

Drinking water 2020

Quarter I

January - March 2020

A report by the Chief Inspector of Drinking Water



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Drinking water 2020
Public water supplies for
England and Wales

Quarter 1
January – March 2020

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Foreword

Drinking Water 2020 is the publication of the Chief Inspector of Drinking Water for England and Wales. This first report of 2020 covers public water supplies and is intended to provide learning as soon as available and prior to the final 2020 report.

This year has been exceptional for the water industry and the country as a whole with the emergence of CoViD-19. The provision of wholesome drinking water to the household has never been more important than during this crisis. The majority of the population has remained at home and relied upon the continuing supply of water. Whilst it was clear to all that the provision of food was critical and food retailers were experiencing significant and visible demands to all, the water industry demands were less visible, but water remained flowing. The water industry should be commended on maintaining supply in a professional and largely an unrecognised way.

This report highlights some of the challenges from a regulatory perspective as companies began to report increasing difficulties in gaining entry to properties for sampling purposes. In response to this IL1/2020 was issued on 6 March setting out guidance on drinking water supply operations in response to CoViD-19. On the 11 March CoViD-19 was declared a pandemic by the WHO and by the 23 March the Prime Minister announced “lockdown”. On 27 March IL 2/2020 was issued to provide guidance on drinking water quality legal instruments during the crisis because of the potential for capital schemes to be delayed, with many contractor’s employees being furloughed.

The effect on sampling was the most notable. Most companies whilst initially withdrawing from consumers’ tap sampling in March quickly re-established this as fixed-point sampling or a combination of zonal and sampling at upstream assets in the following months. Further information on this response will be shared in subsequent quarterly reports. Companies should be commended in this reactive and then pro-active response to rapidly changing conditions.

Early outcomes reported in this quarter include some of the effects on compliance failures. Most notable was a failure on an industrial estate where usage was reduced with a consequent accumulation of iron corrosion products in the supply main which resulted in discoloured supplies. However, the company acted positively by running a flushing programme and taking advantage of the reduced usage to line the main. There is also the first example of a company who chose not to carry out a fitting’s inspection following a taste failure. Finally, in this quarter, some delays on Legal Instruments are described to put into context the wider impacts.

However, regulation has carried on as normal and this report provides information in relation to events, compliance and audits for learning as well as an expansion on the innovative regulatory strategy of recommendations.

Water quality compliance monitoring

In the first quarter of 2020, companies reported a total of 165 compliance breaches which required the Inspectorate's assessment and a further 75 samples where the fluoride concentration did not meet the specification required by Public Health England in fluoridated water supply zones. This represents a decrease of 99 compliance breaches on the same period last year and is largely due to a decrease of gross alpha results above the trigger value; fewer coliform detections particularly at consumers taps; and a reduction in failures for the distribution metals (iron, manganese and aluminium).

Inspectors made 15 recommendations from compliance assessments and most of these related to deficiencies in risk assessment and related to inadequate investigations.

The restrictions related to the CoViD-19 pandemic had relatively little impact on the collection and analysis of samples for the first quarter of 2020, though the number of test results reported for zones in March 2020 was down to 78% of the March 2019 value. DWI issued several Information letters on various aspect relating to CoViD-19 including 1/2020 and 4/ 2020 which both included advice on sampling.

Water quality at treatment works

Microbiological failures at treatment works

Table 1: Q1 2020 – Microbiological tests

Parameter	Total Number of tests	Number of tests not meeting the standard
Water leaving water treatment works		
<i>E.coli</i>	44805	0
Coliform bacteria	44805	7

Whilst there were no *E.coli* failures at treatment works in quarter one, there were seven coliform breaches (SRN 3, TMS 2, SEW 2). Three of the coliform failures at works were covered by legal improvement notices and for a further two (both SEW) Inspectors judged that the company failed to determine a cause despite a satisfactory investigation. Failures at Southern

Water's Falmer works and Horsebridge works lead to recommendations being made.

At Horsebridge works the company identified flooded chambers containing contaminated water including the chamber housing the sample line. Whilst the company had implemented a short-term mitigation, the Inspectorate recommended that the company confirms the implementation of a level sensing pump (or alternative suitable automated method) with dates of completion as soon as possible as a more robust solution.

At Falmer works, the company investigation identified several start-up/shutdown protocol breaches and suggested further investigation into the failure of triple validation timers should be undertaken. The Inspectorate recommended the company confirms that it intends to complete this investigation into the failures of the triple validation timers as advised in the internal report.

Turbidity failures at treatment works

There were six exceedances of the specification for turbidity at treatment works in the first quarter of 2020 (ANH, SEW, SRN, SVT TMS and YKS). At Thames Water's Dartford works the online turbidity monitor was supplied via a connection to the treated water sample line. In line with guidance and good practice, the company installed a new dedicated statutory sample line to overcome the problem. At South East Waters Rathfinny Works deficiencies were identified with the sampling line in the position of the tapping and the size of the sampling pump. The location and design of a sample tap arrangement is a critical consideration for effective monitoring control. Companies are advised to ensure the integrity of sampling is protected by a simple assessment before the commission of any fixtures or fittings on a drinking water site.

Two of these failures were covered by legal notices and a further two were deemed by Inspectors to be unlikely to recur. One was considered trivial and following a satisfactory investigation a cause for the final one was not found.

Water quality at service reservoirs and in distribution

There were no *E.coli* failures at service reservoirs in quarter one of 2020, however, there were 13 coliform detections (SWB 3, NES 3, TMS 2, UUT 2, WSX 2, and SEW 1). In 10 of the failure's, companies carried out rapid internal inspections of which four of these were subsequently identified with ingress. Two of these (SWB), were following heavy rain. In the case of the failure at Lawn Barn Service Reservoir (WSX) in March a large crack transgressing the wall of the inlet chamber was found. In two cases the

company (UUT), considered both their failures were associated with the condition, design or location of the compliance sample tap. Both these failures occurred in January and the company scheduled an internal reservoir inspection for March/April. Again, deficiencies in sample tap arrangements should be identified in a risk assessment before commissioning. The failure at Saltdown No1 Reservoir (SEW), in January did not identify any cause and the company scheduled an inspection for April. For these three failures the companies decided to wait for three months to carry out an inspection. The prioritisation and resource arrangements should be balanced by risk. Any failure before inspection and as a result of the asset is unmitigated. In all 13 failures, subsequent sampling by the companies were all clear.

It was the assessing Inspectors opinion that satisfactory investigations had found no cause for six of these breaches, a further five were considered unlikely to recur following actions taken by the company and the remaining two were covered by legal notices.

Table 2: Q1 2020 – Microbiological tests

Parameter	Total Number of tests	Number of tests not meeting the standard
Water leaving service reservoirs		
<i>E.coli</i>	50909	0
Coliform bacteria	50909	13

Water quality at consumers' taps

E.coli

In the first quarter, there were four *E.coli* detections at consumers' taps (AFW 2, NES 1 and TMS 1). For two of these the Inspectorate was satisfied that companies had taken sufficient action to investigate the breaches and provide advice to consumers such that they were unlikely to recur. The third failure (NES) occurred in Sunderland and was due to the domestic distribution system. A suggestion was made for the company to investigate a possibly high chlorine residual.

In January, Thames Water detected *E.coli* at a consumer's tap in Bromley, the company decided not to issue advice to boil water because when the confirmed *E.coli* result was available, the post disinfection resamples were satisfactory. Whilst the company's report referred to discussions with Public Health England (PHE), further investigation by the Inspector found records

of any such discussion were inadequate and a recommendation was made that improved records be kept of discussions with PHE.

Enterococci

There was a single Enterococci failure on a sample taken by Northumbrian Essex and Suffolk Water from a consumer's tap in Romford. The company conducted a satisfactory investigation but was unable to determine the cause.

Lead

There were eight lead failures between January and March (TMS 3, SVT 2, SEW 1, SRN 1, and YKS 1). Two of these failures were in zones where improvement notices have already been issued and five were considered unlikely to recur.

In respect of one failure, at a care home in East Sussex, Southern Water carried out a water fittings inspection and concluded that the lead solder had been used on all end feed fittings at the premises. Lead solder is not permitted for use on drinking water systems, yet examples such as these are identified where solder intended for heating systems is used by tradesmen in contravention of the Regulations. The care home Manager was advised by the company to replace any internal plumbing fittings or solder that may contain lead replaced, using an approved plumber. It is critical that public building owners only use approved plumbers to avoid such risks particularly where there are vulnerable populations. Since this is a public building the Inspectorate must ensure the company exercises its power under section 75 of the Water Industry Act to secure improvement. The company has confirmed that remedial work to remove the lead solder has been completed.

In all cases the companies, (TMS, SVT, SEW, SRN, YKS), identified involvement of lead piping in all the failures. A summary of the investigations was provided to the consumers advising them to replace any internal pipework. The companies in all cases replaced their lead communications pipe which extends as far as the property curtilage. In one failure (SVT), the consumer was confirmed to have replaced their own pipework and in another (SVT) the company inspection revealed that the lead on the consumer side was a result of lead solder on copper pipe - a further example of the use of unapproved lead solder on a drinking water system. The use of such solder is clearly not uncommon, and it is probable that the only way to prevent this recurrence is to ensure plumbers are approved (with evidence of training) and/or the removal of lead solder from the market. Nevertheless, it also remains that in all but the one example, consumers did not replace their own pipework. This is not uncommon and supply pipe ownership will continue to present a barrier in remediating lead.

Taste and Odour

During the quarter there were eight taste failures (NES 2, SRN 2, YKS 2, SVT 1 and UUT1), and eight odour failures (SVT 1, ANH 2, SEW 1, DWR 1, and NES 3).

The taste and odour failures in Severn Trent's Coalville zone were identified as being caused by alkathene piping which creates a pencil type taste. The two odour failures in the Raydon/Alton and the Hartlepool zone both in February (ANH), resulted in fittings inspections. In one case the company identified dead legs in the plumbing and water heaters on the hot taps. This site was a commercial tyre shop. Plumbing risks such as stagnation could lead to microbial proliferation including *Legionella* spp. In the second inspection the company identified a lead communication pipe which the company replaced. In Welsh Waters Bontgoch zone the failure in January was found to have both alkathene piping and dead legs during the fitting's inspection. In both taste failures in Southern Water and one of the taste failures in Northumbrian, Essex and Suffolk Water, inspections identified softening devices leading to bitter tastes.

In all cases, with the exception of the failure in United Utilities, where the company stated they did not carry out an inspection due to CoViD-19, companies carried out fitting's inspections. In all but one of the cases where fittings inspections were carried out, either definitive proof of a domestic system problem was identified; some other infringement was identified which required remediation; or the company was able to exclude company supply problems. There was one failure in the Dales zone of Yorkshire Water which was described as 'earthy' which is often associated with Geosmin and/or MIB from algae in the catchment.

The outcome to consumers, from fittings inspections, is to mitigate public health risks which would not otherwise have been identified. This highlights the overriding benefit of such inspections.

Iron

Of the 19 iron failures (SVT 4, NES 4, ANH 3, UUT 3, DWR 1, SES1, SWB 1 WSX 1, YKS 1) nine were considered to be either trivial, unlikely to recur or there were legal instruments in place to address the risk of recurrence. A further two the assessing Inspector considered a satisfactory investigation had been conducted and no cause could be found. One failure resulted in a suggestion and four resulted in recommendations (UUT 3, YKS 1).

In January Severn Trent identified a short-lived drop in pressure and increased flows in Quinton zone shortly before the sample for iron was taken. This zone has a history of illegal hydrant use and the company have responded by fitting locking caps to protect the public supply network. Illegal hydrant use has been reported previously in the Chief Inspectors Report as a risk to water quality, since not only does this use increase the velocity of the water and re-suspend sediment, it also risks introducing microbial

contaminants from ill-fitting, unclean and unapproved hydrant standpipes. The company has taken several well publicised prosecutions against illegal use. The dual strategy of locking caps and enforcement is to be commended to protect consumers.

In Zone 16 Fulwood, Wessex Water recorded an iron failure in late March. As part of the investigation the company collected resamples from which the company recorded a further eight failures. The location of the original sample was from an industrial estate and this failure represents some of the first evidenced outcomes from a significant reduction in water usage in industrial areas, as workers were either furloughed or began to work from home in response to CoViD-19. The combination of an iron main with reduced flow has resulted in metal corrosion leaching into the water. The company approached the issue with the dual response of flushing to promote water movement and opportunistic relining whilst consumer demand was low.

In January a failure near Macclesfield (UUT), was attributed to a transient decrease in pressure within the distribution system and increase in flow in the area. A breach in Warrington (UUT), in February had no definitive cause identified. In both cases the Inspectorate recommended that a risk assessment of the local distribution network is undertaken to mitigate against a further breach of the regulations.

A failure in Heysham (UUT), resulted from planned work on 26 February 2020 to carry out a repair on a leaking 4-inch diameter cast iron main. The company flushed the main but did not take samples until 5 March 2020 as part of the breach investigation. The Inspectorate recommended that the company undertakes timely sampling following mains depressurisation to mitigate against a further breach of the regulations.

A failure in Hull (YKS) affected several properties and persisted for some time. Accordingly, a recommendation was made that the company carries out an investigation into the source of the mains deposits and develops a plan to ensure that these mains deposits are removed.

Three failures remain under assessment pending further information from the companies concerned (NES 2, SVT 1).

Nickel

Of the eight nickel failures in the first quarter (SRN 3, ANH 1, ICW 1, IWN 1, TMS 1 and YKS 1), seven were considered to have arisen as a result of the domestic distribution system. In Thetford Zone (ICW), the failure in February was on a new estate with a newly installed chrome plated tap. Resamples in other properties on the estate also failed for the same reason. The failure in Blythe Valley Zone (IWN), in January was also the result of a new tap. In this instance the consumer highlighted that they were nickel sensitive and were advised to contact the EHO. A report was made to the Water Regulations Advisory Service (WRAS) as the tap was on the approved list. The combination of the widespread fitting of new taps which leach nickel and

those who are sensitive to nickel is an increasing public health risk. In the remaining case (YKS), despite a satisfactory investigation, the cause was not identified.

Hafren Dyfrdwy Event - Do not drink advice for consumers in Llangurig, Powys

For the price review period 2020 to 2025 Ofwat has set a challenging performance commitment for all the major water suppliers, to reduce the average duration of supply interruptions to 5 minutes, by 2025. For most companies, this means implementing innovative ways of monitoring demand in supply networks and rapidly responding to unplanned interruptions, as well as maintaining their infrastructure to reduce the frequency of burst mains. The use of water supply tankers to replenish water stored in service reservoirs and for injecting water directly into distribution mains are now standard practices employed by water companies to limit the duration of, and number of consumers affected by, loss of supply events. Whilst these practices undoubtedly reduce the inconvenience caused to consumers from being without a supply of drinking water, there is growing evidence of associated risks to drinking water quality.

In the first quarter of 2020, there were 32 events (of 112 notified) that involved the supply of discoloured water to consumers. In most cases, the discolouration was associated with rezoning activities undertaken to limit the effects of a supply interruption, and a number also involved direct injection of water into distribution mains:

Cause	No. Notified
Burst main	17
Planned work in the network; inappropriate valving operation; or other manual intervention	10
Works shutdown	2
Other distribution asset failure	2
Third party damage	1

In February 2020, Hafren Dyfrdwy caused a serious event in Llangurig in Powys, which resulted in the loss of supply to 213 consumers, with the issue of “Do Not Drink” (DND) advice to the consumers when the supply was restored. Tankers were used to keep Llangurig service reservoir (SR) topped up to help maintain supplies, and water was injected directly into distribution mains as a further measure to maintain supplies to consumers. The injection of water directly into the distribution system caused a further burst main and led to the supply of discoloured water to affected consumers. The consequences for consumers were made worse by the company because one

of the tankers used to replenish the reservoir contained super-chlorinated water that was unsuitable for human consumption.

Hafren Dyfrdwy is owned and jointly operated by its parent company Severn Trent Water. The event began on 24 February when the inlet main to Llangurig SR burst, causing the level in the reservoir to drop rapidly. That evening, the company arranged for two tankers from the Severn Trent depot in Warwick (approximately 130 miles away) to be despatched to Llangurig to replenish the SR. Later on, it was identified that there was a filled tanker ready for use at the Severn Trent base in Shrewsbury that would arrive more quickly than the two on the way from Warwick, and the two tankers were returned to Warwick. In the early hours of the morning the decision was again taken to mobilise two tankers from Warwick, to replenish the SR in time for the peak morning demand.

The company's procedure for discharging drinking water from tankers into a service reservoir required the driver to perform on-site tests for chlorine concentration and turbidity, and to take a bacteriological sample of the water in the tanker, all before the load is discharged. The two tankers arrived at Llangurig SR just before 06.00 on 25 February, and the loads were discharged. Bacteriological samples were taken as required and records showed the results of chlorine tests, but turbidity tests were not performed as required. The recorded chlorine results were within the normal range for drinking water stored in a tanker, but there were irregularities with the results for one of the tankers with different results recorded in the driver's paperwork and those recorded in a hand-held registration device against the bacteriological sample.

At around 07:30 the same morning, an employee arriving at the depot in Warwick noticed that a tanker that should not have left site was missing. This tanker was part-way through being cleaned and disinfected and contained highly chlorinated water - approximately 32 mg/l of free chlorine.

On investigation, it was found that the concentration of chlorine in the Llangurig SR was 8.0 mg/l - above the World Health Organisation's Guideline Value of 5.0 mg/l. The reservoir was promptly removed from supply, and 89 downstream properties subsequently lost supply. Following consultation with Public Health Wales, the consumers at the 89 properties were advised not to drink their tap water once the supply was restored.

The company commenced tankering operations to inject tankered water directly into the distribution system, and after approximately 10 hours, supplies were restored to the 89 properties. Tankers were used to replenish the SR overnight, and the distribution system was flushed to remove highly chlorinated water. Direct-injection operations continued but weather conditions hampered this work and a new injection point was identified. At 10.00 hrs on 26 February there was a burst on one of the mains being used for direct injection, which caused the 89 properties covered by the DND

advice to lose supply again. A second alternative injection point had to be found. Supplies to all affected consumers were restored late in the evening of 26 February.

The company found that the procedure for cleaning and disinfecting tankers at Warwick had not been followed correctly. The arrangements for ensuring that tankers undergoing disinfection were not deployed for use by mistake were insufficiently robust to prevent this from occurring. Furthermore, it is likely that at least one of the tanker drivers fabricated the results of the on-site chlorine test at Llangurig, because if this test had been carried out correctly, the result would have been abnormal. The company was unable to complete its investigation into this because the tanker driver resigned but has strengthened its procedures and carried out refresher training for relevant personnel.

All water companies should ensure that robust risk assessments are carried out whenever reservoir replenishment and direct injection into the network are required to maintain supplies. Risk assessments should be based on accurate records and distribution models and give sufficient regard to drinking water quality risks. Tankering operations should not increase the risk of discoloured water being supplied to consumers, and direct injection into distribution mains should not increase the likelihood of further bursts. Procedures for ensuring that mobile tankers that are off road for cleaning and disinfection should include physical security measures, for example to prevent the tanker from being driven and to lock off filling and discharge points.

Figure 1 –Tanker inlet and outlet locks
(photograph provided by Hafren Dyfrdwy)



Audit Programme - Notice Compliance

Enforcement notices are issued by the Inspectorate, where risks of regulatory breaches are likely to recur. Many of the notices have multiple steps and the actions can be extended over a considerable time. In the first quarter of 2020, the Inspectorate carried out a series of audits at sites where enforcement notices had been issued, to ensure that all the steps required were being complied with. A general assessment of the site performance was also completed.

Compliance with Notices

In summary, compliance with the notices was variable, but raised concerns particularly in respect of disinfection at Portsmouth Water, Thames Water, United Utilities, Bristol Water and to a lesser extent South East Water. Adequate disinfection is fundamental to the provision of safe clean drinking water and the shortcomings identified by the Inspectorate should prompt all companies to ask, 'could it happen here' and look again to ensure that all activities to ensure disinfection is achieved are robust, understood, appropriately implemented and verified.

Observations at Site

Disinfection Notices – Portsmouth Water

This audit focused on Portsmouth Water's progress against seven legal instruments for risk to disinfection. The Inspectorate concluded the findings from the audit were unsatisfactory.

The fundamental principle of a risk assessment is to evaluate the risks from source to tap. The assessment is dependent upon comprehensive, robust and contemporaneous information from suitably qualified and competent assessors. This may require the inclusion of several competent professionals but fundamentally the starting platform is the catchment risk, including source and source pathways. Without an appropriate evaluation of the hazards, any subsequent mitigation is likely to be flawed.

The audit at the sites of Portsmouth water and in particular Northbrook works identified that information was both out of date and incomplete. The subsequent outcome unavoidably failed to employ sufficient risk control management strategies including, and most critically, the disinfection policy. In this respect, enforcement has been initiated for the company to review, modify and reassess the assessments with an expected outcome to mitigate risks throughout the supply system.

On the specific risk of *Cryptosporidium* spp., new or further enforcement is being considered at West Street and Lavant works respectively, as well as enhanced continuous monitoring at Funtington and West Meon works, in order to evaluate the residual risk in the absence of historical data.

Management, training and competency are required to ensure assessments are robust, relevant and used as a tool in the operation of water supply.

These must be supported both by site operating manuals and water quality procedures. The company have been reminded that these were deficient in the delivery and maintenance of the supply system. Enforcement to support the company in delivering these critical milestones is being considered.

The company has engaged positively to ensure the identified risks to water quality are mitigated in an appropriate and timely manner.

Ashford Common works – Thames Water

Slow sand filters (SSFs) are widely used by Thames Water. This type of filtration was the first effective treatment in the provision of drinking water and are still suitable in current times. Many companies do not employ SSFs because of the large capital cost, the large area footprint and they can require a relatively high staff resource. However, when well managed they produce consistently good quality water, have little need for chemical treatment and a low ongoing cost.

In November 2018, Thames Water was issued with a Notice to address operational risks with slow sand filtration at several works, including risks associated with disinfection and *Cryptosporidium*.

One of the requirements of the Notice is the construction of barrier fencing around the works' site to prevent larger mammals from entering. Dead mammals have occasionally been found in slow sand filters, which creates a risk of *Cryptosporidium* and more general deterioration of microbiological quality. The notice required the company to risk assess wildlife/animal activity and excessive vegetation growth. Additional control measures were due to be complete by June 2020. However, there was more work for the company to demonstrate that the vegetation growth was properly managed. The company are developing a safe system of work to improve maintenance and the Inspectorate suggested improvements to the programming and recording of improvement work. Appropriate barriers to reduce larger mammalian wildlife risks to the slow sand filtration process were due to be complete by March 2020 and this was in hand at the time of the audit.

Figure 2: Repaired coping stone among excessive vegetation at Ashford Common works



Slow sand filter performance is reviewed weekly. The records indicate that several filters have 'waivers' in place due to deviation from routine operation. For example: extended run time; operating above 1m head loss without head loss monitoring; operating above the target bed volumes for GAC regeneration/replacement; and operating without GAC. The cumulative effect of waivers presents an increase in risk since each waiver removes a mitigation or critical control point. For instance, over extending the run time or bed volumes ignores the deterioration in water quality which extended filtration could result in. Exceeding head loss limits would exert an out of limit pressure on the filter which was beyond the design capability. If these two waivers occur at the same time break-through of contaminants such as *Cryptosporidium spp.* may be the result. A recommendation was made requiring the company to evaluate this cumulative risk and to consider if filters operating under waivers would be relevant to any subsequent detections of, for example, *Cryptosporidium spp* and event reporting.

The company has expressed the view that these are routine operational deviations which do not collectively or individually lead to an increased risk to water quality. However, the discovery of a dead fox in a slow sand filter in February, was noted to be coincident with a *Cryptosporidium* detection in the treated water. Whilst the company were unable to establish a definitive cause, *Cryptosporidium* oocysts had clearly passed through the slow sand filter(s). The company will need to consider at a senior level the risk tolerance for this strategy.

In line with good practice, turbidity monitors have been installed on the outlet of individual slow sand filters, as required by the notice. Several alarms have been noted, but there was little evidence of investigating the cause because they were considered as nuisance. Persistent and nuisance alarms should be investigated and responded to appropriately. It was suggested that the company adopts good practice in alarm management as outlined in the document *EEMUA 191 - Alarm systems - a guide to design, management and procurement*.

As part of water quality improvements covered by a separate turbidity notice, a semi-automatic works shut down system is being installed to safeguard disinfection, which will provide additional protection to consumers. Commissioning of the shutdown system has stalled, as the company were awaiting completion of another project.

Unfathomably, a portacabin toilet used by contractors was installed above the work's chlorine contact tank. There is substantive evidence where microbiological failures are discovered in tanks or reservoirs that there is ingress. A temporary toilet contains faecal matter, a serious contaminant, which may leak when blocked or overfilled. A simple risk assessment on water quality grounds would have identified the potential for serious risk. The disconnect between water quality and operations is clear and needs reviewing. The company have reported that the toilet is no longer in use, however, it has yet to define a timescale for removing the toilet, as they had yet to investigate how to reverse the connections to the wastewater system. It remains a concern that the company do not see this as necessary for an expedient action. All companies should not need reminding of the minimum standard to assess water quality risks as part of site set up for contractors to avoid high risk installations such as this. It should not need emphasising that it is imperative to address high risk situations in a timely manner and to take steps to address the risks as soon as is practicable.

Fontburn works – Northumbrian Water

There were two notices in place at Fontburn works to address issues related to chemical dosing and turbidity.

The company were required to provide an improved chlorine dosing system and additionally provide an emergency hypochlorite system in the event of an outage. Emergency systems by design are used less and therefore when storing hypochlorite there is a risk of chlorate formation, as a by-product over time if not used. The company have approached this risk in an innovative way by using the hypochlorite system for a dual purpose. A continuous flow is used to maintain the efficacy of Polarite media in the rapid gravity filters during the backwash sequence. Polarite is a trade name for manganese dioxide which is mixed in with the sand and acts as a catalyst to remove manganese by precipitation. Approximately 55 l/day of hypochlorite is used to maintain the filter media. This is a novel way of ensuring the emergency

disinfection system is kept operational whilst benefitting the operational performance of the filter media. Such a flow effectively reduces the risk of chlorate formation in conjunction with the storage room temperature which is maintained below 15°C.

The Notice required the company to review and install sampling facilities to allow representative samples to be taken from the process. However, unsatisfactory sampling facilities were observed at the raw water and post clarifier stages. Long flexible hoses were attached via jubilee clips to a tap or pipework, these arrangements could present unrepresentative samples due to artefacts present in the sample lines. A recommendation was made for the company to rectify the issues and clearly label the sample points.

Technical data sheets provide valuable information on treatment chemicals and a recommendation was made that the technical data sheet for polyelectrolyte was incorporated into works procedures to comply with Regulation 31, as this was not available on the day.

The chemical dosing notice requires the company to 'provide a permanent upgrade of the lime dosing system'. A temporary Kalic system, which is a common trade name for liquid calcium hydroxide, is in use to dose into the post-clarified water. However, in an emergency the Kalic liquid lime can be used on the raw water. Substantial lime deposits and organic growth was observed in the rapid gravity filter inlet channel. The company plan to clean this during a planned works shutdown.

Figure 3: Fontburn rapid gravity filter inlet channel showing substantial lime deposition and organic growth



Franklaw works – United Utilities

Franklaw works was associated with a *Cryptosporidium* incident in 2015 for which the company was prosecuted for supplying water unfit for human consumption. During the incident a Notice was issued requiring urgent and immediate actions to be taken to secure public health. Subsequently a further Notice was issued to consolidate these and future actions to ensure such an event does not recur. The company is under an obligation to complete these actions in the times required, provide a report to evidence completion or, where this is not possible, to apply for an extension citing reasons for any delay.

The Notice required United Utilities to install a run to waste scheme at Franklaw works by 31 December 2019. This deadline was missed, and the company failed to formally apply for a change application to the notice in advance of this date. The company report the delay was due to engineering challenges from potential flooding with the current design. Whilst this may be the case, the company has failed to ensure the basic requisites of the Notice are complied with; that being an application for extension. The action by the company brings in to question the effectiveness of regulation and enforcement in this area, Consequently the Enforcement Policy of DWI will be updated to ensure a mechanism is available to ensure companies do comply.

When an audit team visits a site, observations paint a picture of company compliance. The turbidity instruments had been calibrated within two days of the Inspectorate's visit, but routine calibration had lapsed, and the previous record of calibration was from July 2017. Whilst the company showed that the readings from 3 months of daily comparative checks showed a general level of agreement, the traceability of the handheld monitor calibration to national standards is uncertain. The Inspectorate concluded that the company breached regulation 26(2)(b) by failing to continuously verify the turbidity readings associated with disinfection. Recommendations were made for United Utilities to review its procedures to ensure that critical control instrumentation is calibrated at the correct frequency as per manufacturers' instruction; and to produce a summary report confirming which online turbidity meters had been calibrated in accordance with company policy.

The original notice included a step to *continuously review all critical control points (CCPs)*, however the Site-Specific Disinfection Policy (SSDP) does not include UV set points. UV reactors were installed in response to the incident in 2015, but these were overlooked. It is fundamental to protecting public health that CCPs are effective to ensure disinfection is within proscribed limits. With no limit there is obviously no CCP. A recommendation was made to update the SSDP to reflect the critical nature of the UV disinfection stage.

At the audit a discrepancy between the low dose alarm set points on SCADA and in company documents was observed and the Inspectorate recommended that this apparent error was removed.

The UVT monitors are calibrated by the site Field Service Engineer. Work order numbers are recorded; however, calibration certificates are not issued. The monitors are also verified daily by the site Process Controller. Summary UVT verification readings for the week preceding the audit showed no issues, but the Inspectorate concluded the lack of transparency around the onsite calibrations did not demonstrate the required level of verification of the disinfection process. The company was recommended to keep appropriate records of UV monitor calibration to demonstrate that disinfection can be verified.

The contact tank roof was observed to be retaining a lot of water in the grass/moss and required better drainage. A recommendation was made to improve the contact tank roof drainage, reducing the risk of standing water ingress.

Hatch inspections on the contact tank showed ingress at one hatch and the company completed a timely repair. Nylon rope had secured a sample pump under a contact tank hatch, which appeared dirty. Recommendations were made to review the frequency of inspection checks on treated storage points and to review procedures for the use of materials over water to mitigate against risk of the potential contamination risks in stored water.

United Utilities have planned for remedial work on the baffle curtains which are allowing short circuiting of the contact tank. Similar repairs were required in 2015. The Inspectors concluded that the current design of baffle curtains is not robust and are not effective at preventing short-circuiting of the contact tank and therefore consequentially the effectiveness of disinfection. Inspectors recommend an engineering review of the baffling system in the contact tank to ensure that effective disinfection is achieved, under all operating conditions.

Barnacre Service Reservoir – United Utilities

The most probable cause of the Franklaw event in 2015 was contamination of Barnacre service reservoir, due to run off from surrounding land. The flood defences of Barnacre were examined. A drain had been installed across the access road to divert water away from the reservoir roof, but this was partially blocked by sediment and leaves, washed down by storms Dennis and Ciara. Such a critical asset should be regularly maintained and inspected following heavy rainfall. Faecal risks close to the reservoir were unquantified. There is the potential for run-off onto the reservoir in severe storm conditions. The Inspectorate recommended that this risk is critically assessed in the light of storm Dennis and further strengthened, to divert water away from the reservoir.

Figure 4: Drain breached at Barnacre SR



College works – South West Water

Notices have been in place for several years at College works, with change applications to the notice to refine the scope. The current legal instrument is in place to address pesticide; manganese; taste/odour and trihalomethane risks

The original plan included evaluating the use of CeraMac membranes with either Suspended Ion Exchange (SIX) treatment or UV disinfection to determine which solution would achieve the appropriate outcome of the Notice. Following the evaluation, all the original proposals were rejected, electing instead for new rapid gravity filters, GAC contactors, ancillary treatment of pH correction with sodium hydroxide, and repurposing the existing rapid gravity filters as manganese contactors.

On site, Inspectors observed vegetation growth on the above ground, metal treated water tank and recommended enhanced monitoring of the associated contamination risk. This tank will be decommissioned when the capital work on site is completed.

Disinfection records showed that the pH entering the contact tank was elevated above the 7.2 pH limit stated in the company's disinfection policy, with a maximum reading of 7.84 in the data provided. Disinfection was not compromised but ambiguity in the disinfection policy caused the Inspectorate

to recommend that this is revised to ensure that it is clear and unequivocal how disinfection is always achieved.

Cheddar works – Bristol Water

The remains of a rodent were found in a treated water tank at Cheddar works in 2019, after it had chewed through ducting. The rodent was so badly decomposed that the company failed to ascertain the species.

The company undertook a review of pest control measures and tank ingress risks at Cheddar works and acted to address the risks, including repairing fences, removing grass cuttings and discarded materials, sealing ducts and introducing regular checks for changes in ingress risk and planning to place gauze over the washout to prevent vermin ingress.

Figure 5: Fence repairs and sealed ducts among measures to address vermin risks at Cheddar works



After the event, the Inspectorate recommended that a difference in contact time between contact tank A and B be fully understood and that the disinfection policy for Cheddar works is not breached. The company have redefined the contact tanks as treated water tanks, because UV is the primary mode of disinfection at this site, and marginal chlorination is used to provide a network residual only.

The company had reported, in response to a turbidity failure in July 2019, that they had commissioned a new sample line that was representative of supplies from the works. However, comparative samples from the old and new locations showed discrepancies in heterotrophic counts at 22°C. Bristol Water were unable to find any conclusive evidence as to why there would be a difference and rejected the new tap position. The company do not seem to have considered the possibility that the increase in heterotrophic plate

counts may be representative of the water supplied, and an indication of the regrowth found post UV treatment.

The company themselves had identified a potential risk to disinfection as a result of the growth of biofilms downstream of the UV reactors and are carrying out a study into this issue. Swabs from the inlet of the contact tank tested positive for coliforms and *Clostridia* at the time of the last internal inspection in March 2019. The Inspectorate shall be carrying out further investigations into the disinfection policy and practices with Bristol Water.

The notice requires the company to gather data on raw water deterioration in the catchment. Catchment risks appeared to be well managed with the site team at Cheddar works maintaining a good level of engagement with local landowners, to understand catchment risks and to identify any changes in risk. The team were able to demonstrate good understanding of the land use surrounding the catchment area, often in detail, and we welcome this approach.

Ford works – South East Water

The Inspectorate visited two works (Numbers 1 and 2) at Ospringe and also Ford works to assess progress against notices to address disinfection arrangements at all three works.

The notice for Ford included longer term steps to install continuous chlorine and turbidity monitoring at the inlet to Ford service reservoir to verify disinfection and included a step for the completion of adequate operator training. In their 2019 annual return, the company indicated that the completion date was 'on target' thereby meeting the stated regulatory date of 31 December 2019. During the audit in February 2020 it transpired, however, that whilst operational, the new monitoring equipment had not yet been fully commissioned nor the necessary operator training completed. The Inspectorate recommended that the company informs the Inspectorate of any failure to meet milestone dates in advance. Whilst the company accepted this recommendation, it provided no evidence to support a change in processes that make this unlikely to recur and consequently the risk of a repeat occurrence is not fully addressed.

A recommendation was also made to address identified borehole contamination risks at Ford works, which the company duly rectified.

Figure 6: Air valve replaced, and gland fixed following the audit at Ford works



Mickleburgh service reservoir supplied by Ford works was also visited. The reservoir was last internally inspected in 2006 and had an ROV survey completed in 2019. This is outside of the company maximum inspection frequency of 10 years and recognised good practice outlined in Water UK's Principles of Water Supply Hygiene. The Inspectorate recommended the company takes steps to enable the reservoir to be removed from supply and to undertake an internal manned inspection. South East Water confirmed that they have designed network modifications and plan to carry out the internal inspection in September 2020.

Ospringe works – South East Water

The notices for both works (Numbers 1 and 2) at Ospringe contain short- and longer-term measures to enable the company to verify that disinfection has been achieved. The shorter-term measures include the installation of temporary chlorine and turbidity monitoring at suitable hydrants whilst the long-term permanent solution is delivered. The company confirmed the temporary solution was installed by the deadline of 30 November 2018 at both sites. The location of the temporary turbidity and chlorine monitors could not be shown on the day of the audit and the company subsequently admitted that a single hydrant location was available for monitoring Ospringe No.1 works, due to chamber drain-off flooding the M2 motorway. The company chose to monitor chlorine at the hydrant and reported turbidity relevant to disinfection was monitored at the works. Whilst this may have been a pragmatic solution it is not in accordance with what the company committed to do at this site.

Companies are reminded of the need for accurate information on all matters including progress reports against legal instruments. A failure to do so could

constitute an offence of providing false information, as defined in section 207 of the Water Industry Act 1991.

Ospringe No.1 works is a good quality groundwater, but information provided at the audit shows that the treated water will not always achieve the minimum target Ct in accordance with South East Water's disinfection policy. A recommendation was made for the company to take steps to ensure that the minimum Ct is met on all occasions when water is supplied from the works. The company are progressing the installation of a new UV disinfection system, which is due for completion in early 2021. As a temporary mitigation the company are carrying out enhanced monitoring and will change the flow rates of the variable speed pumps to address the Ct issue.

In advance of the new UV reactor installation, the company is continuously monitoring UVT to understand raw water quality and to assist with the specification of the new UV disinfection system. The monitor appeared not to be reading accurately and as this monitor will provide critical information in the design of the new disinfection system, a recommendation was made for the fault to be rectified.

Legal Instruments

The work of the Enforcement Team became focussed in the first quarter of 2020 by the CoViD-19 outbreak. It was quickly recognised that the nature of the disease was likely to pose a substantial challenge to water companies. This was first observed when samplers were reporting increasing difficulty in gaining entry to domestic premises. The Inspectorate's response in supporting the industry took the form of Information Letter 01/2020 published on 6 March requiring companies to apply for notices under regulation 7 if sampling from water quality zones was impacted. The Inspectorate subsequently wrote to the industry on 27 March (information letter 02/2020) setting out our expectations for legal instruments where progress is impaired by the outbreak. Additionally, replacement undertakings to cover the AMP7 investment period for metaldehyde mitigation were accepted.

New Legal Instruments Issued

In the first quarter of 2020, the Inspectorate put in to place 34 new legal instruments;

Table 3: Legal instruments issued in Q1, 2020

Type of legal instrument	Number	Companies
Regulation 28(4) Notice	4	SRN 1, TMS 3
Section 19 Undertaking	6	BRL 1, SES 1, SRN 2, TMS 1, YKS 1
Regulation 7 Notice	24	AFW, ALB, ALE, ANH, BRL, CAM, DWR, HDC, ICW, IWN, LNW, NES, PRT, SES, SEW, SRN, SST, SVT, SWB, TMS, UUT, VWP, WSX, YKS

Five of the undertakings were for AMP7 metaldehyde schemes, discussed later in this section. The remaining undertaking accepted from Southern Water replaced an existing undertaking for data management improvements and will improve the integrity of information submitted to the Inspectorate under The Water Industry (Suppliers' Information) Direction 2019.

The Regulation 28(4) Notice served on Southern Water replaced the existing notice for Weirwood Treatment Works, and is intended to incorporate the significant additional mitigation actions required, as identified by the site's hazard review (completed as a result of one of the company's Transformation programme Notices).

Management and competency of staff is a key theme running through the Thames Water transformation pathway. The original Management and Competency Notice covered risks associated with operator competency, risk

assessments of planned and unplanned work and failings associated with site procedures and operating manuals in addition to other deliverables. This was a complex Notice and following the completion of a company-wide critical review, the Notice has been replaced by three new notices, covering the three work-streams identified, being (1) Procedures and Documentation, (2) Risk Assessment and (3) Training and Competency. A short summary of each Notice theme is included below;

- (1) Procedures and Documentation (TMS 2020/00001): The Company completed a critical review of the Thames Water procedures to identify deficiencies or where procedures may be missing. This review included all policy documents in addition to production and network standards and processes, a suitability assessment of the company's asset maintenance plans, site operating manuals and schematics. Following the review, the Thames Water Operational Management System was upgraded for improved document governance and compliance. The Water Operational Management System enables all staff to access site specific information and business processes on any internet enabled device. Document version control is managed by a central team who maintain 'one version of the truth'. Information can be accessed via site QR codes that enable the user easy access to site information. Successful outcomes from this notice include; reduced operating risks, improved performance and the standardisation and accessibility to key information.
- (2) Risk Assessment and Resilience (TMS 2020/00003): This notice covers risk assessments of planned and unplanned works and pushes the company to ensure that risks associated with network dead legs and premises with confirmed fluid category 4 and 5 contraventions of the Water Supply (Water Fittings) Regulations (1999) are addressed within the company's network assessments. Thames Water have brought in improvements to their bespoke risk assessment tool with high risk activities now requiring water quality team approval and an upgraded GIS solution to assist network assessments. The return to supply of assets and asset contingency plans was critically reviewed under this notice and identified gaps are being addressed. A new operating standard has been included to enhance works process risk assessments with compliance monitored at a senior water quality governance forum.
- (3) Training and Competency (TMS 2020/00004): Accountability and risks associated with company personnel roles and responsibilities, including management and supervision of third-party contractors are the key priorities of this notice. The improvement actions around the 'Licence to Operate' (LTO) scheme includes recognition of required competencies for each role and the completion of a gap analysis to identify additional training requirements for staff. Coaches and mentors are now placed within the Water Production team to support learning. In Q1 2020 a new Learning Management System was implemented to provide a robust management platform for training and competency across the business.

Annual Progress Reports

During January 2020, the Inspectorate received the first set of the new summary annual return reports, as requested in an email sent to the industry during October 2019. Instead of preparing a full report for every legal instrument, each company was required to send a summary of the status of their open legal instruments with full reports only required for delayed programmes of work. Exceptions to this were where schemes; had long gaps between milestones, a scheme was perceived to be at risk, or was indeed falling behind the deadlines within it. In these cases, full reports were requested so that a thorough assessment could be undertaken. The Inspectorate intends to continue this process for future annual reports and shall publish more guidance on this during 2020.

Closures

The Inspectorate received 30 closure reports in quarter (ANH 3, DWR 5, HDC 1, NES 1, SRN 5, SVT 5, SWB 4, TMS 2, WSX 2 and YKS 2). The usual peak in these being at the end of January, as demonstration of benefit phases of legal instruments came to an end at the end of the previous year. Additionally, 2020 contains the end of the AMP6 investment period and so the majority of AMP6 programmes are coming to a close.

Change Applications

During the quarter there were 44 applications to change legal instruments (ANH 3, DWR 19, NES 7, SRN 8, SVT 2 and UUT 5). The high number of changes requested by Dŵr Cymru were related to the discolouration schemes the company have in place. These represented a re-prioritisation of actions based on both changes in risk and following the final OFWAT determination. The Company have identified their highest risk areas and developed solutions to tackle discolouration.

Most of the other applications received were to update AMP7 schemes, following completion of the early planning stages for these programmes. Decisions are being taken on the final technical solutions to be delivered, where these require studies or further investigation.

Milestones

Companies submitted 61 milestone reports (independent of closure reports, change applications and annual progress reports) to the Inspectorate during the first quarter of 2020 (ANH 4, DWR 1, HDC 2, NES 3, PRT 3, SRN 30, SVT 2, TMS 5, UUT 8, WSX 2, YKS 1).

The significant number of milestone reports submitted by Southern Water represents the last of the hazard review reports for treatment works. As well as focusing on delivering the required improvements that have been identified by this process, the company will now begin the hazard review process for its chlorine booster stations, which is covered by a section 19 undertaking.

Radioactivity Notices

During the first quarter of 2020, the Inspectorate received three applications to cease regulatory monitoring for radioactivity parameters under regulation 6 (1 HDC, 1 ICW and 1 SVT).

The application from Icosa Water was for a new water supply zone. The Notices for Severn Trent Water and Hafren Dyfrdwy were adjustments to the existing radioactivity Notices and represent the final piece of work to align the company's legal instruments with the current company boundary arrangements following the acquisition of Dee Valley Water and the subsequent adjustments.

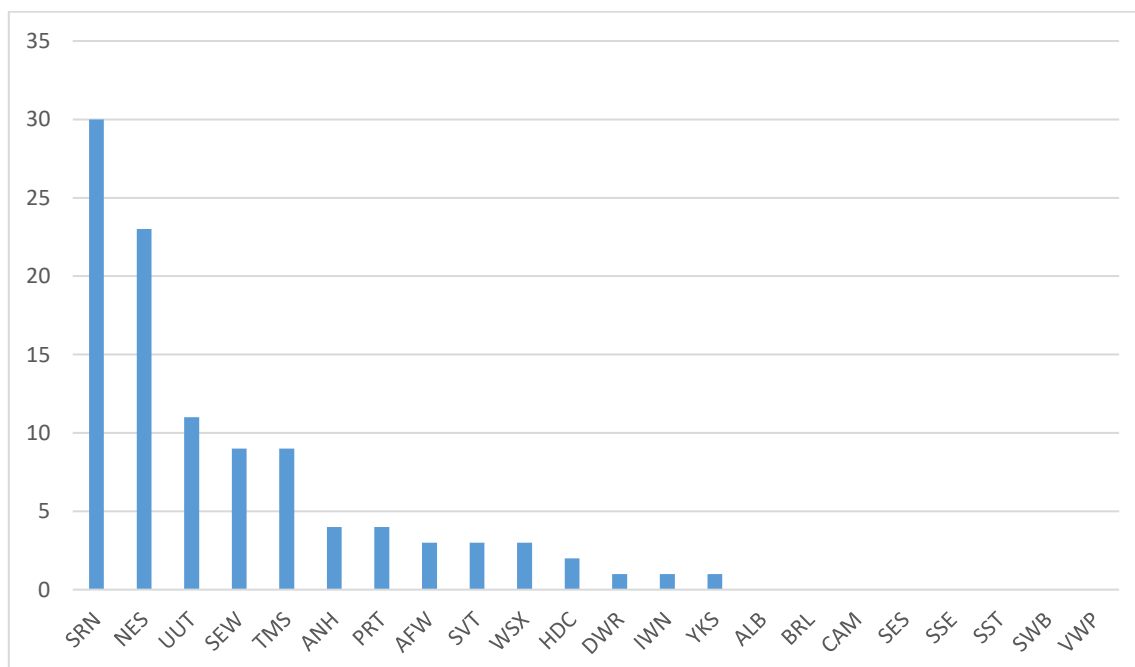
Regulation 15 Applications

Two applications under regulation 15, to use new sources were received during the quarter, from Anglian Water. Both applications were satisfactory and approval letters were issued.

Recommendations

Inspectors made 104 recommendations during the first quarter of 2020 (AFW 3, ANH 4, DWR 1, HDC 2, IWN 1, NES 23, PRT 4, SEW 9, SRN 30, SVT 3, TMS 9, UUT 11, WSX 3 and YKS 1).

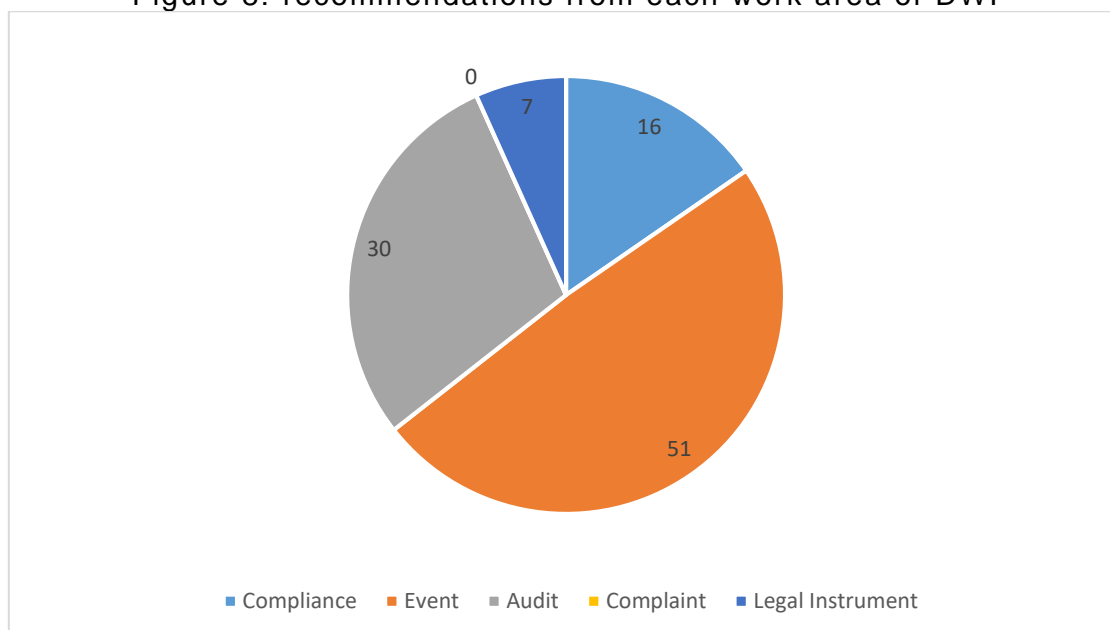
Figure 7: Number of recommendations by company



Almost half of these (51) were made in relation to water quality events, with the rest made following audits (30), compliance failure assessments (16) and

legal instruments (7). No recommendations were made in relation to water quality complaints during the quarter.

Figure 8: recommendations from each work area of DWI



The high number of recommendations made to Southern Water Services related to an unsatisfactory audit at Beauport Treatment Works, where 13 recommendations were made. These related to structural issues within the rapid gravity filters; operation of the new UV process; pH at the point of disinfection; risks associated with the motive water tank as well as regulation 31 for polyelectrolyte; vermin protection and compliance with the Badenoch and Bouchier recommendations regarding the return of waste water. The company have responded and are in the process of addressing the Inspectorates concerns. The company also received a number of recommendations following the submission of inadequate milestone reports for a number of legal instruments including nitrate monitor schemes, GAC assessments at one of its works and delayed flushing schemes within one of the company's highest risk zone for discolouration.

Northumbrian Essex and Suffolk Water received 11 recommendations in response to a serious *Cryptosporidium* oocyst breakthrough event at Lumley Treatment Works. The event, and subsequent audit, highlighted insufficient capital investment to deal with emerging raw water challenges adversely affecting raw water quality. The oocyst breakthrough was largely due to the condition of the works assets, insufficient maintenance, a lack of monitoring and poor practices regarding the operation of clarifiers. The majority of recommendations address the deficiencies associated with operation and maintenance. In response, Northumbrian, Essex and Suffolk Water have committed to significant investment at the treatment works. This includes; a review of chemical dosing systems; clarification and filtration performance assessment; improvements to online monitoring and controls across the

plant; and the installation of UV irradiation after rapid gravity filtration. Enforcement action has been taken in response to this event and the company are delivering improvements under a legal instrument.

A further seven recommendations were given to Northumbrian, Essex and Suffolk Water following two significant events that occurred in succession at Mosswood treatment works. The emergency backup generator, designed to switch on automatically in response to a power interruption, failed to start on two occasions. This resulted in loss of polyelectrolyte dosing and pH correction, significantly impacting coagulation. The avoidable event was caused by a lack of historical investment and the consideration of critical spares. The recommendations address treatment process control, alarms, emergency systems and operational procedures. Mosswood treatment works is currently undergoing improvements to the site's disinfection treatment which is being progressed under a legal notice. Further enforcement is under consideration.

Management continues to represent the highest number of recommendations, with over 50% of recommendations made in the first quarter being for management. Inadequate risk assessment and investigations constituted the highest numbers of maintenance recommendations. Risk assessment remains the largest contributor to the recommendations made within the quarter.

Figure 9: High level categories of recommendations made in Q1, 2020

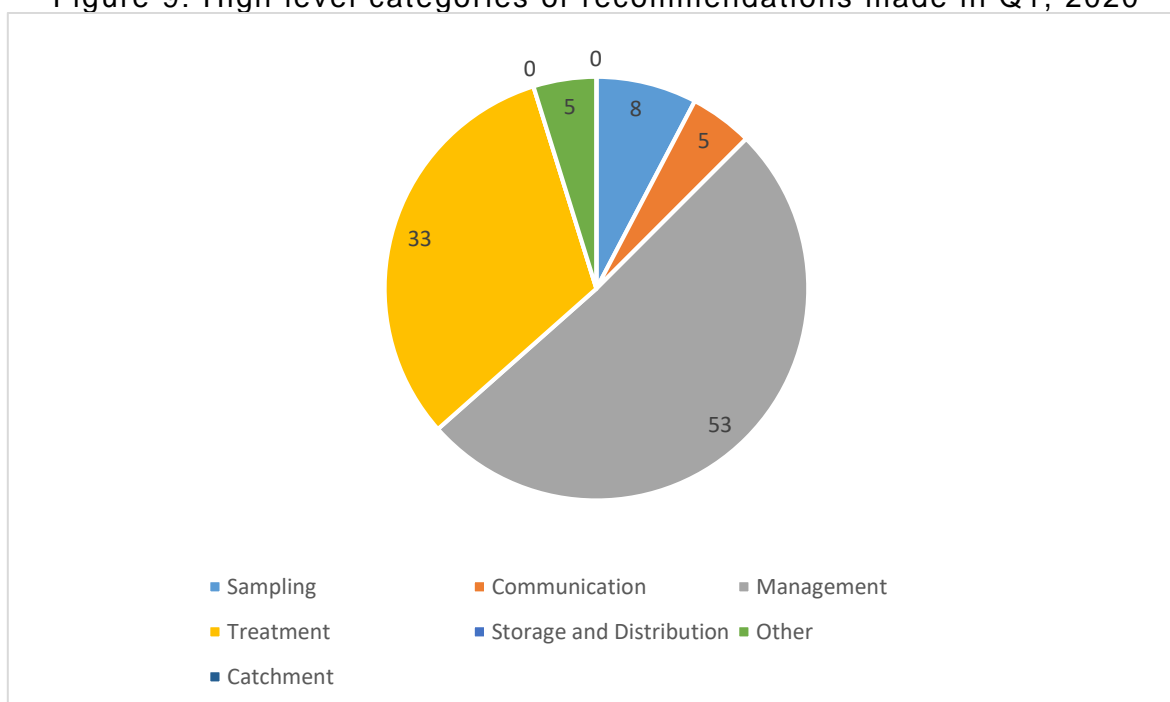
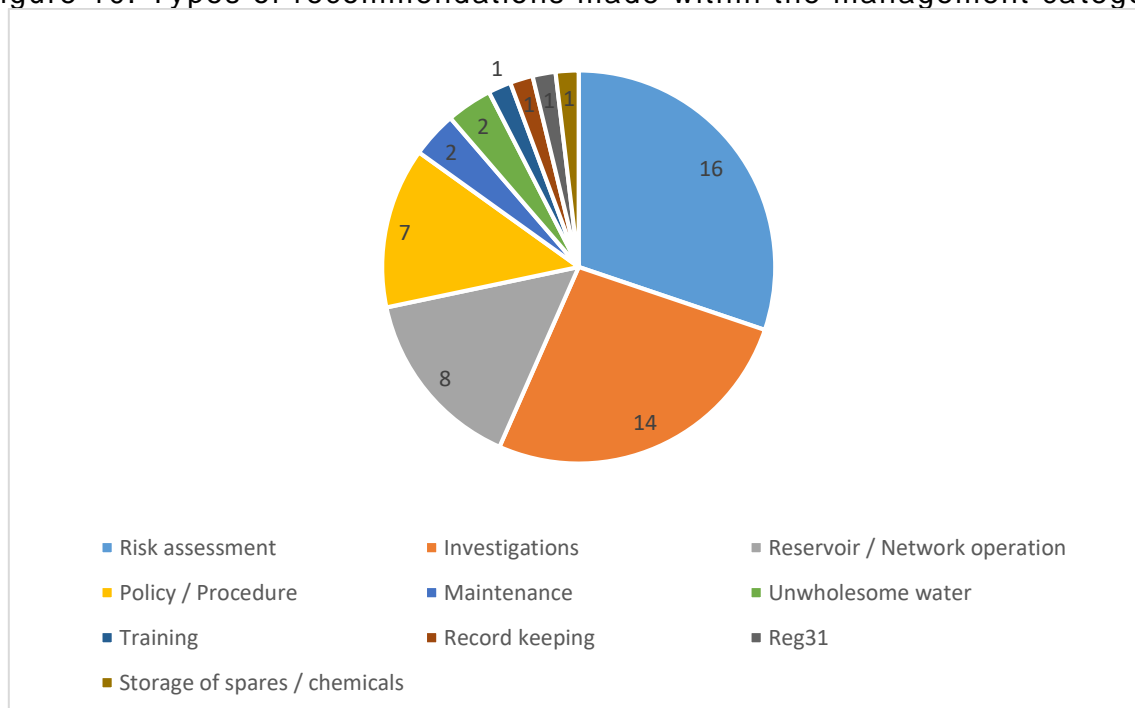


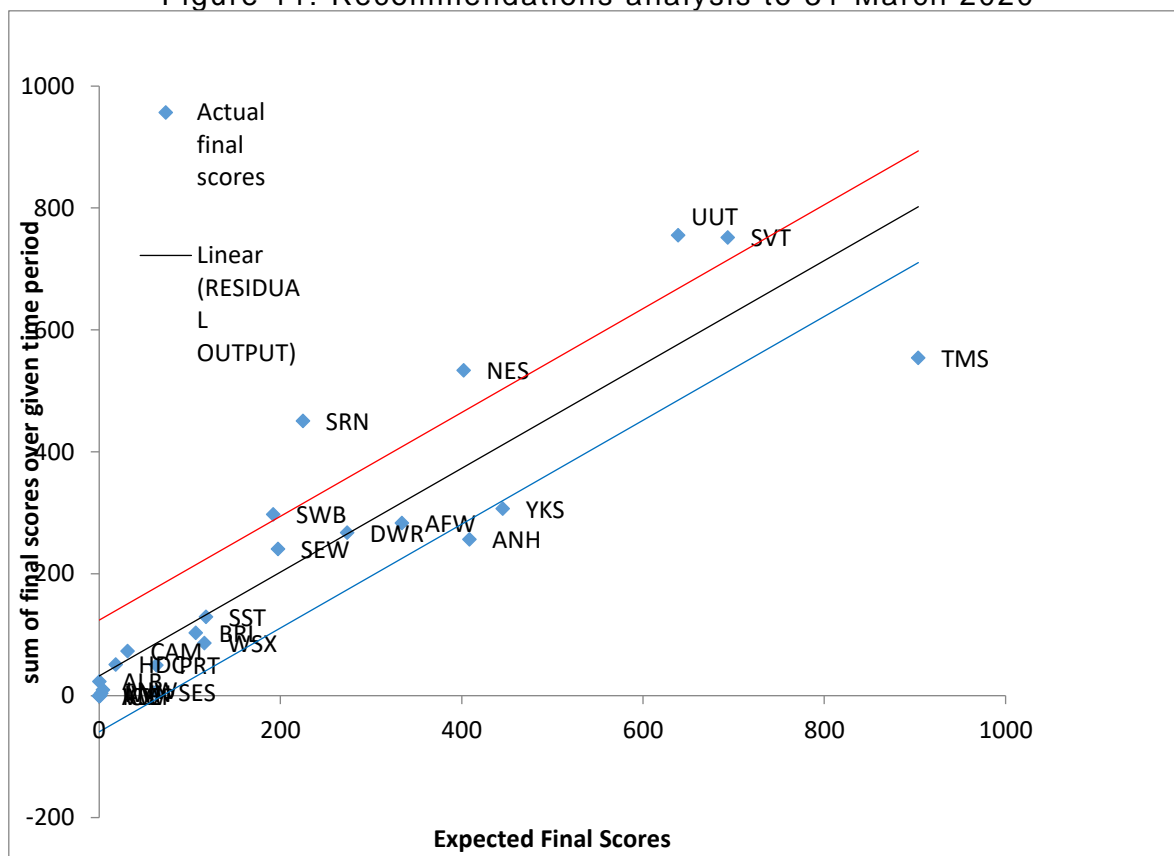
Figure 10: Types of recommendations made within the management category



The analysis of predicted versus actual recommendations scores shows that three companies (SRN, SVT and UUT) remain statistically above the predicted recommendation scores, however it is noted that the Severn Trent Water scores has decreased substantially and is now much closer to the predicted value. Severn Trent is to be commended on their strategy to ensure water quality takes priority and the responsible staff have the necessary empowerment to deliver robust solutions to recommendations.

The Industry should not need reminding that water companies produce water as their only product, and this must always be wholesome. Think drinking water – think water quality. Two companies (NES and SWB) are now statistically above the expected recommendations score and are therefore carrying excess regulatory risk. The principle of risk-based regulation requires a regulatory response to these findings which inevitably will be an increased focus. The Inspectorate will therefore be scrutinising these companies to ensure appropriate mitigations are being put into place and will consider escalation to enforcement where appropriate.

Figure 11: Recommendations analysis to 31 March 2020



Metaldehyde

A number of companies had undertakings, under section 19 of the Act, in place for the catchment work they were undertaking to mitigate the risk from metaldehyde use in their catchments during the AMP6 period. On 19 December 2018 the Environment Secretary announced a restriction of use for metaldehyde products. On 21 December 2018, the Inspectorate wrote to companies with metaldehyde undertakings in place, detailing requirements for replacement undertakings to be offered by companies for the next investment period.

The Inspectorate wrote to companies again during August 2019, following the judicial review that resulted in the government deciding to withdraw the restrictions, but to seek to retake the decision to restrict metaldehyde use as soon as possible. The Inspectorate considered it unwise to proceed with work to put in place the new undertakings while a decision on the restriction of use remained uncertain. In the meantime, some metaldehyde schemes were able to be closed where companies could demonstrate an improved risk position and a lack of detections for three consecutive years.

At the end of February 2020, no position on the restrictions of use had been officially reached and with the current undertakings due to conclude at the

end of March 2020, the Inspectorate once again wrote to companies with metaldehyde undertakings. Following a review of the draft AMP7 undertakings, which require companies to develop, maintain and work to metaldehyde strategies, it was determined that the Inspectorate could accept the replacement undertakings whilst remaining flexible to any change in position with respect to the restrictions of use.

The Inspectorate began to issue the acceptance notices for the AMP7 undertakings at the end of March 2020, with the final undertakings being accepted by May 2020. The accepted undertakings replaced the previous AMP6 undertakings.

Companies have been able to remove some supply systems from the metaldehyde undertakings by demonstrating, through sampling data and risk assessments, that there is no longer a significant risk. Most significantly, Severn Trent Water were able to demonstrate the levels of metaldehyde at their River Severn treatment works had reduced substantially and consequentially these works no longer required an undertaking. The company have invested significantly in their catchment management programmes and this appears to be producing the desired benefit.

Metaldehyde scheme reporting

In a separate piece of work, the Inspectorate has been reviewing and updating its legal instrument reporting requirements with a view to trying to reduce the burden on the industry through more effective and concise guidance, whilst still ensuring Inspectors get all necessary information to perform their duties. An update to Information Letter 02/2015 shall be issued later in the year to facilitate this. As part of this update, the Inspectorate has been working closely with the Environment Agency WINEP team to understand their catchment scheme reporting requirements and whether these hold any similarities with the Inspectorate's catchment scheme reporting requirements. Consequently, it is hoped that the two processes can be aligned so that a single report can fulfil both purposes, reducing the reporting burden for the industry through more effective co-regulation. More information shall be provided on this in the future.

CoViD-19 Sampling Response

The Inspectorate wrote to all companies in England and Wales in Information Letter 01/2020 on the 6 March, setting out the Inspectorate's expectations in response to the CoViD-19 outbreak. The information letter contained advice around sampling activities and requested companies to apply to the Inspectorate for Regulation 7 Notices once sampling from consumers' properties selected at random became no longer practicable. Regulation 7 provides that the requirement for random selection of sampling points in respect of every parameter (other than a parameter for which samples are taken from a supply point authorised by or under regulation 8), may by notice in writing to a water undertaker (whether or not on the application of

the undertaker), be varied as the Secretary of State otherwise determines. Regulation 7 Notices do not apply to water supplied from a tanker. A notice made under regulation 7 does not suspend or reduce the requirement to complete sampling.

On 17 and 18 March 2020, the Inspectorate received regulation 7 applications from most water companies in England and Wales. In response, the Inspectorate prioritised the review of the applications and the issuing of Regulation 7 Notices. In general, companies elected to use fixed-point sampling, collecting random consumer tap samples from employee properties, public buildings or other buildings where access could be maintained. Only one company (DWR) elected to abandon zonal sampling immediately which was at odds with the rest of the industry. This was not expected so soon in the crisis. South Staffordshire and Cambridge Water abandoned zonal sampling as an interim whilst fixed point sampling was put into place. However, the Company quickly established its fixed-point sampling programme and reported they are expecting a minimal sampling shortfall as a result. This company and others are to be commended on this forward-thinking approach as it secured data to maintain confidence in the water supply.

Overall, the industry should be commended for their sampling response at the onset of the CoViD-19 outbreak, which through appropriate adaptation allowed random consumer tap sampling to be maintained for as long as practicable. Due to the rapid evolving nature of the pandemic, by the end of March, most companies had abandoned random consumer tap sampling altogether having followed a phased approach towards enhanced sampling being conducted from water company assets, such as service reservoirs. Whilst this report is generally confined to the first quarter of the year, it is worth emphasising that after the initial response in March, as restrictions eased companies have moved back or are working to move back to random consumer tap sampling, whilst recognising that random sampling is a greater challenge. The Inspectorate shall conduct a review of companies' sampling practices during the CoViD-19 crisis once restrictions are eased and sampling practices are able to return to normal. In the meantime, dialogue will continue with those companies who appear to be outliers in their exit strategy to determine why this is the case.

CoViD-19 Impacts on Legal Instruments

The Inspectorate wrote to companies again on 27 March 2020 in Information Letter 02/2020 to set out our expectations in relation to existing legal instruments during the outbreak. With information from sampling decreasing, companies were asked to prioritise (for early completion wherever possible) any requirements within legal instruments to install or upgrade operational monitoring in order to confirm the efficacy of treatment processes. Companies were requested to report any anticipated delays to legal instruments, as a result of the outbreak, as they became apparent, although

it was noted that many companies had already established communication with the Inspectorate, which was welcomed. Once the extent of the delay became clear and new dates could be confirmed, companies were requested to submit formal change applications to the Inspectorate.

Where the delivery of long-term measures is delayed by the outbreak, the Inspectorate expects companies to maintain the ongoing measures specified in legal instruments and put in place any additional controls required to mitigate any immediate risks to human health caused by those delays.



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