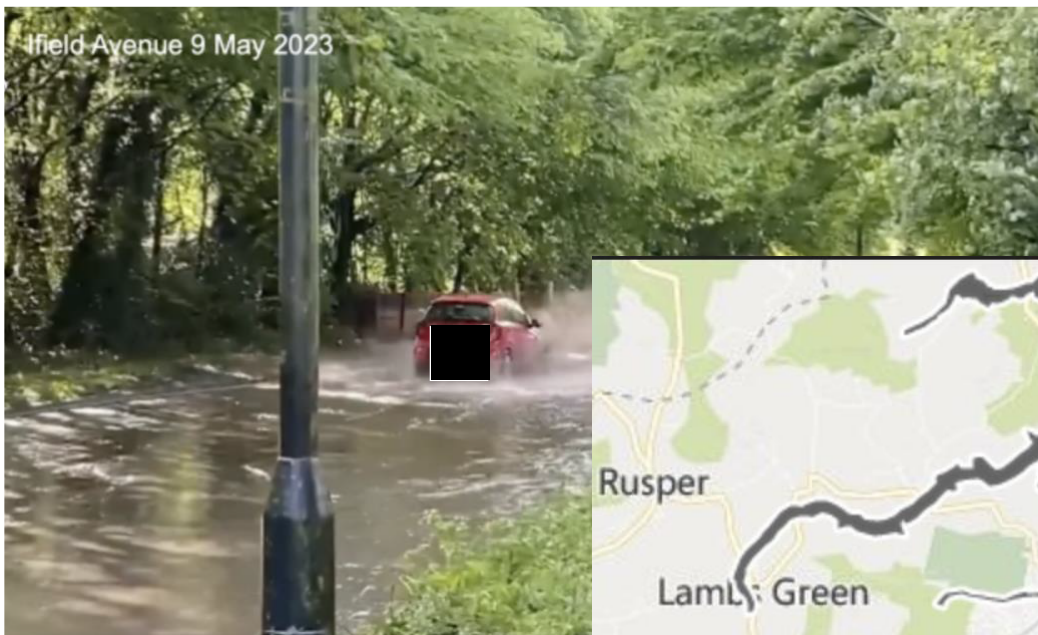




**Extreme rainfall events could be four times as frequent by 2080 compared to 1980s; but why would this impact Sussex Gatwick Airport's plans for a new runway?**



**Will waste pollute the waterways or just cause more localised flooding?**

***There is real possibility of unintended synchronisation of Gatwick Stream and Upper Mole flood peaks unless there is thorough hydrological modelling of the impacts of intended new attenuation at Museum Field and changes at runway culvert and downstream where changes are required to realign section on the lag times for each river downstream.***

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## **Introduction**

**Gatwick Airport with many aspects of its operation is consistent in seeking to move responsibility to outside their remit with the ramifications of the airport falling to neighbouring residential areas and local authorities. We see this again with water and sewage issues.**

- A new runway (and taxiways) at Sussex Gatwick Airport will add to the increasing issues with flooding and sewage-overflow into the waterways that surround (and run through) Gatwick Airport.
- Crawley's sewage treatment plant has concerns with any increase in volume of wastewater from runways, usage of toilets by passenger and workers, plus new offices, hotels, NHS hospital, warehousing, and subsidiary support businesses. This could see an increase in storm overflows and failing efforts to restrict storm water and sewage entering surrounding areas, as well as entering the River Mole.
- Prolonged construction during this expansion could present an increase in pollution of waterways close to and further afield.
- Such flooding impacts water neutrality and reduces water for nature. <sup>i</sup>
- We see no evidence that reed beds can aspirate the impact of flooding in fact these could lead to areas of demise aiding flooding with waterlogged rubbish depressions. Without full assessment of volume of water and waste the areas it is unrealistic to move forward.

## **Reasoning -**

### **1. Run-off, spillages, and potential flooding – for many years**

Construction run-off, spillages, and potential flooding are highly likely, as construction of a new runway and associated road, hotels, car parks, offices, new taxiways, waste sorting depo (CARE), piers, etc. is to take 14 years, not days.

The programme will prolong the potential impacts of habitat loss and increased rainfall. It is not clear if the limited areas identified for environmental mitigation and

enhancement will adequately compensate for the significant loss of habitat or flooding leading to construction materials from entering the water system.

It would seem the DCO makes no provision for securing waste from the site in any management plans, which is suggested in the Construction Resources and Waste Management Plan.

Even without flooding, construction uses a huge amount of water and concerns must be raised as to the water neutrality for neighbouring areas (where will the water for construction be imported from?), as well as pollution entering the waterways.

We see no evidence of water usage targets proposed as such would not comply with adopted sustainability policy ENV9 in the Local Plan which seeks to mitigate the impact of development in this area of recognised 'water stress'. There seems no commitments to ensure sufficient measures are delivered to mitigate water supply impacts.

Spillages need to be addressed to control the potential of pollution entering the waterways. To date, only the 'existing legislative regimes' are included (section 8.16 (Geology and Ground Conditions) – are any other regimes relevant or considered by Gatwick that would prevent such pollution with increased rainfall and the potential for flooding?

Construction can produce contaminated water or other polluting liquids ('trade effluent') which need to be addressed to make sure it does not cause pollution.

Urban wastewater includes water from domestic and industrial premises and urban pollution from surface water run-off. Without treatment, urban wastewater has significant adverse impacts on our water environment. This is because it:

- contains nutrients which, when in excess, can speed up the growth of certain plants, disrupting natural processes and harming wildlife.
- can be contaminated with harmful chemicals and bacteria which present risks to human health and the wider ecology of our water bodies.

Construction and demolition activities related to the Project will give rise to large volumes of waste (1.5 million m<sup>3</sup> excavation waste, and 620,000m<sup>2</sup> of concrete and asphalt), but no mention of additional sewage is mentioned with 1,400 inward migrating workers. <sup>ii</sup>

### **Conversion factors for calculation of weight to volume for use when completing Template 3**

Table 1. Conversion factors used for calculations taken from Draft 16 UK Waste Classification Scheme (previously DETR, now DEFRA)

<b>Type of waste</b>	<b>UK Waste Classification Category</b>	<b>Conversion factor (CF) (Tonnes per cubic metre)</b>
Rock and stone	21.01.01	1.2
Glass (cullet)	21.02.01	0.75
Concrete and/or mortar	21.02.03	1.3

Mixed construction and demolition	22.02.01	1.2
Plaster	22.03.01	1.0
Paper and/or card	22.04.01	0.6
Wood	22.04.07	0.7
Vegetable matter including food and bark	22.06.00	0.75
Household	22.09.01	0.27
Street sweepings and litter	22.09.05	0.2
Sewage	22.10.00	1.0
Healthcare sharps	25.01.01	0.2

Table 2. Indicative weights (Tonnes) of different types of waste in various sizes of containers (based on conversion factors CF from previously DETR now DEFRA) <sup>iii</sup>

## 2. Waste entering the waterways

Regarding waste entering the waterways, we raise the issue of the moving of the waste sorting depo (CARE) to its new location. With waste, especially food matter, comes vermin and little is addressed as to how this will impact surrounding areas or the waterways, with or without flooding.

Aquatic wildlife also requires corridors and waterways provide habitats to such land-based species as well. We question the ecological impacts in the use of piping for the River Mole and the removal of natural riverbanks and habitats they provide along the Mole and the Gatwick Stream. The addition of reedbeds would seem on the surface a positive step but history has shown that these become waterlogged depressions full of rubbish, unmanaged, and aid flooding.

## 3. Drainage Provision using nature

Clarity is required to understand the impacts of the drainage design, runoff from the runways, new highway, car parks, offices, hotels, etc, in detailing engineering solutions on the ecology of the River Mole, including flow rates, deposition of sediment, and flood overspill. (Flood Resilience Statement will be secured, paragraph 5.5.8 and Table 5.2).

Gatwick must be questioned about the timing of the River Mole works (work no 39) and for car park Y about how the narrow flow of water will be accommodated with culverts and narrower tubulation, with the ever-increasing volume to be accommodated with increases in rainfall and waterflow off new buildings, new highways, and new runway.

In the Environment Agency guidance (Flood risk assessment: climate change allowances (2022)), the drainage system should be designed for the 1% AEP event plus a 40% allowance for climate change, if the lifetime of the development is 2100 or beyond.

The drainage strategy proposals to use underground attenuation features and pump stations is of a concern with this application, during both construction and operation of the new runway, as it would seem catchment cannot be drained via nature; this must raise the risk of flooding if not the airport surrounding areas.

As Gatwick Airport is based in West Sussex we raise the following –

The West Sussex Lead Local Flood Authority (LLFA) Policy for the Management of Surface Water and the West Sussex Culvert Policy are not mentioned in the Flood Risk Assessment (FRA) (APP-147).

- Surface water drainage – Gatwick should demonstrate that this model has used the most up-to-date FEH2022 rainfall data.
- The surface water drainage must include an allowance for climate change within the pre-development baseline and post-development.
- The use of infiltration to ground - paragraph 056 of the Planning Practice Guidance: Flood Risk and Coastal Change, the drainage hierarchy must be followed with infiltration to ground considered before other drainage options.

### **Reedbeds (removal of the MBBU)**

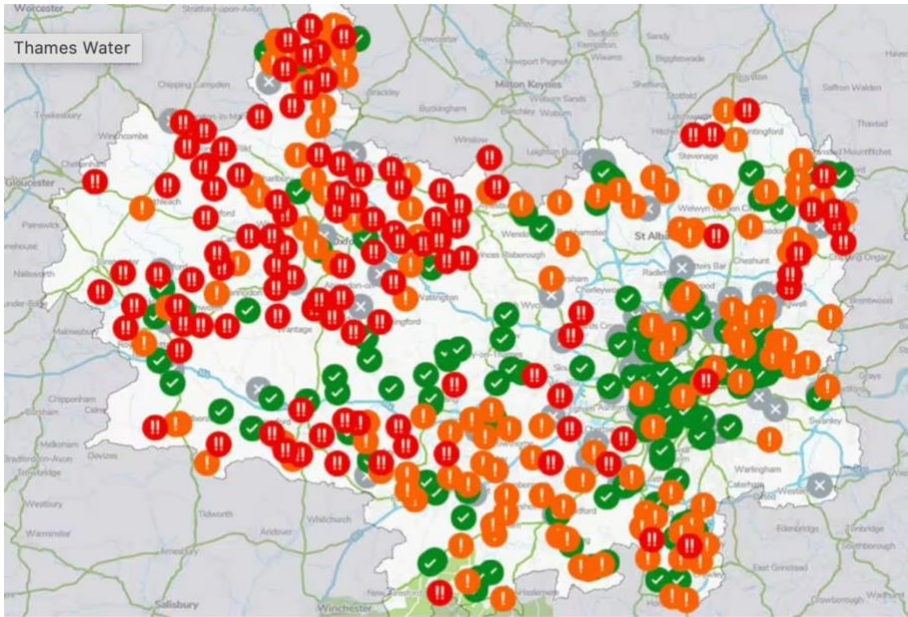
The removal of the MBBU is seen purely as a cost saving activity by the airport.

CAGNE can find no evidence that reedbeds can actually assist with flooding. In fact, we believe they will assist in the demise of areas with little and unmaintained flooded areas as detailed below-

Reedbeds are wetlands dominated by stands of one plant, the Common reed (*Phragmites australis*). The majority are freshwater, but reedbeds are also found in brackish and tidal waters. Common reed is an active coloniser of wet ground or open water and reedbeds form a transition stage in the eventual succession to woodland. In tidal areas or sites which are subject to regular freshwater flooding, a reedbed may persist in a relatively stable state unless there is heavy siltation. Elsewhere, the accumulation of dead vegetation and litter will result in the gradual drying of the bed or waterlogged depression aspirating flooding further.

### **4. Increased rainfall with climate change**

Global warming cannot be ignored when it comes to the new levels of rainfall being experienced by those who live in the southeast, close to Gatwick Airport. This most recently (January 2024) with sewage overflowing from the storm tanks at Horley sewage treatment works on to public footpath at Westvale park. The same incident happened in November 2023. Although Gatwick cannot directly be held accountable, we question again the DCO for the lack of detail to the 14,000 new workers, plus construction workers, and associated businesses such as new hotels, offices, car parks, warehousing, that will place undue pressure on a sewage system that is not fit for purpose now.



Thames Water map of sewerage spillages January 2024. Gatwick is surrounded by four red zones and all others are amber.

Thames Water's interactive map (Image: Thames Water)

The warmer average global temperatures that we are already seeing will inevitably cause the water cycle to speed up due to a high rate of evaporation, say scientists <sup>iv</sup>.

More water vapour in the atmosphere will lead to more precipitation. **Globally, the average could increase by 7% for each degree of warming, meaning we are looking at a future with much more rain, with a consequent higher risk of flooding.**

Melting polar ice may also lead to ocean changes. Summer in the Arctic Ocean is likely to be ice-free by the end of the century, witnessing melting glaciers and ice sheets, increasing ocean volume resulting in rising sea levels.

Ocean water is also warming, absorbing the excessive heat and carbon dioxide from the atmosphere. Long term, this will see warmer oceans causing intensification of storms.

It should be noted that faster overall evaporation rates result in more water vapours in the atmosphere creating more clouds, affecting not only rain fall but also aircraft in flight.

### **Modelling:**

For the first time, a high resolution model that captures the detail of convective, or extreme, rainfall events have provided 100 years of data, spanning the past, present and future continuously, to analyse the future risk of rainfall with the intensity that can cause flash flooding.

A version of the Met Office Unified Model, the same that is used for the operational UK weather forecast, has been run 12 times at a resolution of 2.2km (known as k-scale modelling) to give an ensemble of 100-year climate projections. <sup>v</sup>

## 5. Historic flooding

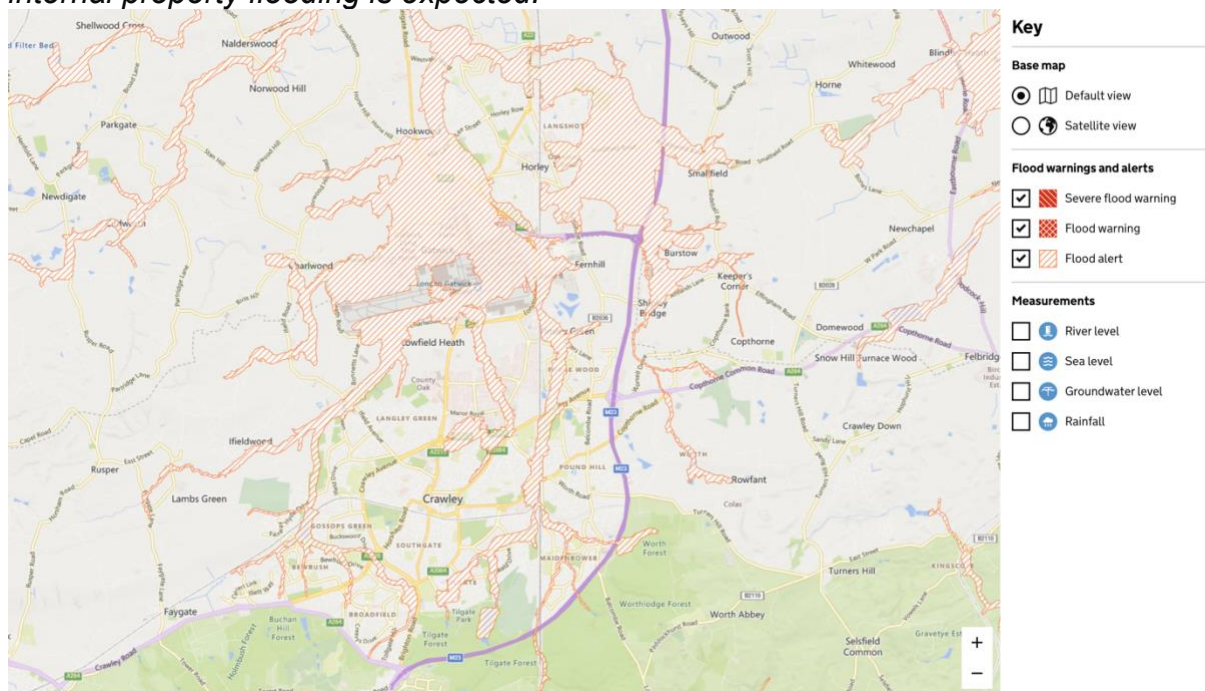
In October 2021, a Flood Alert was issued for The Upper River Mole, Ifield Brook, Gatwick Stream and Burstow Stream. Areas such as Horley, Hookwood, Smallfield, Charlwood and Burstow were covered under this alert.

Flooding is also likely in multiple areas along rivers in the area, particularly around Horley, as well as further west in Guildford and Cranleigh. <sup>vi</sup>

According to the Environment Agency, any low-lying areas near rivers could be affected. Smaller watercourses will respond more quickly to heavy rainfall, leading sewage to the River Arun.

### More recently, on 5 November 2023: **Flood alert for Upper River Mole, Ifield Brook, Gatwick Stream and Burstow Stream**

*'River levels remain high as a result of the rainfall yesterday. The river level on the River Mole has now peaked, however, flooding of roads and low lying land along the River Mole particularly around Horley will continue later today. Flooding of roads and low lying land is possible throughout today, Sunday 05/11/2023. We expect flooding to affect low lying land and roads along the River Mole particularly in Horley. No internal property flooding is expected.'* <sup>vii</sup>



The above map, taken from the flood alert site, clearly shows Gatwick Airport runways and the extent and proximity of the flooding now. Little will reduce this with flooding with a new runway, new taxiways, new hotels, car parks, highway, de-icing, etc.

## 6. Facts about the waterways in and around Gatwick Airport

The River Mole is a modest lowland river in southeast England, that rises near Rusper in West Sussex in the wooded hilly heartland of the Surrey / Sussex Weald, near Crawley – Ifield Brook which drains Ifield Mill Pond - and Horsham.

The Mole and its tributaries flow broadly north, through Crawley, around and under Gatwick Airport (as it has been diverted several times to allow for airport expansion), before meandering through mostly rural countryside to Dorking.

The River Mole is a tributary of the River Thames and flows northwest through Surrey to the Thames at Hampton Court Palace.

The first monitoring station on the Mole is south of Gatwick Airport. The Mole runs under the airport runway in a culvert completed in 1985<sup>viii</sup>. The course of the Mole within the airport perimeter has been altered several times since commercial flights began in 1945; the stretch immediately north of the runway was reinstated in 1999.

The Mole enters south of Horley, Surrey, where it meets the Gatwick Stream. This stream rises in Worth Forest below Clays Lake, West Sussex, flowing north through Tilgate Forest and Maidenbower, Three Bridges, and Tinsley Green – all residential areas and one parkland.

Most of the water in the river is from surface drainage, particularly from Gatwick Airport and the urban areas of Horley and Crawley, and the flow rate responds rapidly to rainfall.<sup>ix</sup>

Much of the water comes from Crawley every day, a densely populated area with Horley gauging station being the main monitor of flow. (2020 - The mean flow measured at Horley gauging station (52 m [171 ft] above OD) is 1.40 m<sup>3</sup>/s (49 cu ft/s).<sup>x</sup>

The River Mole has the most diverse fish population of any river in England<sup>xi</sup>. The **Gatwick Stream** is dominated by coarse fish such as brown trout, brook lamprey, and eel. In 2003, the upper River Mole near Meath Green Lane, Horley, was enhanced to create a gravel spawning area.

## 7. Increased sewage requirements

The second-largest Sewage Treatment Works (STW) in the Mole catchment is located on the Gatwick Stream upstream of the confluence with the Mole.

In 2020 Crawley STW discharged 15,000 m<sup>3</sup> (530,000 cu ft) of water per day, but with a new runway comes increased demand for housing which will mean greater sewage discharge, as well as waterflow through increased rain and runoff.

On the 20<sup>th</sup> September 2023 it was reported in the media that – *“More than 42 hours of storm overflow that “could be sewage” has been released into the River Mole north of Gatwick Airport according to data on a Thames Water map. It follows weather warnings (2023) and wet and stormy conditions across Surrey in the past week.”*<sup>xii</sup>

A spokesperson for Thames Water commented: *“Taking action to improve the health of rivers is a key focus for us and we want to lead the way with our transparent approach to data.”* They added: *“Of course, what matters most is stopping the need for the discharges and we have published plans to upgrade over 250 of our sewage treatment works and sewers, including an upgrade to Horley.”*

This is not factual as yet as such we have to work on current evidence to sewage that can be accommodated.

Rainfall is known to have an immediate impact on sewer systems and waterways, as well as a longer-term one, as water makes its way through land in a catchment. In



addition to the Horley site, there have been a further 16 hours of storm discharge into the River Mole, according to the same data. This is as well as more than 18 hours reported along the River Wey. <sup>xiii</sup>

2023: ***Thérèse Coffey accused of ‘throwing in the towel’ over sewage scandal***

Environment Secretary Therese Coffey said there was "no way we can stop pollution overnight", given the major changes needed to the water system.

2023: ***Thames Water has been fined £3.3m after it discharged millions of litres of undiluted sewage into two rivers, killing more than 1,400 fish.*** <sup>xiv</sup>

A court heard that there was a "significant and lengthy" release of sewage from treatment works near Gatwick Airport in October 2017 into the Gatwick Stream in Sussex and River Mole in Surrey.

2021: ***Southern Water fined record £90m for dumping raw sewage.*** <sup>xv</sup>

That fine followed nearly 7,000 incidents across Hampshire, Kent and Sussex between 2010 and 2015, in a case brought by the Environment Agency.

2012: ***Two flood warnings are in place for the River Mole in Surrey with further heavy rain predicted across the South East.*** <sup>xvi</sup>

Residents along the river at Hookwood and Charlwood, and also at Sidlow, Leigh and Betchworth were advised to contact the Environment Agency Floodline for more information.

Mole Valley council said river levels had already risen significantly following prolonged rainfall overnight.

### Legal spill

Water companies are allowed to spill untreated wastewater under certain conditions, such as heavy or prolonged rainfall.



Source: Getty



## 8. More toilets

How many new toilets are Gatwick Airport planning with a new runway? And how many more will be installed to deal with the subsequent inward migration of workers? Plus, for construction workers and subsequent facilities such as car parks, hotels, offices, warehousing, etc.

Waste from toilets: a waste tank of 225 litres can accommodate 100 people for 8 hours of usage. We therefore do not believe there are sufficient waste facilities for the construction, number of passengers and workers envisaged by Gatwick.

## Government guidance offers -

The following tables show the minimum number of toilets and washbasins that are required -

*Number of toilets and washbasins for mixed use (or women only) <sup>xvii</sup>*

Number of people at work	Number of toilets	Number of washbasins
1-5	1	1
6-25	2	2
26-50	3	3
51-75	4	4
76-100	5	5

The Urban Waste Water Treatment (England and Wales) Regulations 1994 aim to protect the environment from the adverse effects of untreated urban wastewater. The main requirements of the regulations are:

- the establishment of systems to collect wastewater from urban 'agglomerations' (towns and cities)
- the secondary treatment of collected wastewater
- the identification of sensitive areas (for example, areas susceptible to eutrophication)
- more stringent treatment of wastewater discharged to sensitive areas.

The regulations implement the European Union Urban Waste Water Treatment Directive (91/271/EEC). This fulfils the requirement under section 12A(1) of the regulations to regularly publish a situation report on the treatment of urban wastewater and disposal of sludge in England. <sup>xviii</sup>

## 9. Gatwick Airport should pay for a new sewage station

Gatwick Airport should be paying for a new sewage station to deal with the increase in passengers and workers at the airport and surrounding areas. A forced inward migration of workers (approx. 30k by Gatwick figures) will be inevitable if this new runway is permitted, with housing being sought in far reaching areas.

Industry body Water UK has announced plans to almost double spending to pay for upgrades and cut sewage discharges, but why is Gatwick not including a new sewage system to accommodate a vast increase in waste? <sup>xix</sup>

## 10. Water supply issues

A vast increase in water will be required for an expanded airport with associated hotels, businesses and housing, but there is doubt as to whether the supply will be sufficient or reliable. The number of toilets and washbasins required in the airport and other places of work are listed above.

The increased demand for housing in areas around the airport will also require water. The average water usage for a standard household in the UK is about 164m<sup>3</sup> per year, which depends heavily on the number of people in the household. <sup>xx</sup>

People living at home	Average annual water usage in m <sup>3</sup>	Litres per day
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1	54	149
2	101	276
3	134	367
4	164	450
5	191	523
6	216	592
7	239	655

However, South East Water is already experiencing problems with supplying its existing customers.

June 2023: **Regulator Ofwat investigates South East Water** <sup>xxi</sup>

Ofwat said it has launched an investigation into South East Water over whether the company “*has failed to develop and maintain an efficient water supply system*”.

South East Water is the worst performer for supply interruptions in the country and has been named on a watchlist of at-risk companies with the least “financial resilience” in the privatised sector. The company is also separately under investigation by the Drinking Water Inspectorate.

Last year, South East Water lost £74 million.

## 11. Water Neutrality in West Sussex

Water Neutrality affects a large part of the County of West Sussex. All of Horsham, most of Crawley, part of Chichester and a small part of Mid Sussex, along with part of the South Downs National Park, fall within the Southern Water Sussex North Water Resource Zone. Water supply is sourced from abstraction points in the Arun Valley, which includes biodiversity sites such as the Amberley Wild Brooks Site of Special Scientific Interest (SSSI), Pulborough Brooks SSSI and Arun Valley Special Protection Area/Special Area of Conservation and Ramsar site (the Arun Valley Sites).

Natural England advised that the existing abstraction within the Sussex North Water Supply Zone is almost certainly having an impact on the Arun Valley sites and consequently that developments within this zone must not add to any impact. A position statement was issued by Natural England in late 2021 and since then the Local Planning Authorities have worked on the basis that new development can only go ahead if it will not add to the current level of water abstraction.

A newsletter will be published going forward for interested parties to stay up-to-date with the latest news, progress updates, and engagement activities for the Sussex North Offsetting Water Scheme (SNOWS), the short-term strategic solution developed by Crawley Borough Council, Horsham District Council, Mid Sussex District Council, Chichester District Council, South Downs National Park Authority, and West Sussex County Council, to address water neutrality impacts on the local planning system, before a longer-term solution is delivered by Southern Water.

The first newsletter will be published in November 2023. It will introduce the Water Neutrality Project Manager employed on behalf of the above-mentioned Local Planning Authorities, to plan, implement, and deliver SNOWS; provide general

updates on water neutrality; details of external consultations or documents; SNOWS project news current and future project activities and forthcoming engagement; as well as development management and local plan updates.

For further information please see the water neutrality section of the County Council's website <sup>xxii</sup> or contact Caroline West, Planning Policy and Infrastructure Team Manager on 033 022 25 225.

## 12. Pollution in ponds around airports

Research has shown how ponds and other bodies of water around an airport can absorb the air pollution caused by the airport's operation. <sup>xxiii</sup>

A pond was tested which is close to the runway of Liverpool's John Lennon airport. Passenger numbers at this airport have increased nearly tenfold since the 1990s and the impact can be seen in the lake mud. "*A distinct change was measured in the magnetic properties of particles found in the sediment since 1995, which now match the types of particles produced from aircraft engines*".

It is highly likely that similar effects could be found around Gatwick and it is inevitable that this pollution would affect the ecosystem in and around any nearby pond or lake.

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i [REDACTED]

ii <https://www.hse.gov.uk/simple-health-safety/workplace-facilities/health-safety.htm>

iii [REDACTED]

iv [REDACTED]

v <https://www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2023/new-research-shows-increasing-frequency-of-extreme-rainfall-events>

vi [REDACTED]

vii <https://check-for-flooding.service.gov.uk/target-area/064WAF32UpprMole>

viii [REDACTED]

ix [https://webarchive.nationalarchives.gov.uk/ukgwa/20060802172124/http://www.environment-agency.gov.uk/commondata/acrobat/mole\\_condoc\\_pt1\\_1284016.pdf](https://webarchive.nationalarchives.gov.uk/ukgwa/20060802172124/http://www.environment-agency.gov.uk/commondata/acrobat/mole_condoc_pt1_1284016.pdf)

x Marsh, T; Hannaford, J, eds. (2008). *UK Hydrographic Register* (PDF). Hydrological data UK series. Wallingford, Oxfordshire: Centre for Ecology & Hydrology. ISBN 978-0-9557672-2-7. Archived (PDF) from the original on 5 October 2013. Retrieved 9 September 2020.

xi [https://webarchive.nationalarchives.gov.uk/ukgwa/20140328111502/http://www.environment-agency.gov.uk/static/documents/Leisure/fisheries\\_eng\\_765655.pdf](https://webarchive.nationalarchives.gov.uk/ukgwa/20140328111502/http://www.environment-agency.gov.uk/static/documents/Leisure/fisheries_eng_765655.pdf)

xii [REDACTED]

xiii [REDACTED]

xiv [REDACTED]

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xv [REDACTED]

[REDACTED]

xvii <https://www.hse.gov.uk/simple-health-safety/workplace-facilities/health-safety.htm>

xviii <https://www.gov.uk/government/publications/wastewater-treatment-in-england/wastewater-treatment-in-england-data-for-2020>

xix [REDACTED]

[REDACTED]

[REDACTED]

xxii <https://www.westsussex.gov.uk/planning/water-neutrality/>

xxii [REDACTED]

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