

The Stream

Somerset
Rivers Authority

Progress Update - November 2016



Dredging: new era advances

New techniques for dredging the Parrett are being tested this November and December, as Somerset Rivers Authority seeks cheaper and better ways of maintaining tidal rivers.

Three weeks of trials are being carried out between Westonzoyland Pumping Station and Burrowbridge to see how effective water injection dredging and agitation dredging can be at getting silt moving down to Bridgwater Bay and preserving the River Parrett's capacity.

Cllr John Osman, SRA chairman (*pictured above right, with Iain Sturdy of the Parrett Internal Drainage Board*) said: "This is the first time that such trials have been done on the Parrett in conjunction with a long-term programme of detailed monitoring. Potentially, new methods offer Somerset big benefits: done at the right times, in the right places, they could be much cheaper, more effective, and better for the environment, local residents and farmers."

The trials are being delivered for the SRA by the Parrett IDB with contractors Van Oord. Read more on page 2.

Natural flood works total 200

The Somerset Rivers Authority Board has agreed, in principle, to keep supporting natural flood management and whole catchment works.

The cause is being boosted by the enthusiasm of farmers such as John Elliott, who was so pleased with his leaky pond at Brompton Ralph (*above*), he's enlisting his neighbours to help create a further cascade of ponds.

Just over 200 natural flood management and farm resilience schemes are now either completed, in progress or proposed. The SRA is putting £550,000 of Growth Deal money from Heart of the SW Local Enterprise Partnership towards the multi-partner Hills to Levels project.

More than 850 farm visits have been made, and the Farming & Wildlife Advisory Group SW have investigated 40 roads where land management works might help solve local flooding issues.

SRA council tax money has funded the investigation of 50 sites in West Somerset, including the areas around Carhampton, Roadwater and Monksilver.

Somerset Rivers Authority (SRA) exists to provide higher standards of flood protection than ordinary national funding allows for. The Stream details past, present and future work.

For more information about the SRA - or if you'd like to receive future copies of The Stream - call 01823 355111, email sra@somerset.gov.uk or visit www.somersetiversauthority.org.uk



New dredging techniques aim to keep silt moving out to sea

The techniques being trialled for Somerset Rivers Authority are water injection dredging and agitation dredging: two ways of getting and keeping silt moving. Work must be done when an outgoing tide can carry silt away.

The vessel being used on the Parrett is called Borr (Old Norse for 'son'; *pictured above*). After being delivered to Dunball Wharf in halves, then re-assembled, Borr motored upstream through Bridgwater on Saturday night, 12 November.

Three weeks of trials started on Tuesday, 15 November, in conjunction with detailed monitoring before, during and after. Along the trials section, there is 150% more silt than there was in April. In places, four times as much.

Work is therefore carrying on from where 2.2km of maintenance dredging was finished earlier this year by the Parrett IDB for the SRA. (That dredging, and these trials, both maintain the 8km pioneer-dredged in 2014).

How does **water injection dredging** work? In the top left picture (not taken on the Parrett!), the injection bar, spraying water, is raised so you can see it. Nozzles pump out a high volume of water. The plan on the Parrett is to lower the bar just above the river bed. Surveying has created a very precise profile of the river - and this profile can be updated in near real-time. As the vessel passes, it re-measures. A screen on board shows the relative positions of bed and injection point, so it's possible to see what effect work is having, and to raise and lower the bar, and vary the pressure and volume.

River water is pumped through the injection bar. It's aimed at the soft silts in the bed of the Parrett, so they become super-saturated and

more separated, in a turbulent fluid lower layer of their own, slightly different to the surrounding water. Van Oord call this a "density current": it is, effectively, a different material to the water around it, so it behaves partly independently. In this state, on an outgoing tide, it should travel: the hope is that it will carry down right back out into Bridgwater Bay, and disperse naturally.

Agitation dredging (*top right, in Scotland*) uses a Farrell attachment, an articulated arm with a cutting device, which rotates, and a suction hose. As the cutting head moves towards its target area, mud and water are vacuumed up, and blown back out into the top of the river. The idea here is that silt is given much more time to carry before it drops down again and settles.

The trials aim to get a better understanding of where silt goes and the best ways to keep it moving. Many different variables will be measured, particularly turbidity (how cloudy water is - and when and where it settles again).

Five potential benefits of the new techniques:

- **Cheaper** – potentially much cheaper.
- **More efficient** - letting water carry silt away should be mechanically more efficient than digging it out and hauling it away with excavators, barges, tractors and trailers. If natural processes take silt out to sea, this will reduce costs.
- **Better for the environment** – bankside flora and fauna do not have their habitat disturbed other than at the mud level.
- **Better for residents** – less traffic coming and going, no road closures.
- **Better for farmers** – not spreading silt over fields means land does not have to be taken out of commission until vegetation re-grows.



SRA grant helps flood group. Do you need equipment too?

Somerset Rivers Authority has funded a new community equipment store in Dunster, with kit to help fight flooding.

Gear which can now be used by Dunster's new Flood Group includes portable sandbag fillers, sandbags, hi-viz jackets and shovels. The store is sited in the middle of Dunster.

The Community Resilience in Somerset Partnership (CRISP) gave just over £3,000 from Somerset Rivers Authority (SRA) to Dunster Parish Council to support the Flood Group, which has five founding members.

Cllr John Osman, Chair of the SRA, said: "Surface water is a problem in parts of Dunster during times of very heavy and prolonged rainfall, and when flooding has occurred it's had a devastating impact on people, so I'm very pleased that the SRA and CRISP are backing Dunster Parish Council and the new Flood Group. The store and equipment that we've paid for will help Dunster's volunteers protect villagers, visitors, homes and businesses."

Doug Challoner, acting chairman of Dunster Parish Council and Flood Group member, said: "What it does is, it gives us the confidence that we're ready, we can deal with problems in the future.

"It's brilliant. If any issues occur, we'll spring into action in ways that we've planned for and I am sure that people will be extremely pleased."

Grants of SRA money are available to other communities throughout Somerset via CRISP. Where there is a need, grants can be used to buy things such as generators, headlamps, lighting, protective clothing, clean-up equipment, depth markers and dry sheds for storage, or to fund training for local volunteers.

For more information about CRISP, email civilcontingencies@somerset.gov.uk or check out www.communityresiliencesomerset.org.uk

In the photo: Nicola Dawson of CRISP (centre) with Dunster Parish Council emergency group members (from left) Geoff Witherford, Alan Vicary, Alan Rigler and Doug Challoner, with their new store and some of their new equipment. The Flood Group's fifth founding member Alan Blackham could not be present.

Badger risk reduced by SRA

Flood defences put at risk of collapse by badgers have been protected in a scheme funded by Somerset Rivers Authority and delivered by the Environment Agency.

Steel sheet piles have been installed in a raised flood bank near Isle Brewers (*pictured below*) to stop badgers digging right through it. If this had been allowed to happen, flood water could have surged through and destroyed the bank.

No badgers were moved or harmed in the work, which was carried out by a specialist contractor under licence from Natural England. Badgers are a protected species.

Cllr John Osman, SRA chairman, said: "This work will help to stop water flooding overland into Isle Brewers from the River Isle. The bank is one of several structures that limit and control flows around the village, and if it had collapsed, restoring it would have cost a lot of money. So I'm pleased that SRA funding has helped to prevent destruction and protect local people and properties."

Raised banks are attractive to badgers on the Somerset Levels and Moors because they are warmer, drier and easier to dig through than cold sub-soil.

Dr Rachel Burden, Somerset Flood Action Plan Manager for the Environment Agency, said: "Along with routine maintenance by the Environment Agency of the whole scheme around Isle Brewers, this work will ensure that the level of flood protection to the village is maintained and flood risk is managed appropriately. Thanks to landowners for their help and agreeing access to deliver the work."



Bony updates on big projects

Cannington: Work to protect 200 homes and the A39 from flooding is progressing well. An SRA contribution of £300,000 enabled this £4million scheme, led by the Environment Agency, to go ahead. A flood alleviation channel has been dug beneath the A39.

Three Roman skeletons (*one pictured above*) were uncovered during an archaeological investigation. Evidence strongly suggests that the area was flooded in the Roman period.

Pioneer dredging: New dredging of 750m of the River Parrett downstream of Northmoor Pumping Station was completed in August, ahead of schedule and under budget.

The work was commissioned and funded by the SRA, partly using Growth Deal money from Heart of the SW Local Enterprise Partnership (HotSWLEP). It was delivered by the Environment Agency with contractors Galliford Try, Black & Veitch and Land & Water. They removed 13,000m³ of material to improve flows in the river and help reduce local flood risk.

Taunton: Consultants have been appointed to work on the Taunton Strategic Flood Alleviation Improvements Scheme (backed by the SRA). Plans include a large flood water storage area at Bradford on Tone. The scheme will protect homes and businesses and enable growth.

Bridgwater: Two possible locations for a Bridgwater Tidal Barrier are being investigated, one close to Express Park, the other in a more open setting a bit further downstream. The SRA is contributing £2m of HotSWLEP Growth Deal money towards this Environment Agency-Sedgemoor District Council project. Further public consultation will be held in spring 2017. See www.bit.ly/BridgwaterBarrier



SRA funds new flood relief channels

(Photo: courtesy Jon Woodward)



Two new river channels are now flowing on the Somerset Levels, as major engineering works funded by Somerset Rivers Authority provide extra protection against flooding.

The new channels branch off from the Soway and Langacre, pass under the A372 at Beer Wall near Othry, then reconnect downstream. They more than double the amount of water that can flow underneath the road, through two sets of massive new culverts.

Beer Wall was impassable for several weeks in early 2014 – through flooding and then deploying temporary pumps – with damaging, costly effects on local community life and business. As Somerset County Council (SCC) also previously raised the road by up to 60 centimetres, it would now stay open, were there to be a repeat of the 2013-14 flood.

Cllr John Osman, SRA Chair and SCC Leader, said: “The new improvements at Beer Wall have only been able to happen because of the way that Somerset Rivers Authority is set up to provide extra works that make people’s lives safer and better. This is a scheme that reduces flood risk, maintains access, increases resilience, respects the local environment, promotes business confidence: all aims agreed in Somerset’s 20 Year Flood Action Plan.



“I’m very proud of the excellent work that’s being done and would particularly like to thank the project teams at the Environment Agency and contractors Skanska, who’ve delivered this latest phase for the SRA.”

Dutch engineers were commissioned for the specialist job of designing, fabricating and installing tilting weirs in the two new channels, to get greater control of upstream water levels. The new structures can be controlled remotely by the Environment Agency.

Better river gauging equipment and new CCTV cameras have also been installed to improve flood and water level management, and maintain appropriate environmental conditions within an area of international importance for wildlife (chiefly, migratory birds).

Other features include innovative, combined passes for eels and otters, and platforms which will allow disabled people to go fishing.

As works draw to a close, children have been visiting on lively school trips from local primary schools such as Middlezoy (see above).

The SRA used Growth Deal money from the Heart of the South West Local Enterprise Partnership at Beer Wall, as part of an overarching plan for Soway and King’s Sedgemoor Drain improvements.

The latest step will see vegetation cleared around Dunball Rail Bridge and Parchey Bridge (pictured left), and surveying to see if desilting work is needed.

Extra work cleansing roads to reduce local flood problems

The SRA is funding extra maintenance for problem areas across the county, to keep roads open, preserve access for communities and safeguard properties from flooding.

A four-pronged programme will see Somerset County Council's highways department deliver additional gully emptying, drain jetting, highway sweeping and de-silting underneath structures.

Gully emptying targets locations most susceptible to flooding, identified using data like Environment Agency surface water flooding maps, historical records of highway service requests and highway maintenance history.

Extra cleaning out of drains from gullies to outfall helps to further reduce the annoying and inconvenient problems of flooding on local roads, while extra sweeping helps to prevent the future clogging of drains by debris and detritus such as leaves, sticks, mud and litter.

De-silting increases the flow of water through structures such as bridges and culverts. It reduces the risk of damage being caused by pressure, or by floating debris colliding and getting stuck. It also cuts the risk of flooding on roads and in nearby properties.

ENHANCED GULLY CLEANSING: Places due to benefit include roads, streets and lanes in:

Mendip – Ashwick, Nunney, Holcombe, Croscombe, North Wootton, Upton Noble and Wanstrow

South Somerset - Montacute, Tatworth & Forton, Bruton, Cudworth, Winsham, Yeovilton, Pitcombe, Stoke-sub-Hamdon, Mudford, Lopen, and Barrington

Sedgemoor – Wedmore, Cannington, Greinton, Nether Stowey and Compton Bishop

Taunton Deane – Wiveliscombe, Wrantage / Fivehead, North Taunton / Kingston St Mary

West Somerset – Exford, Roadwater and Withypool



ENHANCED DRAIN JETTING: Places due to benefit include roads, streets and lanes in:

Mendip – Ashwick, Holcombe, Croscombe, Wanstrow

South Somerset – Ilchester (*already done*)

Sedgemoor – Compton Bishop, Highbridge, Catcott, Westonzoyland, Wedmore, Axbridge

Taunton Deane – Wiveliscombe, Wrantage / Fivehead, North Taunton / Kingston St Mary

West Somerset – Exford, Roadwater and Withypool

ENHANCED HIGHWAY CLEANSING: Places to benefit from mid-November include roads in:

Mendip – Ashwick, Binegar, Cranmore, Kilmersdon, Evercreech, and Upton Noble

South Somerset – Montacute, Yeovilton, Tatworth & Forton, Bruton, Cudworth, Winsham

Sedgemoor – Spaxton, Compton Bishop, and Wedmore, Broomfield and Brean

Taunton Deane – Wiveliscombe, Wrantage / Fivehead, North Taunton / Kingston St Mary

West Somerset – Exford, Roadwater (Old Cleeve & Nettlecombe parishes) and Withypool

DE-SILTING OF STRUCTURES: Places are:

Mendip - near Wraxall, **Sedgemoor** - Edithmead, **Taunton Deane** - near Creech St Michael