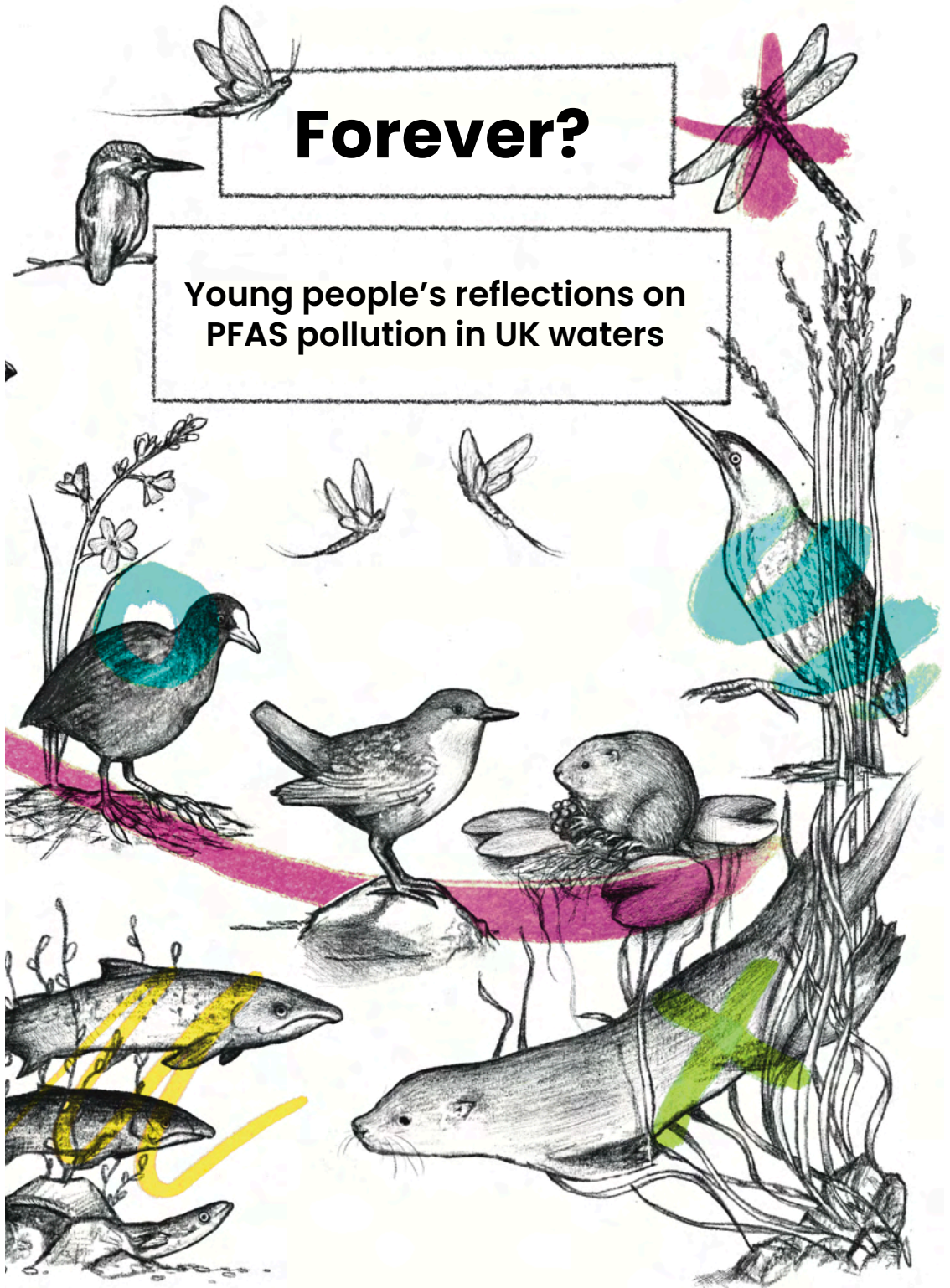
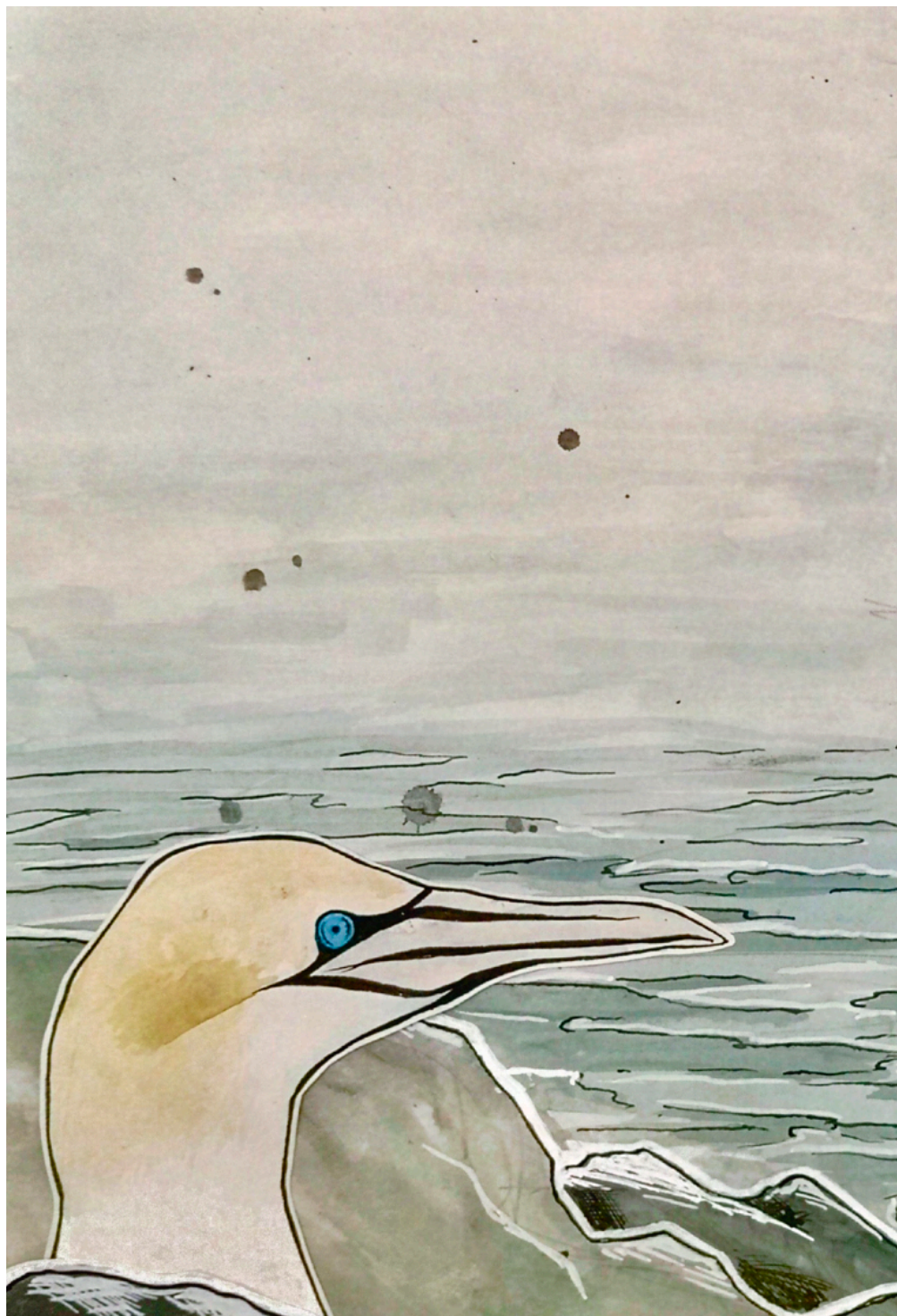


Forever?

Young people's reflections on
PFAS pollution in UK waters





To our water champions,

Forever is not just a lifetime, it is infinite. A promise to be loved forever, a pinky promise to be best friends forever in a playground at lunchtime, a misguided tattoo quoting your favourite film or book or a young love. These forevers are joyful, part of the interplay of life and the marks of youth that remain with us throughout our life are our own stories. But forever chemicals – also known as PFAS – are not.

UK Youth for Nature, a network of 16-to-35-year-olds around the UK, want to show you what forever could be. A world where forever chemicals, are forever banned.

When we speak together about PFAS, we talk of the fear of chemicals outlasting us, of the worries of the impacts of these chemicals on our DNA, our health, our wildlife, our future generations. We are custodians of the collective 'youth' for now. But as we age out of that descriptor, as our lives change, our friendships form new forever bonds in new circumstances, PFAS remains. And we are asking you to help us change that.

Blue spaces such as rivers, pools, lakes and seas, are places that have tangible, powerful impacts on our physical and mental health. But hidden PFAS is making our waterways sick, and in turn, it makes us and our communities sick too. We are nature defending ourselves. And we are asking you for your help.

In this zine, written, illustrated and compiled by young people around the UK, we show you what PFAS are doing to our environment, and our connection to it. With your help, we can forge a future where forever chemicals are a thing of the past. Thank you for choosing a path that leads to nature recovery, where our forevers are promises to work towards a brighter future together.

-The UK Youth for Nature team



A new survey conducted by Ipsos, commissioned by CHEM Trust, found that **71% of UK adults aged 16-24** are either 'very' (27%) or 'fairly' (44%) **worried about the potential impact of harmful synthetic chemicals on the environment in products they use.**

82% of UK adults aged 16-24 think the UK Government should either 'definitely' (37%) or 'probably' (45%) **take action on the use of PFAS in products.**

67% of UK adults aged 16-24 would be either 'very' (21%) or 'fairly' (46%) likely to **stop buying a product they regularly use if they learnt it contains chemicals that have a negative impact on wildlife.**

77% of UK adults aged 16-24 would be either 'very' (25%) or 'fairly' (52%) likely to **pay more for products that are manufactured using chemicals that are safer for wildlife.**

On behalf of CHEM Trust, Ipsos interviewed a representative quota sample of UK adults aged 16-75 (n= 2186). The survey was carried out using the online i:omnibus from 28th February – 3rd March 2025. Data are weighted.

Unweighted sub-sample bases are as follows:
UK adults aged 16-24 (n= 290)

Survey questions referenced above:

Q1. *Before completing this survey today, to what extent were you personally worried or not about the potential impact of harmful synthetic chemicals in products you use on each of the following? (options given: very worried; fairly worried; not very worried; not at all worried; don't know)*

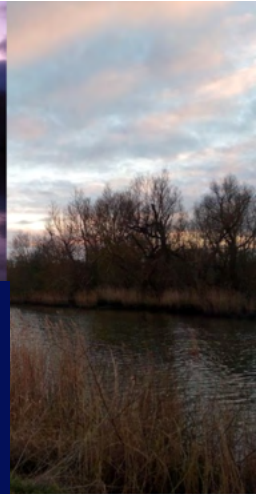
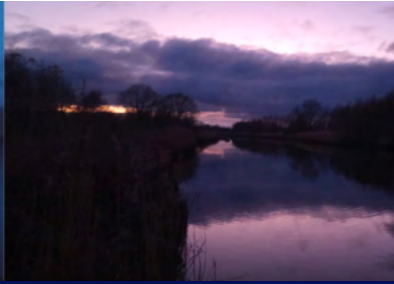
1. Your personal health
2. The environment

Q2c. *To what extent are you likely or unlikely to do each of the following? (Options given: very likely; fairly likely; not very likely; not at all likely; don't know)*

1. Stop buying a product I regularly use if I learnt that it contains chemicals potentially harmful to my health
2. Stop buying a product I regularly use if I learnt it contains chemicals that have a negative impact on wildlife
3. Pay more for products that are manufactured using chemicals that are safer for people's health
4. Pay more for products that are manufactured using chemicals that are safer for wildlife

Q6b. *Should the UK Government take action or not take action on the use of PFAS in products?*

(Options given: definitely should take action; probably should take action; probably should not take action; definitely should not take action; don't know)



Rivers allow us to live, without them would be without us.

the species that inhabit them maybe the flutters of hope, peace or joy to us but only if we bother to notice them. Still, they keep us healthy.

As we reach towards the future we cannot forget that the greatest technology, lays within nature herself, free, safe.

we don't even know her properly there is So much beneath the surface.

We owe it to protect what we love and even what we don't know yet,

To remind ourselves what truly matters. What would life be without.

living landscapes. But more over without living humans.

Forever.

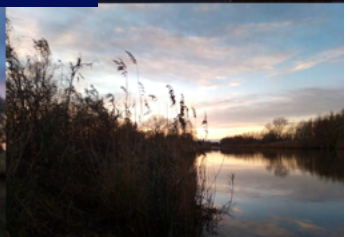
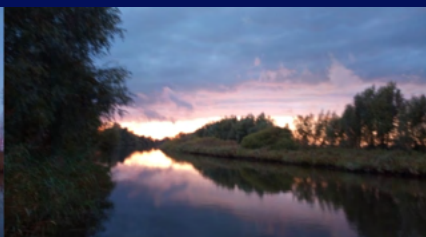
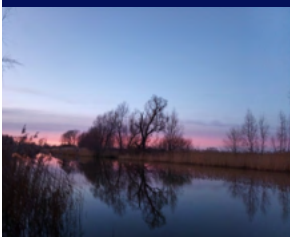
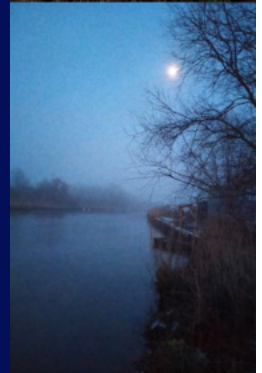
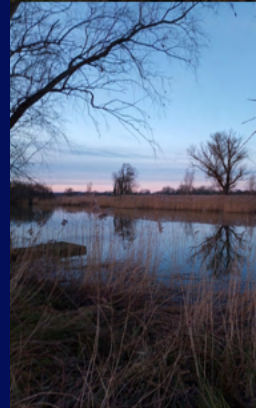
Doesn't the concept of forever scare you.

We don't even know what forever is.

We cannot afford to make anymore mistakes .

My earth, my river, my wildlife, my body is not to be experimented on.

It's not a matter of change. It's a matter of stopping further change.









PFAS & UK Seabirds

Invisible, potent and persistent PFAS are contaminating wildlife in the UK and beyond, endangering their wellbeing and survival. Oceans are the endpoint for many leached PFAS chemicals, endangering life within and reliant on them (Levy, 2020). Seabirds are particularly affected by PFAS due to their position as consumers in marine food webs and bioaccumulation patterns where organisms ingest and collect contaminants from their environment.

Largely, PFAS enter marine ecosystems through polluted river flows. Freshwater pollution occurs from leaching of PFAS containing materials from landfills and wastewater treatment plants, amongst other sources. Often, water treatment plants release more PFAS in disposal effluents than comes in due to insufficient processing and filtering (Brase et al., 2021). This illustrates an obvious disconnect between recognising the damage of PFAS on human and ecological health and taking real, mitigative action. This issue is emphasised by climate change, which is permafrost melt which presents a potential source of persistent, water-soluble PFAS, posing an imminent hazard for marine ecosystems (Bilela et al., 2023).

As such, seabirds are vulnerable to the effects of PFAS through consumption of polluted sediments and marine life leading to accumulation in protein-rich tissues like the liver. PFAS levels are likely to increase at higher levels of the food chain due to biomagnification threatening seabirds and other predators.

The effects of forever chemicals on seabirds are numerous, far-reaching and heartbreaking. Lab and field studies have found increased stress, endocrine and metabolism disruptions, decreased hatching success rates and even death because of PFAS ingestion (Sun et al., 2023). Additionally, these effects are not localised but spread to non-contaminated regions through water flows and wildlife migration patterns. One species observed to be suffering from PFAS are kittiwakes, small gulls which nest in colonies around the UK's coastline facing disrupted hormone levels, slowed healing and discolouration. Research on arctic kittiwakes shows that levels of PFAS are elevated following winters spent in seas further south, closer to PFAS outlets. This consequently affects arctic predators where toxins are accumulated directly through from other animals as well as plant species which thrive on the increased guano availability around bird breeding colonies (von Herff, 2024).

Ultimately, PFAS pollution presents a major, growing threat to seabirds and wider marine ecosystems in the UK and further afield. The effects of forever chemicals on seabird health, reproduction and survival have been well documented. Now, we can learn from past cases such as polychlorinated biphenyls (PCBs), which negatively impacted the environment for decades after usage has ceased (Marine Conservation Society, n.d.). Whilst we cannot remove PFAS from our oceans due to the sheer volume of chemicals, it is imperative we take global action to prevent further chemical damage to the UK's unique, vulnerable ecosystems and biodiversity.





THINGS I WANT
TO LAST

FRYE
FOREVER

HEALTHY
MARINE LIFE

OUR WONDERFUL, WILD
WATERS



River cober

Looe Pool, Cornwall

But don't you see?
We are the rivers
We are the seas
In losing the rich vitality of
our waters
We lose ourselves
We are nature defending
itself

The river Cober in Cornwall is 4.5x above the Environmental quality standard of PFAS levels (River Trust 2020). It is hard to believe these peaceful waters I have grown up by are rife with dangerous forever chemicals. In a county celebrated for beautiful beaches, where thousands flock every year to enjoy the 'untouched' landscapes. Yet this does not exist. We have allowed our waters to be intoxicated, leaching into our soil, air and bodies. Are we going to allow this to continue?

Escapism On The Waterways – The “Blue” Spaces Effect

Cast your mind back to the first announcement that we were going into Covid lockdown – it’s unlikely that it has slipped your mind, being such an unusual moment in recent history.. For those of us in shared homes without outdoor space in London, it was a sudden entrapment. Away from fresh air, green spaces and the luxury of wandering to reduce the impact of the stress that the most populous city in the country has on people.

It was this forced slowing down that created space for us to discover our local areas, the parks with ponds, community gardens growing food and canals with predetermined pathways. The Regents Canal, that runs through Hackney and De Beauvoir Town, is now a place filled with cafés, bars and restaurants, exciting opportunities to discover new food over drinks with friends. But during lockdown, it was the lifeline that led residents to Victoria Park, welcoming birds, bugs and people alike.

The Regents Canal welcomes birds, mammals, fish and more, in part with huge thanks to The Regent’s Canal Living Waterway project, who have been working tirelessly on restoring the Kingsland Basin – championed by local residents taking action to leave the waterway in a better state than they found it in.

From foaming beach waves crashing to shore to a slow moving canal slinking through a city, experiences with water enable us to take a moment, make space and feel a sense of perspective. A small canal winding through London became a haven for those who couldn’t leave the city and access wide open spaces. We may have felt the “psychologically restorative effect”, that water has, without having the language to articulate the feeling. As green spaces rise in popularity as places to seek wellness, water can be lower on the priority list for an individual seeking a calm moment.

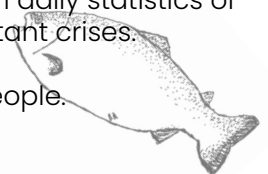
Across the UK, the population is suffering with mental health – at least 1 in 4 people will experience a mental health problem. Imagine that the solution for the health of our watery environments, is the same solution for improving the lives of millions. We know that the “associated soundscape and the quality of light on water might be enough to have a restorative effect”, and it’s our responsibility to one another to protect this natural source of wellness.

Finding joy in the everyday is touted as the portal to a happy life, and discovering the canal and its inhabitants were a source of this peace whilst the world scrambled to rebalance itself. A place away from daily statistics of unwell communities, daily news updates and constant crises.



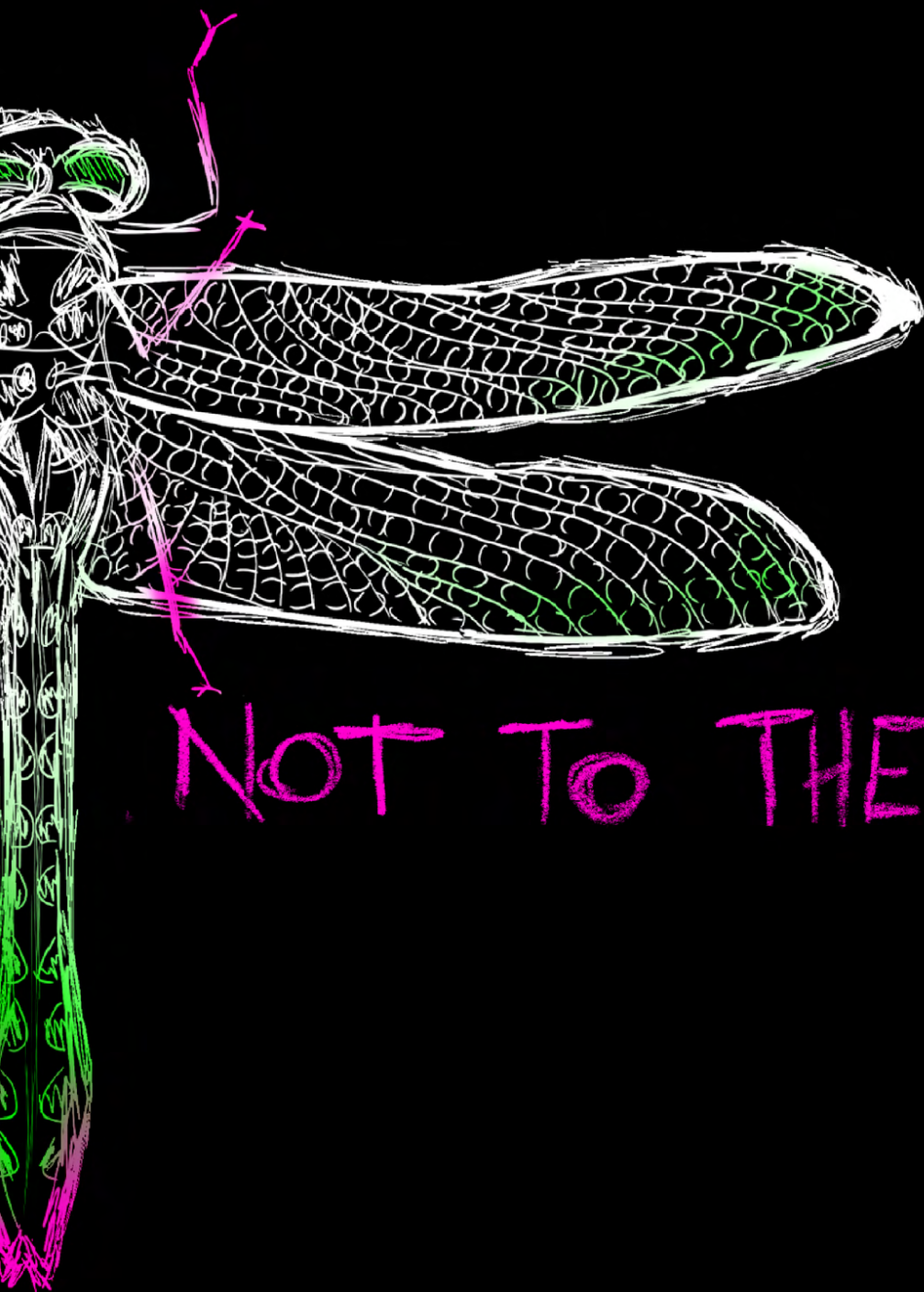
Water is life – for wild creatures, plants and people.

If the water is sick, so are we.





INVISIBLE TO US



Known colloquially as “forever chemicals” for their persistence in the environment, per- and polyfluoroalkyl substances (PFAS) form a vast group of over 10,000 industrial compounds that have been a staple in consumer products since the 1950s.¹ Their durability comes from an incredibly strong carbon-fluorine bond (C-F), making PFAS resistant to water, grease, and stains—a property that has made them remarkably useful in products ranging from nonstick pans to clothing to pesticides.

While this resilience has proven useful, it comes with a significant downside: PFAS are nonbiodegradable, with some taking up to 1,000 years to break down. Their widespread use, therefore, is contributing to an ever-growing chemical pollution crisis, with troubling implications for global ecosystems—particularly marine life. In the UK, this is an especially pressing issue, as marine biodiversity is vital to both our well-being and economic stability.

PFAS can find its way into our oceans in many ways, but the primary input is considered to be through rivers. Once there, these chemicals don’t just remain in the water; they rapidly accumulate in marine organisms. Seaweed often acts as a reservoir for PFAS, absorbing far higher concentrations than the surrounding water. This sets off a chain reaction in marine food webs, as species feeding on contaminated seaweed spread the chemicals across trophic levels, through the processes of bioaccumulation and biomagnification, causing far-reaching adverse effects on marine life.²

Marine biodiversity is crucial to the UK, with the Office for National Statistics valuing the UK’s marine natural capital assets at £211bn³. The ocean provides vital services in the form of jobs, food provision, raw materials, to name a few, with the UK home to the widest range of sea life of any European coastal nation.



With this in mind, imagine a future where the use of PFAS is left unchecked.

Its contamination creeps through the waves, an invisible poison, building up in the bodies of harbour porpoises, increasing their vulnerability to infection by 41%⁵. The boards advertising orca spotting trips have been removed: not a single calf has been born in the last two decades, and they are quickly heading towards a complete collapse by the end of the century⁵.



The fishing nets that once brimmed with herring and mackerel, the most caught fish species in UK waters³, now return with diminished hauls. These fish, crucial staples of the UK's marine economy, bear the chemical scars of PFAS, rendering them unsafe for consumption. Once bustling restaurants begin to lose their appeal as diners no longer trust seafood dishes. The fish markets fall silent. Dwindling tourist interest leaves behind ghostly piers and shuttered storefronts.

And on a global level?

The Earth has been proven to be a blue planet: a fact immortalised in the Earthrise photo taken by William Anders 1968 from space, celebrated in the iconic documentary "Blue Planet" narrated by David Attenborough.



The ocean covers 70% of the planet's surface, holding 97% of all water and 80% of the world's biodiversity⁶. Healthy oceans support not only the marine species that live in them but also provide essential services like nutrient cycling, which is vital for life on land. They offer spaces for recreation and tourism, improving mental and physical wellbeing.

In short, the ocean is critical to life on Earth as we know it. But PFAS are not just a local issue; their mobility in water makes them a global threat to marine ecosystems. Traces of PFAS have been found everywhere, from soil samples on Mount Everest², to the icy expanse of the Arctic Circle. So, the future, if the use of PFAS continues unchecked, appears increasingly dire. These chemicals would leave

no corner of the planet untainted, eroding biodiversity and resilience in ecosystems, marine and otherwise, worldwide. This creates a dangerous spiral: as biodiversity declines, ecosystems become less resilient, leaving them more vulnerable to further damage, causing further biodiversity decline.

Even if sources of PFAS to the environment are immediately halted, environmental concentrations will decline very slowly. The long history of use of some PFAS means that there is a legacy of environmental contamination that is challenging to remediate. But by stopping their usage where it is unnecessary, and working to create alternatives to PFAS for where there seems to be none, we can prevent future harm and work towards restoring the systems most severely impacted.

The story of PFAS is one of innovation turned environmental catastrophe — yet another example of dangers of industrial progress without regard to nature. These “forever chemicals,” threaten to rewrite the narrative of Earth’s marine ecosystems, and we cannot let that happen. Protecting our oceans—the lifeblood of the planet— is not just an act of conservation but an act of survival. Their health is inextricably linked to ours, and the time to act is now, before the blue planet turns irreparably grey.





The frog had fallen poorly,
poisoned by the contaminants of
industrial waste.

soon just like his family,
his life would be erased.



The sun rose over the dark, murky water,
and the sky filled with hues of red.

Kingfisher, at the top of the food chain, starved,
as all the fish were dead.




A River Memory...

It was only our fourth date. We cycled from work to the river. We sat on the riverbank giggling at ducks picking blackberries.

We stepped into the water with our trousers rolled up and stood sharing stories about possible otter sightings while birds swoop around us. We weren't the only ones, people around us swimming, canoeing full of sounds of splashing and laughter. As the sun went down, the river glistened with golden light. We left for home pushing our bikes, bats foraged above our heads. I fell in love with my partner that summer and I fell in love with my river too.

As time went on the river feels less alive. The waters are murky now. There doesn't seem to be as many people there now, or wildlife either. No one wants to go too close to the water.



But I finally did spot that otter. That otter makes me feel hopeful.

...

This is where my story used to end. Then I read...

Otters among UK
wildlife carrying
toxic 'forever
chemicals',
analysis shows

Even if the murky waters run clear again, what invisible threat will run through. What will be of my river. What will be of my otter. My otter that was my hope.



- **Stop PFAS emissions at source by committing to match** EU action on PFAS – including its proposed universal restriction on the use and manufacture of all PFAS – in the revised Environmental Improvement Plan published later this year. This should involve:
- **Catching up** with EU PFAS protections introduced since the UK left the EU's regulatory system
- **Taking action now ahead of the EU's universal restriction**, with immediate bans on consumer uses and national action for limiting and cleaning up PFAS pollution e.g. as other European countries have done, such as Denmark and France.



UK 4N

Collated & partially
illustrated
by
Rart & Merlorelli