Local Water Pollution Update

There has been huge recent coverage in the press and social media about sewage and phosphorous/nitrogen levels in Christchurch harbour, and more accusations of sewage being discharged directly onto Friars Cliff beaches. Feelings are running high about this, but what are the facts? Way back in the December 2021 Forum we wrote an article on the sewage/phosphorous/ nitrogen situation as we saw it at the time. In hindsight we were right about the points we raised, but the situation is evolving and it is time now to provide an update - so here goes...

Background

There are periodic claims of sewage discharges along Friars Cliff and Avon beaches, sightings of brown scum and foam in the water, and unexpectedly large landings of seaweed. Also, major concerns have been raised about phosphorous/nitrogen levels in Christchurch harbour due to contamination in the rivers Avon and Stour. We have recently seen strong campaigning on this from the Christchurch Harbour & Marine Society (**CHAMS**) whose mission is to improve the waters in and around Christchurch.

FCRA supports these concerns and has vigorously tackled the issue for several years through engagement with:

- Secretary of State via our MP (Sir Chris Chope).
- Local councillors and BCP.
- Wessex Water.
- Environmental activists.
- Active participation in CHAMS.

We agree with most of the issues but there is no 'quick fix' solution – it will be a long journey. This article seeks to explore, fairly and squarely, the situation as we understand it.

The Environment Agency (DEFRA)

Firstly, we refer to the **Environment Agency (EA) website** which contains a huge amount of water sampling and analysis data. EA samples are taken weekly in summer near (1) Avon Beach car park and (2) Southcliffe Road ramp. The analysis tests for pathogens Intestinal Enterococci (IE) and Escherichia coli (EC), with gradings following strict EC guidelines so we expect them to be generally reliable. The water quality was classified **Excellent** consistently from 2021 to 2024.

However, EA water sampling takes place only from May to October each year - there is no water sampling in winter. We are strongly concerned about that and believe there should be year-round testing, so we raised this formally in 2021 with our MP, Sir Chris Chope. Sir Chris agreed, and twice tackled DEFRA Secretary of State but with no positive response – most probably we think due to the excessive cost of UK-wide testing. With the change of government, we are re-raising it again now with Sir Chris.

DEFRA report – Friars Cliff beach – summertime only!

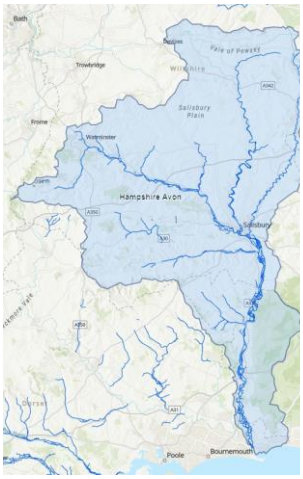
Christchurch Harbour

The EA '*Catchment Data Explorer*' website provides extensive data on ecological and chemical contaminants in water areas nationwide. However, the data provided for Christchurch harbour is less comprehensive than it is for Poole harbour, and only covers 2019 and 2022, so it is not up to date.

Among other concerns, the data shows an issue with the **Dissolved Inorganic Nitrogen** concentration in Christchurch harbour, yet the EA has no intention to reduce the concentration because it would be '*disproportionately expensive*'. This is disappointing because it contributes to a significant ecological issue. So, what is causing it?

Firstly, it is important to differentiate between sewage and phosphorous/nitrogen. **Sewage** is faecal discharge from humans and animals (including birds and fish direct into the sea/rivers) and measured through faecal indicators IE and EC as above.

Conversely, **phosphorous and nitrogen** are naturally occurring chemicals (with derivatives phosphates/nitrates) that are highly concentrated in agricultural/farming fertilisers as well as sewage. When there is heavy rainfall, farmland fertilisers in the vast area between Christchurch and northwards towards Bath can run off through dozens of tributaries into the rivers Stour/Avon before they have a chance to be absorbed into the soil. With ongoing changes to our weather pattern such as sudden, heavy downpours, the run-off issues increase. Phosphorous also discharges through natural surface water run-off from urban areas – so it is a mixed issue.



The Hampshire Avon Catchment area showing Avon run-offs

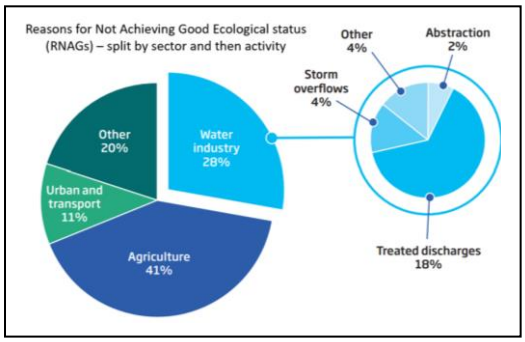
All these then flow downstream into Christchurch harbour, where they concentrate and flow through The Run. ***Two large rivers (Avon / Stour), with catchments among the largest in the UK, flowing into one small harbour (Christchurch) with a tiny outlet at The Run is a severe pinch-point***.

Additionally, not only is the harbour very shallow, but it also suffers from the Solent's double high tide effect which reduces the time for low water 'flush out'.

Interestingly, the EA's '*Catchment Data Explorer*' indicates that for rivers in general, the issues that prevent 'Good Ecological Status' is:

- **Agriculture - 41%**
- **Water management - 28%**

This is important because it shows that the main issue is with agriculture and <u>then</u> water management, of which the biggest issue is *routine treated water discharges* rather than *storm overflows*.



However, this data is a national average only and may well differ in the local context of the BCP urban sprawl and upstream river catchments. Of note, both EA and CHAMS water sampling indicates that the river Stour contains way more phosphorous than the river Avon, so the Stour appears to be the primary contributor to damage in Christchurch harbour.

For water company action, there is a recently introduced phosphorous 'stripping' process that removes >80% from water recycling centre discharges. Wessex Water has a government approved programme underway to roll this out for all 16 nearby water recycling centres in the river Stour, with completion in the next few years.

So, phosphorous/nitrogen contamination seems to be the largest issue in Christchurch harbour, with more data collection/analysis needed into the different contaminant sources. Additionally, there is very little data available on faecal contaminants in the harbour, and this needs much more investigation.

Friars Cliff/Avon Beaches

Much is said on social media about raw sewage being discharged onto our local beaches, but this is not correct. There are no sewer discharge points anywhere along Avon/Friars Cliff beaches.

Misconceptions

For Avon and FC beaches, notification of discharges is available through the Surfers Against Sewage (SAS) mobile app titled ***Safer Seas & Rivers Service***. This pulls in EA and Water Company data, weather alerts and modelling to provide alerts to warn when there has been a sewage discharge on or near one of our beaches. However, the alerts are not entirely correct as there are no sewage discharge pipes on or near our beaches at all – they are some distance away. Also, the warnings do not correlate much (in summer at least) with EA test results. From an objective viewpoint, the App's alerts are 'indicative' rather than 'actual'.

For an example of widespread misunderstanding and reporting, there is a common marine algae seen in our waters called ***Phaeocystis*** (marine phytoplankton) which forms a worrying-looking grey/yellow foam and colours the water brown. Phaeocystis is often filmed/reported on local Facebook pages as raw sewage floating on the water - but it is in fact just a naturally occurring algae and non-toxic – although it is encouraged to grow by high phosphorous concentrations.

Phaeocystis

Also, it is sometimes over-easy to suggest that a brown/orange colour to our river water is due again to raw sewage. This also is highly unlikely, and most probably attributable to riverbed silt/mud churned up in stormy weather.

The many valid concerns about sewage discharge are noted, but it is easy for misconceptions like these to creep into, and even distort, the argument.

Combined Issue

In the wider area the sewage overflow and discharge locations are:

Water Recycling Centres (WRC)	Sewage Pumping Stations (SPS)	River: Combined Sewer Overflows (CSO)	Sea: Combined Sewer Overflows (CSO)
Christchurch WRC	Iford Lane SPS	Tuckton Rd CSO	Bournemouth Pier CSO
Holdenhurst WRC	Mudeford Gardens SPS	Cooper Dean CSO	Boscombe Pier CSO
Palmersford WRC			Fisherman's Walk (Southbourne) CSO

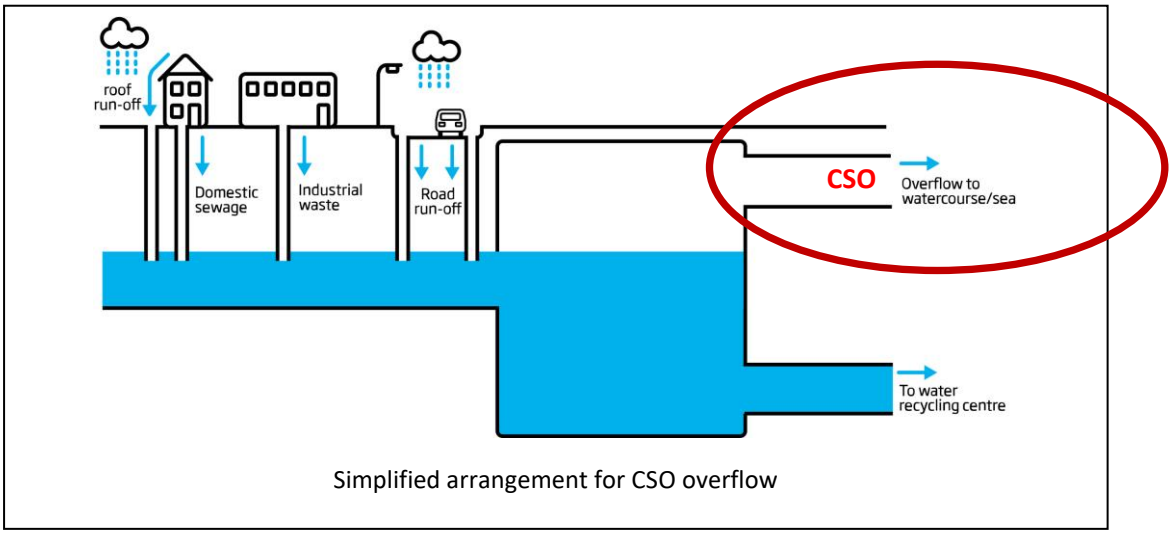
From the table, we see that Combined Sewer Outflows (CSOs) discharge into the sea at 3 nearby outlets roughly ½ km offshore near Boscombe and Bournemouth Piers, and Fisherman's Walk at

Southbourne. We know that 'long-shore drift' carries sea water from west to east but the enormous dispersal and dilution from the discharge points greatly reduces the chance of contaminants reaching our beaches. EA sampling data supports this point.

For the CSO discharges into the rivers/streams feeding Christchurch harbour, the nearest overflow to us is at Mudeford Gardens which last operated in 2018, although upstream CSOs do discharge frequently. Again, there is dispersal and dilution into the river water, but of course the dilution is far less than it is for sea-facing CSOs – so it is much more of an issue.

Of note, the CSO discharges occur mainly in winter after heavy rainfall and contain surface run-off water mixed with diluted sewage. These are overflow situations where storage tanks are overwhelmed, and the discharges are screened/filtered to block solids over 20mm. The overflow occurrences seem to be increasing, mainly due to:

- Population growth (more houses)
- Changes in weather patterns (more storms)
- Inadequate tank storage (at sewage treatment facilities)



Simplified arrangement for CSO overflow

Christchurch Harbour & Marine Society (CHAMS)

In the past few years, CHAMS has been increasingly engaged over pollution in Christchurch harbour and regularly measures river Stour phosphorous levels at >200ppb, which exceeds the measurement scale and is clearly unacceptable. Additionally, CHAMS is now purchasing dedicated faecal measuring equipment, so later this year they will have accurate data collection on E-Coli levels, which will be invaluable.

CHAMS quite rightly identifies that the poor phosphorous/nitrogen situation in Christchurch harbour is far more complex than most realise, and there is insufficient data available on faecal contamination.

To communicate concerns, CHAMS holds regular public meetings at Stewarts Garden Centre and is campaigning strongly, with success, at many levels. FCRA supports the CHAMS position, and we also liaise closely with nearby organisations such as the Christchurch Harbour Watch and Highcliffe Sailing Club.

One campaign they are pursuing through an **e-petition** is for Christchurch harbour to be afforded the same status as Poole harbour through the creation of a ***Christchurch Harbour Protection Policy*** and

designation as a ***Special Protection Area***. We agree, as it would certainly draw greater attention to the environmental and pollution issues.

Does anything else discharge near us?

Entirely separate to CSOs are Surface Water Outfalls (SWOs) that drain surface water from streams, roads and roofs into the sea and rivers. SWOs are located at many points along the rivers/coast with two near us at Gundimore and Steamer Point. They are not connected to the sewage system so they should not discharge sewage, but may contain pollutants such as car wash, detergent, oil, fertiliser etc and can appear brown-ish due to silt/mud (not sewage). Authorities investigate misconnections and infringements, but it is a difficult area to control as any house or business could potentially misuse these drains.

SWO at Steamer Point

Discussion

Worrying as all the above seems, we cannot ignore the EA water quality sampling along our beaches that is generally excellent (when taken) for Intestinal Enterococci (IE) and Escherichia coli (EC). These pathogens do not survive long outside host organisms and are fragile when exposed to sunlight in seawater, so they perish fairly quickly. That said, any quantity of seawater, anywhere, will likely have at least some colonies present of IE/EC, so seawater should not generally be swallowed.

For phosphorous/nitrogen, there is increasing local data collection that indicates high concentrations in Christchurch harbour and the rivers Stour/Avon, which in turn links to long-term damage to wildlife and the environment.

So, what is being done about all this?

Quite a lot actually. Despite media reports incorrectly stating otherwise, our local water provider, Wessex Water, has major investment programmes in hand to expand facilities and reduce discharges, with more incoming. There are 85 improvements rolling out between 2020-25, one of which is for Stoney Lane, Christchurch, and 878 in total extending to 2050. Between 2020 to 2025, Wessex Water is spending around £150m on storm overflow improvements, rising to around £500m between 2025 and 2030 (if approved by the regulator).

Upstream and downstream monitoring systems around all river discharge points are being introduced, but there are technological limitations on what can be tested. The government recognises this, and more research is in hand, but improvements will take time.

For sea contaminants, Wessex Water machine learning (AI) tools are being developed/introduced to more accurately predict **bathing water risk levels**. In conjunction with BCP (a joint scheme called ***Sea Check***) there are now learning/ monitoring devices attached to buoys offshore at Boscombe and Bournemouth Piers and one planned for **Avon Beach**.

Further, the Government has initiatives underway, and there are many actions elsewhere. That said, focused action is tricky because responsibility for water quality lies with so many different organisations including Wessex Water, BCP, Natural England, farming regulators, and the Environment Agency (DEFRA).

Still, there seems to be real momentum gathering and more must be done. The ***Environment Act (2021)*** brought in a huge range of improvements including legal controls, enforced water company investments, monitoring systems, statutory obligations, accountability etc that will greatly reduce

pollutant discharges into rivers and seas. This is a big step forward and will lead to real improvements, but it is also massively costly, and it will take time for us to see the more significant improvements. There will also be many further improvements upcoming (**in 2025 alone**) within:

- *Water (Special Measures) Bill.*
- *DEFRA regulatory review.*
- *Independent Water Commission Report - reform of regulatory framework.*

What is not helpful are the more emotive '*toilet bowl discharge'* types of argument that offloads all blame on sewage/water companies rather than addressing the broader complexities of the argument. The 'devil is in the detail' and there is no simple solution!

Can we be notified of any potential discharges?

For water quality information, anyone can access the EA pollution risk forecasting service and historic testing data at www.gov.uk/quality-of-local-bathing-water. However, in our opinion there are two main issues with the testing process:

1. It tests only for faecal matter (IE/EC as above) but not wider contaminants, so the test criteria are too narrow.
2. Testing is conducted only from 15 May to 30 September – so there is no winter testing. This is unacceptable given the rapid increase in winter-time water use (open-water swimming, surfing, windsurfing, paddling etc).

Wessex Water also provides detailed discharge data that contains far more detailed local information than the Safer Seas & River Service, at: https://www.wessexwater.co.uk/coast-and-rivers-watch-map**.**

What about the RNLI Red Flags sometimes raised on our beaches?

The RNLI Lifeguards liaise closely with BCP Seafront Operations to ensure that 'red flag' decisions are made correctly. Reference is made to the SAS app and also to local weather conditions. Red flags do not therefore directly equate to contaminants in the sea, but again they are indicative.

What is the FCRA Position?

For Christchurch harbour the argument seems far too one-dimensional when centred on CSO discharges as the actual issue is more concerned with water pollution in a broader context. So, with apologies for any arguments / information we might have missed, we have genuine concerns over agricultural run-off and treated water outflow as the main contributors to the proven high phosphorous/nitrogen content in Christchurch harbour.

Also of concern are the considerable number of CSO discharges into the rivers Avon/Stour and their effect on the environment. There are programmes underway to reduce discharges, but the real issue is the lack of an effective UK-wide rainwater management strategy that would reduce the volume of rainwater passed through CSOs.

Finally, it seems to us that winter water testing, in particular, is inadequate (there is none!) and also there needs to be faster and more expansive testing, with near real-time availability of results.

So, on all this FCRA has the following positions:

1. Press DEFRA through our MP for:

- Bespoke EA analysis of the reasons for the poor water quality in the rivers Avon and Stour, and Christchurch harbour.
- Improved, year-round EA water quality testing.
- Increase research/funding into AI driven, point of discharge, real time water quality testing.
- Investigate/identify how agricultural run-off pollutants can be reduced.

2. Press our MP for a change in the national rainwater management strategy so that rain is better managed where it falls, and rainwater and sewage then become separated. This change of strategy would greatly reduce water run-off issues and CSO discharges.
3. Support CHAMS in its campaign for Christchurch harbour to be afforded the same status as Poole harbour through the creation of a **Christchurch Harbour Protection Policy** and designation as a **Special Protection Area**.
4. Seek an accelerated water company implementation of phosphorous stripping measures in the rivers Stour/Avon.

Finally, despite all this there is so much still left out of the argument:

- Micro-plastics are entering our rivers and water systems. What damage do they cause?
- What other pollutants are knowingly/unknowingly introduced into our rivers and what is the effect?

To close, there clearly is no quick-fix solution, and real leadership is needed across government, organisations and businesses to drive initiatives and improvements. FCRA is behind local campaigns that support this.

Paul De Jonghe

Article acknowledgements & references, with grateful thanks:	
DEFRA & EA Water Test Data & Reports	Hampshire Avon Catchment Partnership / Wessex Rivers Trust
Surfers Against Sewage (WWW & App)	Sir Chris Chope (MP Christchurch)
CHAMS Facebook page	Matt Wheeldon, Director, Wessex Water
Christchurch Harbour E-Petition: https://democracy.bcpcouncil.gov.uk/mgEPetitionDisplay.aspx?id=240	Waterbody Data Catchment Planning: https://environment.data.gov.uk/catchment-planning/WaterBody/