things like give talks to Long Sutton Gardening Club and Langport Rotary Club, and take part in SCOP26+, Somerset's version of the international event held in Glasgow – as well as activities detailed in the following pages.

SOMERSET COMMUNITY RESILIENCE EVENT

Preparing for emergencies and strengthening communities were the main themes of the annual Somerset Community Resilience event held in October.

Highlights included a dozen interactive online training sessions, all free, and an open evening for the new Langport and Huish Episcopi Flood Group.

Session subjects included:

- Property flood resilience, with national flood resilience expert Mary Donhau and the Environment Agency
- Using social media in flooding emergencies, with communications officers from Somerset County Council's Highways and Transport section (@TravelSomerset)
- How we can prepare for the challenges our changing climate may bring, with SRA Community Engagement officers Emma Giffard and Dawn James
- Insurance, volunteer recruitment and risk assessments with Communities Prepared, a national community resilience training programme

The whole event was organised by the Somerset Prepared partnership, which is jointly chaired by the SRA's Emma Giffard with a representative from the Environment Agency. Partnership members include Somerset Rivers Authority, the emergency services, the county and district councils, the Environment Agency, Somerset Rotary, Spark, Red Cross and Safe South West.

Videos and presentations can be seen on the Somerset Prepared website.

SOMERSET PREPARED GRANTS

The SRA funds a small number of grants for equipment and training given to Somerset communities by Somerset Prepared. Three grants were given to flood warden teams in 2021-22:

Croscombe: for equipment such as hi-viz jackets and sandbags, and materials to help raise awareness about flood risks and what flood wardens do.

Ham: for equipment such as a generator to power a back-up to the main the village pump (which is featured at 13 minutes 40 seconds in the film Down by the River – see p.44) and parts for that back-up pump.

Martock: for equipment such as head-torches and hi-viz jackets, temporary flood barriers, flooding advisory signs and flood warning apparatus.

Robin Huish, Ham Village Flood Defence Committee

SUPPORTING COMMUNITIES AFFECTED BY FLOODING

In several places recently affected by flooding, Dawn and Emma have helped people to get through the aftermath and get readier for what the future may bring. In Chard, Combe St Nicholas, Forton and Tatworth, Ilminster, Shepton Mallet and Croscombe, dozens of dedicated residents have volunteered to help their communities become more resilient. Emma and Dawn say it has been a privilege to help set up and reinforce flood warden groups. In Chaffcombe, a flood resilience plan devised by a local resident was presented to the SRA's Technical Group, and it is hoped that Chaffcombe will be one of several places to benefit from a new project funded in the SRA's Enhanced Programme of works for 2022-23, which is about helping communities to implement their own ideas. In Croscombe and Forton and Tatworth, the possible installation of new 'early warning' telemetry systems is being investigated.

In all of the above places, information has been provided about topics including property flood resilience measures, insurance, emotional health, household, business and community flood plans, funding for community groups and the complexities of who is responsible for what when it comes to water. Flood warden training is being arranged for all of the above communities, as part of ongoing SRA involvement.

In Ruishton and Ham, Emma and Dawn worked with local residents and Somerset County Council's Highways department on a successful bid to the SRA for a grant for new digital flood warning signs. In Burrowbridge, they worked alongside the Environment Agency, meeting flood group members to discuss refreshing their community flood resilience plan and ways of recruiting more members. In North Petherton, which was affected by flooding in 2021, they met town and district councillors to discuss setting up a community resilience group and possible grants for equipment and training. In Martock and Langport, they continued to support existing groups in a variety of ways, such as going on a Martock site visit to discuss road flooding problems with representatives from Somerset County Council's Highways Department, and giving a presentation at a recruitment evening in Langport.

BUILDING LOCAL RESILIENCE ACTIVITIES IN 2021-22

Bridgwater

SCHOOLS

Around 120 children enjoyed learning more about flooding when Somerset Rivers Authority and Environment Agency staff visited Catcott Primary School and St John & St Francis Church School in Bridgwater.

Highlights included lively sessions about the £100-million Bridgwater Tidal Barrier scheme and climate change, and several fun activities.

From a flood box, they fished out all sorts of unpleasant things that might be hidden in floodwater, such as poo and a giant rat. Not real poo, and not a real rat's body, it should be said, but still memorably gross enough for an audience of 8- to 11-year olds.

They poured water over a model house to see how different features of Sustainable Drainage Systems (SuDS) can reduce run-off.

And they experimented with an Augmented Reality Sandbox, which uses light and sand to show how water runs off different kinds of landscapes. This video explains how the magic sandbox works: https://youtu.be/pqEC8DpiYv0

SuDS House

DOWN BY THE RIVER FILM

A new Somerset film called Down by the River premiered in Glastonbury in February 2022, with nine free screenings following countywide.

Down by the River is a documentary about the inspiring ways that communities across Somerset have responded to flooding. It was commissioned by Somerset Rivers Authority from the Bridgwater-based charity Somerset Film.

Down by the River celebrates local volunteers, and highlights some of the extraordinary work they do to help reduce the risks of flooding. Places featured include Moorland, Martock and Ham on the Somerset Levels & Moors, Croscombe in Mendip and West Somerset.

After its launch in Glastonbury Town Hall, Down by the River was shown in Bridgwater, Burrowbridge, Cheddar, Croscombe, Drayton, Martock, Minehead, Taunton and Yeovil.

Entertaining and thought-provoking Somerset archive films also featured. Subjects included historic Somerset floods, local groups like the Home Guard in World War Two, and fundraising carnivals. The exact mix varied from place to place, to allow for items of very local interest, but all of the films showed what Somerset people can do when they put their minds to it.

That theme served to prompt discussions with audiences about challenges such as flooding and climate change, and what people locally could do to respond, for example by setting up or joining a flood wardens group or devising plans for greater community resilience. Preparing for an incident could ultimately save lives.

Down by the River is now online: https://youtu.be/3M3G52lvNlo


West Sedgemoor


David Hall


Odcombe


Sarah Elliott


Teresa Bridgeman


Cheddar


Gordon Swindells

ADAPTING THE LEVELS

"Greater resilience to climate and economic change"

One of the aims of Somerset's 20 Year Flood Action Plan is to facilitate "better management of the most vulnerable and challenging parts of the Somerset Levels, with the consent of owners and occupiers, with the intent of helping them to remain profitable and build greater resilience to climate and economic change." This ambition has fed into many different parts of the SRA's work, particularly into Adapting the Levels and two ongoing trials of Environmental Land Management Scheme (ELMS) initiatives being run for Defra.

Background

Somerset Rivers Authority and the EU's Interreg 2 Seas European Regional Development Fund are funding a major project on the Somerset Levels and Moors called Adapting the Levels. The EU's funding has not been affected by Brexit: the project runs until March 2023.

The aim of Adapting the Levels is to get local people and organisations co-operating and adapting to the water-related effects of climate change (flooding and drought).

Out on the ground, the project is being led by the Farming & Wildlife Advisory Group SouthWest (FWAG SW), Somerset Wildlife Trust and Somerset County Council, with support from the SRA's Community Engagement team.

Adapting the Levels is part of a larger €7.347 million EU Climate Adaptation initiative called Co-Adapt. Co-Adapt is short for Climate Adaptation through Co-Creation. It involves 12 partners in four countries: Britain, France, the Netherlands and Belgium. Lessons learned are being shared between different countries.

The other two Co-Adapt projects in Britain are both local. They are: Connecting the Culm, which is led by the Blackdown Hills AONB (Area of Outstanding Natural Beauty) team and covers parts of Somerset and Devon; and Porlock Vale Streams, which is led by the National Trust in West Somerset, and is interwoven with the Trust's Riverlands initiative. Through Hills to Levels, the SRA has approved funding for more than a dozen Riverlands schemes. Two recent examples include the proposals for the River Aller and Tivington Farm (see pages 17-18).

Activities in 2021-22

New web-based Adaptation Pathways app for Adapting the Levels

A new app helps Somerset people and organisations turn their ideas into plans for action, particularly as regards flooding and drought. It proffers Adaptation Pathways as a simple way of looking into complex issues, to see how different options interact in changing combinations of circumstance.

Adaptation Pathways are generally used to help organisations across the world plan for climate change. Somerset's approach is unusual because it allows anyone to contribute, so conversations about future courses of action can be more inclusive.

ADAPTING THE LEVELS ACTIVITIES IN 2021-22

Adapting the Levels team members worked with parish and town councils, businesses and communities to create draft pathways which can be explored on the Adapting the Levels website, using tablets or desktop computers. People living and working in Somerset are invited to comment on the pathways and add their ideas. Visit https://pathways.adaptingthelevels.com

Subjects covered include reducing the run-off of rainwater from homes and gardens, managing flood risk in Wedmore and Langport, and managing flooding and drought on farmland.

Adapting the Levels' ultimate ambition is to build up a shared mosaic-like vision for the future of Somerset's communities and businesses.

New mobile Somerset Trails app

Somerset Trails is a free mobile app that helps people to explore the local impacts of climate change and ways that nature can help Somerset adapt. Launched by local Co-Adapt partners in 2021, the app is funded by Somerset Rivers Authority and the EU's Interreg 2 Seas programme. It combines maps for walkers with video-guided tours, and has a Kids Corner for children.

Iona

Somerset Trails can be downloaded from the Google Play Store or Apple's App Store.

The first trail begins in the centre of Wedmore. It incorporates fine views across the Somerset Levels, and takes in meadows, dew ponds and historic ridge and furrow field systems. Videos are triggered at key points when out walking. For younger Wedmore trail followers, 8-year-old tour guide Iona leads the way. She said: "I think people are going to have a lot of fun coming on the walk, and they're going to learn lots about climate change and what people are doing about it in Somerset."

A second trail is being planned by the National Trust. This will focus on the Porlock Vale Streams project on Exmoor, with behind-the-scenes footage of re-introduced beavers and details of pioneering river restoration schemes in the Aller and Horner catchments.

Throughout walks, people are invited to add their own thoughts and ideas, so project teams can develop climate adaptation plans with community voices at their heart.

Moor Associations

Moor Associations were encouraged by the SRA in earlier strands of Flood Action Plan work now absorbed into Adapting the Levels. The forerunner in 2018 was the West Moor Futures Group, followed by Tealham and Tadham Moor, Moorlinch, Curry Moor and Aller Moor (Beer Wall to Aller Drove). Other Moor Associations are being developed. The SRA's goal is to promote flood-resilient farming and good environmental outcomes in flood-prone areas, through greater collaboration between different sectors, chiefly farming, conservation and water management.

Moor Associations make it easier for people to co-operate and get things done. They are set up and run by local farmers and landowners who have agreed to work together for their mutual benefit. On Curry Moor there are 32 landowners (173 fields, 350 hectares), on Aller Moor 37 (140 fields, 285 hectares). Local experience has shown that in areas with fragmented land use, greater collaboration between farmers and a single management structure enables greater collective buying power, more machinery sharing, better grazing arrangements and improved farmland infrastructure.

A Moor Associations Co-ordinator is employed on the Adapting the Levels project through the Farming & Wildlife Advisory Group SouthWest (FWAG SW), along with a Farm Liaison Officer and a part-time Water Management Adviser. Associations get some administrative support from these staff.

Environmental Land Management Schemes (ELMS)

In 2021-22, new Moor Associations were set up on Curry Moor and Aller Moor (Beer Wall to Aller Drove) to allow landowners to participate in a Test and Trial water storage programme for Defra's new Environmental Land Management Scheme (ELMS). ELMS is due to be Defra's main land management funding scheme by 2024, focused on the delivery of "public goods for public money".

The Somerset Levels and Moors are very dependent on public payments, worth around £5 million a year. The phasing out of those payments could have considerable effects on the special characteristics of the Levels and Moors, and the people who make a living from that landscape. The SRA Board wants to be able to make a case to Defra for continuing public payments for public services such as the seasonal management of flood water. Hence this trial, part-funded by the SRA and supervised by FWAG SW.

Ben Thorne of FWAG SW told the SRA Board in September 2021 that the process was being driven by talking to farmers on the ground who were very keen individually and collaboratively. A trial was due to run between the start of December 2021 and the end of February 2022. However, while October 2021 was very wet, November, December and January had below-average rainfall. This meant no inundation of the areas selected for trial. Farmers will try again this coming winter.

Somerset Levels and Moors peat trial

Somerset Rivers Authority has also agreed to part-fund the running of an ELMS trial of payments for the preservation and restoration of peat in 2 – 4 small areas of the Somerset Levels & Moors. The proposed system of payments will be based on a sliding scale of incentives for progressively higher water tables and compatible types of land management. Areas of wet low-lying land are important to the SRA because they can act as a buffer against flooding. Preparations for this exercise were carried out during 2021-22. It is hoped to run a trial this coming winter (2022-23).

Financial Summary

BACKGROUND

For its first full year of work in 2015-16, Somerset Rivers Authority (SRA) had Interim Funding of £2.7 million from the Department for Environment, Food & Rural Affairs (Defra), Somerset's local authorities and Somerset Drainage Boards Consortium. In December 2015, the Government proposed that Somerset County Council and Somerset's district councils should be given the power to raise what is known as a 'shadow precept' of up to 1.25% of 2016-17 council tax, to fund the SRA – and only the SRA. SRA money is strictly ringfenced for SRA purposes. The Government's move was approved in the House of Commons in February 2016.

The figure of 1.25% was chosen because it came close to matching the SRA's initial budget of £2.7 million.

The SRA is still reliant upon an annual shadow precept and its level is still pegged to that initial £2.7 million, although the actual amount of money raised has gone up. In 2021-22, it was £2.922 million. In other words: the level of the charge is frozen, it has not gone up since 2016-17, but as the number of households in Somerset increases every year, more people pay, so the total amount rises. The Parrett and Axe Brue Internal Drainage Boards (IDBs) also choose to contribute £10,000 a year each.

2021-22 LOCAL PARTNER FUNDS

As stated above, the SRA receives annual funding from two sources. Firstly, council tax. Somerset's local authorities raise money for the SRA through a shadow precept. Secondly, the Parrett and Axe Brue IDBs make contributions.

In 2021-22, from these two sources, the SRA received Local Partner Funds totalling £2,941,586 (£2,921,586 from the shadow precept, £20,000 from the two IDBs – £10,000 each).

In March 2021, the SRA Board agreed to top up that total of £2,941,586 with funds moved out of contingency, and thereby set a budget of £3,440,000 to cover the SRA's 2021-22 Enhanced Programme of works. Further funds, also carried forward from the previous year, were allocated to staffing (four full-time staff), a new part-time Technical Adviser post, administration and overheads. The 2021-22 Enhanced Programme contained 21 schemes and activities, all designed to advance Somerset's 20 Year Flood Action Plan. The table below shows how much money was allocated to each workstream within the Flood Action Plan:

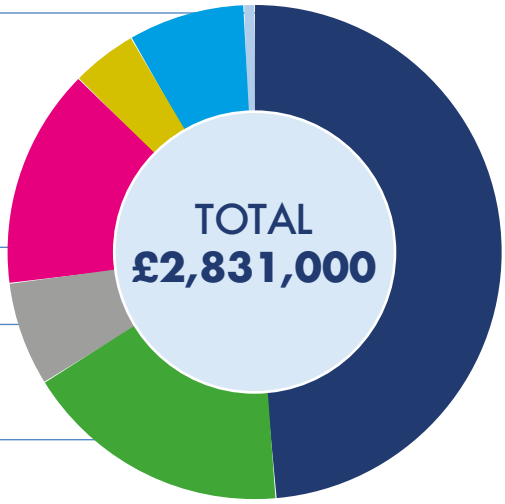
2021-22 BUDGET BY WORKSTREAM	TOTAL £	PERCENTAGE
Dredging and River Management	1,445,000	42%
Land Management	705,000	20%
Urban Water Management	300,000	9%
Resilient Infrastructure	865,000	25%
Building Local Resilience	125,000	4%
TOTAL	3,440,000	100%

Spending of Local Partner Funds in 2021-22

Since its launch in January 2015, the SRA has received Local Partner Funds of just over £20m. It has used these funds to deliver 203 actions and initiatives, described in this and previous Annual Reports available in the Flood Risk work section of the Somerset Rivers Authority website. Many actions and initiatives are completed within one financial year. Some require longer-term research, design, planning and implementation, so take longer.

During 2021-22, coronavirus pandemic restrictions continued to affect delivery, so less was spent than originally expected. The table below shows all of the Local Partner Funds held by the SRA at the beginning of the 2021-22 financial year and the SRA's total spend during the year. Remaining funds are carried forward into future years.

2021-22 SPENDING BY WORKSTREAM	TOTAL £	%
Dredging and River Management	1,377,000	48.6
Land Management	498,000	17.6
Urban Water Management	193,000	6.8
Resilient Infrastructure	408,000	14.4
Building Local Resilience	121,000	4.3
SUB TOTAL	2,597,000	
Staffing, administration, overheads	214,000	7.6
SRA Development Activities	20,000	0.7
TOTAL	**2,831,000**	



LOCAL PARTNER FUNDING 2021-22 FINANCIAL SUMMARY	ALLOCATED FUNDS AT START OF 2021-22 FINANCIAL YEAR £	SPEND IN 2021-22 £	ALLOCATED FUNDS CARRIED FORWARD TO 2022-23 ONWARDS £
TOTAL	**10,388,000**	**2,831,000**	**7,557,000**

Financial Summary

HEART OF THE SOUTH WEST LOCAL ENTERPRISE PARTNERSHIP (HOTSWLEP): SOMERSET FLOODING PROJECT

Following the Somerset floods of 2012 and 2013-14, the Heart of the South West Local Enterprise Partnership (HotSWLEP) allocated £13,049,000 of Government Growth Deal funding to a project known as Somerset Flooding. Since the SRA was launched in 2015, this Growth Deal funding has been channelled through the SRA. Its purpose has been to help the SRA and its partners achieve some of the main ambitions and objectives of Somerset's 20 Year Flood Action Plan.

To complement HotSWLEP's Growth Deal funding, the Somerset Flooding project has had to secure significant local match funding. The project's total budget is more than £40 million. Other money has come from SRA Local Partner Funds, Sedgemoor District Council, Somerset West and Taunton Council, local Community Infrastructure Levy charges on new developments, the Environment Agency, Wessex Water, central Government sources (Flood Defence Grant in Aid, New Homes Bonus), the Department for Environment, Food & Rural Affairs and the EU's Triple C initiative.

The SRA has now spent all the £13,049,000 Growth Deal funding it was allotted. The last £1,372,866 was spent in 2021-22. Total spending on the Somerset Flooding project during 2021-22 financial year was £4,871,660, because of additional contributions from other sources.

HM Government

heart of the south west
local enterprise partnership

SOMERSET FLOODING 2021-22 SUMMARY (£)	HotSWLEP FUNDING ALLOCATION	MATCH FUNDING TOTAL ALLOCATION	TOTAL FUNDING SPEND UP TO END 2021-22	HOTSWLEP FUNDING SPEND DURING 2021-22	TOTAL FUNDING SPEND DURING 2021-22
Pioneer Dredging River Parrett	2,222,179	8,298,463	10,520,642	213,851	226,201
River Sowy/King's Sedgemoor Drain Enhancement Scheme	8,211,821	3,485,772	9,269,680	1,159,015	1,796,712
Bridgwater Tidal Barrier *(SRA made a contribution)*	2,000,000	13,875,062	10,978,146	-	2,642,387
Land Management Capital Grant Schemes	550,000	1,285,234	1,835,234	-	-
Taunton Strategic Flood Alleviation Improvements Scheme *(SRA made a contribution)*	65,000	8,194,058	1,022,252	-	206,360
TOTAL	**13,049,000**	**35,138,589**	**33,625,954**	**1,372,866**	**4,871,660**

Progress with Somerset's Flood Action Plan

Of the 59 actions in the Flood Action Plan drawn up in 2014, 52 have been completed, are underway or are now part of the SRA's annual Enhanced Programmes. Much more detailed information is contained in a presentation given to the SRA Joint Scrutiny Panel on 8 July 2022. This page describes progress against key targets, as set out in the Plan's Executive Summary.

Dredging

We must: Dredge the first 8km of the Rivers Tone and Parrett. **Achieved**.

River Sowy/King's Sedgemoor Drain enhancements

We must: Increase the capacity of the Sowy/King's Sedgemoor Drain (KSD) recognising that this solution will reduce the cost of pumping during future flooding events. **Being achieved**. See p.8-9.

Flood management and infrastructure solutions

We must: Invest in flood management and infrastructure solutions having developed a better understanding of their effectiveness. **Being achieved**. The SRA has so far approved more than 220 actions across Somerset, many including a large number of elements. See p.6-7 for an example in this report of how managing a crucial stretch of the River Parrett is now rooted in the "better understanding" gained from years of water injection dredging, silt monitoring and evaluation.

Bridgwater Tidal Barrier

We must: Accelerate the construction of a Barrier or Sluice at Bridgwater with the objective of achieving delivery by 2024. **Being achieved**. It is hoped to start preliminary works at the Barrier site in 2022-23, so it is ready for use in 2026. See p.12.

Somerset Rivers Authority

We must: Establish a Somerset Rivers Board that has greater control and responsibility for work to maintain and improve water management of the Levels. **Achieved**. The SRA was launched on 31 January 2015 and now covers the whole of Somerset.

Catchment-sensitive farming / Natural Flood Management (NFM)

We must: Support farmers to maximise the benefits from catchment sensitive farming, especially regarding run-off in the upper catchment. **Being achieved**. Hundreds of schemes have been delivered and hundreds of NFM structures have been created using funding from a range of sources. The SRA has targeted flooding problems on roads and encouraged better soil managment.

Urban water management

We must: Manage urban run-off by ensuring best practice in planning and Sustainable Drainage Systems (SuDS) implementation. **Being achieved**. See p.31-34.

Strong local leadership, engaging partners and communities

We must: Ensure strong local leadership with full engagement of local partners and communities. **Being achieved**. The SRA is run by a board of partners (see p.4) and a Joint SRA Scrutiny Panel has also been established to help ensure that the SRA is fulfilling its purpose. The SRA's Management Group and Technical Group engage with SRA partners and many other organisations and individuals as required, as seen throughout this report: For example, Trees for Water Action Fund volunteers (see p.28-29), dedicated residents in communities affected by flooding (see p.42) and big bodies like the RSPB (1million+ members) and the National Trust (5million+ members).

The Flood Action Plan is now being reviewed and, in autumn 2022, people across Somerset will be asked for their views about what should be done to keep giving Somerset more protection from flooding and greater resilience (see p.4).

Somerset Rivers Authority

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