



**GUIDANCE NOTE:
RESILIENCE OF WATER SUPPLIES IN
WATER RESOURCE PLANNING**

**A SUPPLEMENTARY NOTE TO LONG
TERM PLANNING FOR THE QUALITY
OF DRINKING WATER SUPPLIES**

Guidance Note on Resilience of Water Supplies in Water Resources Planning

1 Purpose

- 1.1 The purpose of this Guidance Note is to provide water suppliers and other stakeholders with guidance on the resilience of water supplies in water resource planning, with emphasis on the consideration of impacts on drinking water quality when planning for sufficiency of supplies and development of water resource schemes, including the development of strategic regional schemes (SROs) being managed by RAPID.
- 1.2 This Guidance Note is not intended to be a comprehensive review of sufficiency resilience in water supply practice. There are no new policy initiatives set out herein, and no new legal obligations. The focus is on delivery of existing obligations, whilst taking account of current guidance and good practice within a long-term planning context. This Note applies to all water resource schemes, both within and outside formal planning arrangements, and within and across water suppliers' boundaries.
- 1.3 The Note draws from, collates and updates existing guidance on the Drinking Water Inspectorate's website and is provided to assist water suppliers and other stakeholders to access and take account of matters that are essential to the interests of domestic and non-domestic water consumers in water resource planning. The Note is intended to complement guidance from others on matters relating to water in the environment. The Inspectorate recognises the legitimate interests of both the environment and society in water resource planning and will work with other stakeholders to achieve fair and sustainable outcomes consistent with Ministerial priorities.
- 1.4 We will update this document as necessary to take account of developments in legislation, policy and guidance, industry good practice and any specific matters arising from periodic reviews of prices. The Inspectorate welcomes comment on the document, including suggestions for areas or matters not currently included.

2 Legislation and guidance

- 2.1 The regulatory framework that sets the context for this Guidance Note is listed on the Inspectorate's website; www.dwi.gov.uk/water-companies/legislation and commentary on interpretation is provided in our Guidance on the Regulations: Introduction to the Public Water Supply Regulations in England and Wales (www.dwi.gov.uk/water-companies/guidance-and-codes-of-practice/guidance-on-implementing-the-water-supply-water-quality-regulations). We expect that compliance with this legislative framework will be a mandatory requirement of water suppliers' Water Resource Management Plans (WRMPs) and related contingency planning set out in Drought Plans (DPs).
- 2.2 A couple of specific points from the primary legislation, the Water Industry Act 1991 (the Act), may be worth noting. Section 86, relating to the appointment and delegated powers to the Chief Inspector of Drinking Water, includes reference to "...such other powers and duties in relation to the quality and sufficiency of water supplied...". This has particular application to powers and duties relating to the protection of public health, and to resilience and contingency planning.
- 2.3 Additionally, the statutory obligations on water suppliers under section 68 of the Act include their duty to supply wholesome water, and includes this requirement: "... It shall

be the duty of a water undertaker..... so far as reasonably practicable, to ensure, in relation to each source or combination of sources from which water is so supplied, that there is, in general, no deterioration in the quality of the water which is supplied from time to time from that source or combination of sources. ...”. This primary duty may have implications for how water suppliers develop their WRMPs and DPs, especially in relation to resilience and contingency planning.

- 2.4 The Inspectorate interprets the statutory requirement for ‘no deterioration’ by reference to compliance with the requirements of the Regulations, including standards. Nominal changes in the concentration or level of a parameter may not be considered as deterioration if the water as supplied remains wholesome and is acceptable to consumers, provided that the supplier can demonstrate that it has considered and limited the deterioration as far as is reasonably practical.
- 2.5 Additional to the requirements of primary and secondary legislation, the Inspectorate takes account of both statutory and non-statutory guidance from other stakeholders, together with current good water supply practice, when considering its own guidance and actions on water resource and sufficiency matters.
- 2.6 This statutory guidance includes that provided by the Environment Agency (EA) to water suppliers on WRMPs, and the Strategic Policy Statements (SPS) issued by Ministers for England (assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/661803/sps-ofwat-2017.pdf) and for Wales (senedd.wales/laid%20documents/gen-ld11283/gen-ld11283-e.pdf) to inform suppliers’ business plans, which include provision for their WRMPs and DPs. The Ministerial guidance emphasises the priority they expect Ofwat and water suppliers to give to resilience planning, particularly for maintaining sufficiency of water supplies to consumers. Whilst current WRMPs for the AMP 7 period are now in place, consideration has started, led by the EA, of the planning guidance for WRMPs 24 and 29. The Inspectorate is contributing to these discussions.
- 2.7 A significant contribution has been made to the debate by recent reports from the National Infrastructure Commission (NIC); “Preparing for a drier future” – April 2018 (nic.org.uk/app/uploads/NIC-Preparing-for-a-Drier-Future-26-April-2018.pdf) and “Resilient infrastructure systems” – May 2020 (nic.org.uk/app/uploads/Anticipate-React-Recover-28-May-2020.pdf). Its analyses and recommendations, welcomed and supported by the Inspectorate, set out the challenges for both the environment and society arising from a projected water supply deficit. Its recommendations reset the context for water resource planning in England and are particularly relevant to supply resilience and contingency planning.
- 2.8 The Inspectorate has also contributed to the development of the recent EA publication “Meeting our future water needs: a national framework for water resources” (The National Framework); www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources. The Inspectorate supports the conclusions of the report and is working with other stakeholders to deliver its recommendations.
- 2.9 The Inspectorate does not have a statutory role in the development or appraisal of WRMPs, but at the request of individual suppliers we have had informal discussions about drinking water quality matters arising during development of previous WRMPs. We are happy to continue that dialogue with both individual suppliers and the Regional Groups

that are now an integral part of the water resource planning process, and we encourage them to engage early with the Inspectorate on the development of proposals.

- 2.10 The considerations necessary to take account of drinking water quality within WRMPs are generally well exposed and understood, and the importance of public health protection, wholesomeness and public confidence in drinking water quality remain central to the legitimacy of every supplier's WRMP. We expect water suppliers to take account of the guidance contained in this Note, whilst delivering their current WRMPs, and we would welcome engagement by them or their representatives if clarification is required on any points of principle or detail in the Note.
- 2.11 In 2019 the Inspectorate has joined with Ofwat and the EA in a joint regulatory initiative to fast track a small group of strategically important regional schemes from the current WRMPs. The Water Regulators' Alliance for Progressing Infrastructure Development (RAPID) will seek to resolve policy, regulatory and operational barriers to developing complex water resource schemes, and some guidance for water resource planners and Regional Groups on the Inspectorate's contribution to this work is included in the section below on RAPID. The Inspectorate will have a more formal role in the assessment of proposals within the RAPID process.

3 A risk-based approach to planning for water resources and sufficiency of supplies

- 3.1 For all aspects of water resource planning, the Inspectorate expects that water suppliers will always plan to meet their statutory obligations relating to the quality of their drinking water supplies. It follows that a minimum requirement of all water resource schemes is that drinking water quality, for both wholesomeness and acceptability to consumers, is always central to, and accounted for, in the appraisal of any options considered.
- 3.2 The Inspectorate considers that the obligations on water suppliers and other stakeholders in the provision of new water sources, or of bulk supplies across supplier boundaries (or indeed wider distribution within supplier boundaries), is adequately covered by existing legislation to ensure consumers are protected. We intend to continue using these existing tools to regulate source changes and the movement of water across and between supplier areas.
- 3.3 The core requirement of existing legislation is that it is mandatory for water suppliers to carry out risk assessments for all of their water supply systems, from source to tap, adopting a drinking water safety plan approach. We expect that suppliers planning strategic water resource schemes will adopt this approach throughout the project life cycle for every scheme to assess existing and potential risks to water quality, and therefore consumers, and to identify appropriate risk mitigation options. Drinking water risk assessments are a current national statutory requirement before making a water supply and represent current international good practice in water supply management.
- 3.4 The prescribed methodology for conducting risk assessments is the mandatory use of drinking water safety plans (DWSPs). DWSPs are described by the World Health Organisation as follows: "...the most effective means of consistently ensuring the safety of a drinking water supply is through the use of a comprehensive risk assessment and a risk management approach that encompasses all steps in water supply from catchment to consumer."

- 3.5 The publications “Drinking water safety: Guidance to health and water professionals” in England (cdn.dwi.gov.uk/wp-content/uploads/2021/02/01145349/DWI_England_DrinkingWaterSafety_February2021.pdf) and “Drinking water safety: Guidance to health and water professionals” in Wales (cdn.dwi.gov.uk/wp-content/uploads/2021/02/01145316/DWI_Wales_DrinkingWaterSafety_February2021.pdf) provide further information on DWSP methodologies.
- 3.6 DWSPs must be completed by water suppliers for each of their supply systems and they should identify the hazards of concern (or partially mitigated hazards) and any associated parameters; retain evidence that the sources of the hazards have been identified and confirmed; and the range of options for mitigation considered including, where appropriate, catchment management measures. There must also be a clear statement of how the benefits delivered by identified mitigation options must be included in overall project costs from an early stage to facilitate appropriate decision-making.
- 3.7 Requirements for the main output from DWSPs, i.e. risk assessment reports (RARs), are set out in the Guidance to the Regulations referred to above, and in Information Letter 02/2019 (dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/24102403/02-2019.pdf) and it’s Annex A (dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/24102405/02-2019_AnnexA-2.pdf). The water quality and scientific teams within your organisation should be familiar with these requirements and reporting should fit in with the normal process that companies use for this.
- 3.8 Suppliers are required to keep under review their RARs for all of their water supplies, and to report updates as per the above-mentioned guidance. In doing so, they should have regard to information informing any learning from events or near misses circulated by the Inspectorate or suppliers from time to time. Thus, risk assessments for water resource schemes need constant review to ensure that the final outcome of the project continues to be a suitably wholesome, acceptable and reliable drinking water supply.
- 3.9 If a drinking water safety plan identifies clear actual or potentially significant risks, the supplier must manage and mitigate the risks from the hazard prior to the supply to consumers. Any associated RAR records must be updated accordingly and in a timely manner as per the guidance mentioned in paragraph 3.7. The Inspectorate may consider taking enforcement action to ensure that the risks are mitigated.
- 3.10 To facilitate and support the delivery of suitable DWSPs, suppliers should consider joining the “Drinking Water Inspectorate Risk Management Assessment Scheme”. This Scheme, launched on 1 August 2019, has been jointly developed by the Inspectorate and Lloyd’s Register, in consultation with water suppliers.
- 3.11 The purpose of the Scheme is to verify that the DWSP process, as advocated by the World Health Organisation, has been implemented, and is consistent with the requirements of the Water Industry Specification document (WIS) (W I S 04-01-04), together with the BSI standard for Security of Drinking Water Supply – Guidelines for Risk and Crisis Management – BSEN 15975-2. Guidance on the Scheme can be found on the Inspectorate’s website (dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/24102421/04-2019_DWIRMAS_Guidance.pdf).
- 3.12 Embedding this approach in WRMPs will provide assurance that water supply proposals are efficient and sustainable from source to tap and contribute to a lasting legacy of long-

term benefits for both the supplier and its consumers. To have legitimacy, and to gain the support of the Inspectorate, this approach needs to be transparent about the continuous assessment of short, medium- and long-term risk mitigation measures and associated investment requirements, for current consumers and future generations, including any progressive measures necessary during the delivery stages of all strategic water resource schemes. It is essential that risk management contingency measures set out in DPs are consistent with the level and timing of mitigation measures in DWSPs and funded accordingly.

4 Managing changes in raw water quality

- 4.1 Localised changes to raw water quality occur occasionally requiring a review of existing risk profiles. Failure or a likelihood of failure to supply wholesome water because of a deterioration in raw water quality (such as nitrate, pesticides, turbidity, THMs (and precursors), colour, Cryptosporidium and other pathogens) should be identified through raw water monitoring and the DWSPs and RARs for every water treatment works and its associated supply system, including the import or export of bulk supplies. Deterioration in this context means a measured change in raw water quality over time, or demonstrable unmitigated volatility in quality changes brought about by changes within the catchment, most frequently arising from diffuse pollution. It does not mean evidence of poor performance of a treatment works within its design parameters.
- 4.2 In addition to diffuse pollution, raw water quality changes due to changing weather patterns bring a further challenge to existing risk mitigation arrangements. For example, the greater intensity of rainfall events causing rapid and more extreme deterioration in raw water quality have caused temporary exceedance of the design parameters of some treatment facilities. WRMPs should take account of how changing weather patterns might affect water quality and the availability of sources and consider in modelling the potential temporary or permanent loss of sources, or the need for additional risk mitigation, whether within catchments; in abstraction control or raw water storage; or as upgrades to treatment facilities.
- 4.3 The Inspectorate would encourage water resource planners to consider the necessity for greater flexibility in abstraction conditions to enable abstraction to be locally rebalanced when some sources have short duration quality problems, to protect the efficacy of existing assets, and as an efficient alternative to asset upgrades. This might apply to both the use of, and volumes available from, groundwater sources (especially those used for blending purposes), and from surface water abstractions, especially for short term licence variations that do not have long term consequences for the environment. In all WRMPs, the consequential implications for existing asset use must be part of any water resource scheme assessment.
- 4.4 Most hazards will be known about already within existing risk assessment arrangements. However, where a deterioration in raw water quality has been identified and presents a risk to consumers (for example, the existing treatment process is not designed to deal with either the type or level of the contaminant), water suppliers must investigate the cause of deterioration and take action to protect consumers. This action should primarily focus on investigations in the catchment and, where feasible, specific actions taken to control the level of pollution entering the supply at source, although a wide range of other operational interventions, or short-term or permanent treatment solutions, may be necessary to supplement catchment activity.

- 4.5 When considering catchment management/control solutions, suppliers should have regard to the specific obligations of the Water Framework Directive (WFD) and the developing requirements of the Environment Bill. However, the capacity of a supplier to accommodate a matrix of multiple drivers will depend on the level of risk to drinking water quality and whether a catchment solution could be delivered with reasonable certainty to provide a timely outcome to prevent the supply of unwholesome water. In some situations, a treatment solution may need to be installed, and suppliers will be required to adopt a twin track approach that includes treatment, or other operational control measures, in addition to catchment management actions to mitigate the risks to consumers from raw water deterioration.
- 4.6 Suppliers have a statutory duty to undertake monitoring of raw water at every abstraction point as part of their risk management controls for each treatment works and associated supply system. These activities by water suppliers will contribute to WFD objectives in respect of the protection of areas from which drinking water is abstracted.

5 Making treated water transfers and bulk supplies

Many water resource schemes involve transfers of water within a supplier's supply area; exports and imports across supplier boundaries; and introduction of new sources. All water resource scheme proposals must be able to demonstrate that they meet the following basic principles of good water supply practice.

- 5.1 When providing a bulk supply or transfer:
- that the supplier should not expose consumers to a greater risk of exposure to unwholesome water;
 - that the supplier must always meet its water quality and sufficiency of supply obligations; and;
 - consumers' confidence and trust in their supply must be maintained.
- 5.2 Assessments of potential water resource schemes need to include the implications for the use of existing water supply assets, particularly whether existing asset condition, capacity and location lend themselves to the proposed scheme, and if not, what are the interim (solution delivery period) and longer term operational needs for the existing assets, and the short term maintenance costs or accelerated depreciation costs involved.
- 5.3 Water suppliers must consider risks to water quality when a change is made to an existing water supply. Introducing changes, such as altering the blend of sources in a supply or introducing a new source, can change the chemical characteristics of the supply resulting in disruption of chemical conditioning treatments and plumbosolvency controls. Such changes can also result in changes to aesthetic characteristics such as hardness, taste and odour, which consumers may find unacceptable. Proposals to introduce a new source or alter the blend of an existing supply should not increase the risk of consumers being supplied with unwholesome or aesthetically unacceptable water. Where there is an increased risk of non-compliance with a regulatory parameter or the presence of a substance or microorganism that could cause the water supply to be unwholesome, suppliers must ensure that appropriate control measures are in place before any application to make a supply is submitted to the Inspectorate under regulation 15.

- 5.4 Specific matters for consideration when developing water resource proposals (including the reintroduction of an existing source, bulk supplies, and transfers that have been out of supply for 6 months or more) should include (where relevant) the following:
- a. Suppliers are expected to have carried out risk assessments, covering, as a minimum, the potential impacts on public health, wholesomeness and acceptability to consumers of new or altered supply arrangements, including within- and cross-boundary transfers of drinking water supplies, and must meet regulatory requirements for the introduction of new sources;
 - b. The supplier should be satisfied that the risk assessment has considered the potential impact of mixing of different water types within its distribution network, including customer acceptability issues, and the operation and maintenance requirements of that particular network (for example, for event mitigation, water stability and age and service reservoir turnover);
 - c. The outcomes of the risk assessment must be reflected in the company's RAR submissions to the Inspectorate in accordance with the guidance mentioned in paragraph 3.7 above;
 - d. Other routine operational matters to be included in these risk assessments should include assessment of the impact on optimisation of phosphoric acid dosing, pH and colour for plumbosolvency control; fluoridation practices; other chemical stabilisation processes; the mixing of chloraminated supplies and chlorinated supplies; and compliance with treatment and disinfection obligations, and the minimisation of disinfection by-products;
 - e. Transfers of water, or commissioning of new sources, that increase the risk of non-compliance, or rejection by consumers, will not be permitted until steps to mitigate those risks are in place (by any appropriate means, including, for example, treatment, blending and/or consumer communications);
 - f. Where it is proposed that a new supply replaces an existing supply from a source that is then to be abandoned or rendered not available (perhaps due to changes to an abstraction licence), the cost benefit assessment of the proposed scheme must include the whole life costs of managing the quality and delivery of the new supply, including treatment costs, pumping costs and network maintenance costs;
 - g. Companies must ensure that any decommissioned or mothballed plant is fully disconnected from any water supplies, that all diagrams and mapping systems are updated to show the disconnections and that the disconnections can be evidenced photographically;
 - h. It is the responsibility of the supplier receiving a transfer to satisfy the regulatory requirements for the introduction of new sources, and to ensure compliance with the Regulations. The recipient supplier must complete a risk assessment for the water supply (source to tap). If the recipient finds that the supply is already in use by the supplying supplier, it must seek and obtain relevant information from the supplier to complete its risk assessment. The risk assessment would need to be informed by analysis carried out by the receiving supplier. Where a new connection/transfer operates in both directions, both receiving suppliers should submit R A Rs for the relevant supply systems, plus the associated analytical results as soon as is reasonably practicable; and

- i. For bulk supply agreements in particular, formal transfer agreements must make provision for meeting all of the requirements of the Regulations, and be clear on responsibilities for the risk assessments required for regulation 15 submissions; on monitoring and liaison arrangements on quality matters to protect consumers during routine operation; and on the availability and sustainability of the supply, and especially for agreements without guarantees of supply in all circumstances, to enable both parties to make the necessary contingency arrangements to meet their licence to operate obligations.
- j. Similarly, for proposals that involve third party access to a water supplier’s infrastructure, formal access agreements must make provision for meeting all of the requirements of the Regulations, including for regulation 15 submissions.
- k. Although each scheme needs to be considered as a bespoke solution, the following is a general characterisation of proposed water resource schemes:

New Raw Water Sources	Desalination, direct re-use and all sources requiring new abstraction points
Raw Water Transfers	For river regulation reservoirs, and to support indirect re-use
Potable Water Transfers	NAVs, bulk transfers/supplies

6 Resilience arrangements in water resource planning.

Current arrangements for security of supply – planning and monitoring

- 6.1 Under Section 86 of the Act the Inspectorate has duties relating to the quality and sufficiency of public drinking water supplies in England and Wales. Local Authorities have a duty under Section 77 of the Act to keep themselves informed about the wholesomeness and sufficiency of public water supplies in their area and have powers to enforce water suppliers to provide alternative supplies when piped water supplies are unavailable. Under Section 37 of the Act water suppliers have a duty to make a supply to premises and to consumers who demand it, and to maintain, improve, and extend their supply systems as necessary to secure that they are and continue to be able to meet their obligations.
- 6.2 Current water supplier resilience planning provisions for public water supplies are set out in each supplier’s WRMPs. For WRMP19 it is generally the case that suppliers are transitioning from generic planning assumptions in 2015 based on a drought return period of 1:100 to a return period assumption of 1:200 minimum in 2025, although in some instances it is estimated that this will not be achieved until approximately 2030.
- 6.3 This is complimented by a common performance commitment (PC) put in place by Ofwat relating to security of supply: “Risk of severe restrictions in a drought -Percentage of the population the company serves that would experience severe supply restrictions (for example, standpipes or rota cuts) in a 1 in 200 year drought”. This is a new, non-financial common PC for PR19. All water suppliers are expected to use this common PC because it

is important to customers and a good measure of future resilience. All suppliers are expected to improve their performance (as measured by this PC) over AMP8, by altering the supply demand balance of their water resource zones (WRZ) (providing extra capacity). This can be done by reducing demand (for example, reducing leakage or consumption (PCC)) or increasing supply (for example, building a new reservoir, water transfers, or other means).

- 6.4 This PC is useful at a macro (Water Resource Zone) level as it measures delivery of water to a WRZ. However, it is not an adequate measure of supplier resilience to significant loss of supply events at a consumer's tap due to disruptions to routine operations (for example, weather events such as droughts, extended warm weather spells, or unusual demand events such as the Beast from the East freeze/thaw event in 2018; the pandemic in summer 2020; or the loss of a single source supply), as many such incidents stem from inadequate provision for resilience locally in treatment capacity; water pumping and storage capacity; distribution network capacity; or distribution configurations that limit flexibility of supply arrangements.
- 6.5 Some suppliers have bespoke PCs that go some way to addressing this risk at a more granular level. For example, a water company's PC "% of population supplied by a single source" with target levels reducing over the AMP8 period from 24.1% to 14.1%. This PC incentivises a variety of measures such as strategic and local network reinforcement, installation of interconnections and additional storage in the network, as well as improvements in network operation.
- 6.6 Water supplier Drought Plans (DPs) are directly linked to the supply provisions made in the long-term strategic WRMPs, but set out short-term operational actions to manage the impact of drought on their consumers and the environment until such time as WRMP outcomes are delivered for consumers. These actions focus on putting in place temporary restrictions on the sufficiency of supply duty as set out in the Act by voluntary or involuntary means ranging from consumer information and awareness campaigns and changes in normal abstraction arrangements and supply arrangements, to consumer use restrictions, and drought permits or orders that permit supply rationing.
- 6.7 There are generally 4 levels of control in a DP, with the most severe (Level 4) being emergency drought orders incorporating supply restrictions, rota cuts, and consumer access to drinking water supplies via standpipes in the street.
- 6.8 In 2017 existing DPs were subject to an operational review in "Exercise ARICA" to test the National Drought Group's strategic decisions and their consequences in response to severe drought (Level 4) conditions in South East England. The post-exercise report was published in January 2018. The main conclusion of the report was as follows: "... The water industry proved more than capable of managing a drought through levels 1 to 3, with plans well developed and response effectively exercised. However, measures such as stand pipes and rota cuts – outlined in drought plans once level 4 is reached – were not considered feasible or acceptable by the industry...".
- 6.9 The Inspectorate agrees with this conclusion and considers that DPs that depend on L4 restrictions to manage extended interruptions to supply at relatively high-risk planning assumptions such as 1:100, and at 1:200 in areas of concentrated population and economic assets of regional or national significance, to be not fit for purpose. The latter situation may apply below L4 depending on the capacity of the water supplier to successfully implement Level 1-3 control measures, including arrangement, delivery and distribution of

large volume alternative supplies at a time of challenge that may be contingent with pressures on mutual aid capacity from other water suppliers.

- 6.10 The sustained interruption of piped water supplies presents foreseeable risks to public health due to diminished washing, hygiene and sewage facilities; causes disruption to routine societal activities such as school attendance, and access to local facilities such as GP surgeries and dental practices; and disrupts economic activity at every level from high street to industrial sites. These impacts may be exacerbated during high demand weather events and are potentially further complicated by a reduction in access to alternative facilities and travel restrictions during the current pandemic.
- 6.11 In respect of both routine and non-routine operational resilience, every water supplier has a duty to proactively plan for containment of and recovery from potential water sufficiency events that might otherwise impact on consumers, with a view to providing a public water supply as defined in the legislation and guidance, whilst protecting public health and meeting wholesomeness and acceptability requirements.
- 6.12 The Inspectorate’s Information Direction ([dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/03135400/The-Water-Industry-Suppliers-Information-Direction-2019.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/521400/The-Water-Industry-Suppliers-Information-Direction-2019.pdf)) requires water suppliers to notify DWI of incidents where consumers experience loss of supply. The Inspectorate has a duty to investigate all incidents and has noted that recent events included instances where sufficient water was available for abstraction, but that the infrastructure in place was inadequate for the purposes of making and maintaining a supply. It is also of note that some of these events are recurring, and no action has been taken to prevent recurrence, or to learn from the lessons of previous supply failure.
- 6.13 In one recent instance, the Inspectorate commented as follows: “...the Inspectorate recommends (ref XXXX) that the company reviews the capacity of its supply networks to withstand significant, but not unforeseeable, weather related and other supply interruption challenges with particular regard to putting in place interim risk mitigation measures to strengthen the resilience of its infrastructure. This might include a variety of measures such as strategic and local network reinforcement, installation of interconnections, and additional storage in the network, as well as improvements in network operation that together contribute to a coherent operational contingency plan.”
- 6.14 The Inspectorate acknowledges the long-term nature of water resource planning, but expects, as with all risk management situations, that reasonable steps will be taken to have in place interim risk mitigation measures until the desired outcome is delivered. These steps should not be confined to a focus on supply restrictions for potentially extended periods of time, but should include investment in local infrastructure to meet current duties to make and maintain a supply.

Changes at PR24

- 6.15 Current Ministerial Strategic Policy Statements make clear that for business planning purposes for PR19 that resilience of supply should be a priority for water suppliers.
- 6.16 In addition, the National Infrastructure Commission concluded that current water resource planning assumptions are inadequate for today’s societal needs and recommended a return period assumption of 1:500 by 2030’s. HM Treasury’s National Infrastructure Strategy (www.gov.uk/government/publications/national-infrastructure-strategy) endorses the twin track (demand management and increasing supply) approach. It also requires commitment

to increase drought resilience to a 1 in 500 year extreme drought event by the end of the 2030s.

- 6.17 WRMP 24 guidance formalises this as follows: “You should plan to be resilient to any drought of an approximate return period of once in 500 years without implementing an emergency drought order [such emergency drought orders can authorise actions such as standpipes, rota cuts or provision of water tanks]. You should achieve this level of resilience by 2039 at the latest.”
- 6.18 The Inspectorate supports these requirements for WRMP 24 planning and expects that water suppliers will make provisions in their contingency plans, including drought plans, to take all reasonable steps to mitigate risks to consumers of the consequences of insufficiency of supply in the interim period while these outcomes are being delivered. These interim measures will be informed by local and regional circumstances, but are likely to include changes to operational regimes; reviews of provision for arrangements for transfers of water, and the security of any procurements arrangements associated with these; water supply system configuration adjustments and optimisation (including for abstraction, treatment, pumping, storage, and network facilities); infrastructure investment to increase supply and distribution resilience; event support and mutual aid provisions and capacity to maintain water supplies to consumers; and, in extremis, supply sufficiency restrictions to manage supply failure.

7 Regulators’ Alliance for Progressing Infrastructure Development (RAPID)

- 7.1 RAPID brings together Ofwat, EA and the Inspectorate to promote the development of critical national water resources infrastructure that is in the best interests of water users and the environment. It has established a programme of work that concentrates on the planning for and delivery of a small group of regionally significant water resource schemes. Key to this is a series of milestones (gates) for each scheme, each of which confirms progressive regulatory support through the main phases of project delivery from concept to service.
- 7.2 As strategic resource solutions (SROs) pass through each gate, the Inspectorate and RAPID will seek confirmation from scheme sponsors that drinking water quality and sufficiency is central to their planning processes, and that the risk-based approach to planning for water resources and sufficiency of supplies described above is embedded in the methodologies used for development of these schemes.
- 7.3 Evidence of the risk assessments carried out for each option of each scheme, together with the mitigations considered for risks to quality and sufficiency over short, medium- and long-term time periods (including during project delivery stages) will be required to progress through gateways. The DWSP approach should be used from an early stage of planning to enable risks to be mitigated prior to any new or revised supply arrangements going live.
- 7.4 Each supplier has its own bespoke DWSP methodology to report and maintain risk assessments relating to drinking water quality and public health protection. These arrangements should continue, and the Inspectorate will complete detailed analysis of the approaches adopted and the RARs for each scheme proposal and feed the outcomes into the overall RAPID gateway assessment. The level of detail required from scheme sponsors, and the challenge from the Inspectorate, will vary progressively throughout scheme development.

- 7.5 In preparation for the submissions, the Inspectorate encourages engagement with us by scheme sponsors and Regional Groups to clarify requirements and to discuss scheme development to satisfy the expectations of relevant gate. By example, we anticipate that these meetings might usefully include discussion of some or all of the following:
- a. An outline of the approach to DWSPs – explaining risks and options for mitigation (for example, additional treatment, catchment managements options, consumer engagement planning);
 - b. Forward programme for completion of regulation 15 requirements for new or revised sources, or return to service of existing sources, including sampling/consumer communication scheduling, if required;
 - c. A comprehensive programme, if required, of regulation 31 product approval being considered as part of a critical pathway (for example, RO membranes, new products). This should include a bespoke programme with progress being reported with gate submissions, with an expectation that confirmation of completed BS 6920 tests, and evidence of ongoing product testing is provided by gate three. Details of the regulation 31 process can be found at: www.dwi.gov.uk/drinking-water-products.
 - d. Evidence that the scheme has the support of the sponsors' drinking water quality teams, and feedback on their initial views, together with an outline of how and when the Inspectorate will be engaged in discussions at scheme-specific level with both scheme sponsors and with the Regional Group promoting the scheme; and
 - e. Clarity on the sequencing of regional and company planning and delivery programme priorities, with evidence to support the proposals that summarises the risks mitigated and populations benefiting to demonstrate the public benefit delivered.
- 7.6 In discussions at all stages of a water resources scheme development process, both bilateral and within its contribution to a RAPID context, the Inspectorate would be interested to explore the following additional considerations during planning for the project:
- a. ongoing risk management for the existing operational asset base during the planning and construction phases of the strategic schemes to protect water quality and public health, and the considerations for how new proposals will be integrated with the existing water supply system in a manner that optimises the service and economic benefits for consumers;
 - b. The enabling requirements and their costs of managing quality and sufficiency of supply risks during the planning and delivery phases of each scheme. The Inspectorate expects suppliers to give priority to reasonable provision for full or partial mitigation of risks during the interim phase prior to new schemes coming into service. Consideration should be given to optimising value from interim measures, including their incorporation as key elements of the final schemes. The Inspectorate expects that this will require early, if not immediate, progress in the provision of localised mitigation measures. As with all drinking water quality improvement schemes, a supplier's statutory duties are not relieved by having in hand proposed solutions, and all reasonable steps must be taken to have in place and manage interim risk mitigation measures;
 - c. The Inspectorate expects scheme sponsors to adopt adaptive planning where it is appropriate for each scheme. This approach will help manage risk over appropriate

timescales, including provision of interim mitigation measures, and it both facilitates changes to planning assumptions (for example, delivery of reductions in network leakage, or demand management expectations on consumption reduction targets), and accommodates innovation and technological advances over the long delivery timeframes of typical strategic water resource schemes. In addition, smaller schemes that are planned with provision for expansion, and incorporating future elements where practical and financial considerations show it is appropriate, are generally more nimble in delivery, maintain and support a stronger lower tier local network of service companies, and are a hedge against uncertainty in long term forecasting;

- d. The Inspectorate supports the views of both the NIC that strategic infrastructure schemes should deliver public value, and of Ministers that resilience investment should comprise best value solutions. We welcome the discussions currently taking place with other stakeholders to find a consensus on how these views might be interpreted in the water sector and expect the outcomes to be reflected in the RAPID group of schemes and in the delivery of suppliers' current WRMPs. The Inspectorate expects that these discussions will extend beyond direct financial accounting innovations to considerations of solution innovations that have embedded local and inter-generational benefits with low carbon consequences, that enhance consumer acceptability, and that provide benefit for the environment and the economy;
- e. The legitimate costs of maintaining readiness for use of an out of service strategic water resource scheme are a continuing concern for some recent water resource enhancement solutions. The Inspectorate would expect to see these availability costs exposed, and provided for, as a core element of any optioneering exercise for every proposed scheme; and
- f. Clarity is also vital about the challenges coming from integration of new water resource schemes with existing supply systems, including the provision of data handling for integrated monitoring, control and correction/recovery arrangements if solutions are provided and operated by third parties.

7.7 RAPID publishes its protocols and templates for each of the gates, with the template including the following requirements regarding drinking water quality:

Initial drinking water quality considerations and risk assessments:

Gate one submission

Summary statement of the initial overall assessment of potential risks to drinking water quality and supply issues/resilience, including but not limited to:

An outline of the plan for future work to develop Drinking Water Safety Plans including identification of key risks.

Consideration of short, medium and long term mitigation to ensure security of customer supplies during construction and commissioning phase.

Confirmation that the solution has been discussed with company Drinking Water Quality teams, and feedback on their initial views,

Confirmation of DWI engagement in the discussion at solution-specific level and throughout the process.

Gate two submission – in addition to the ongoing requirements of gate one:

Update to Drinking Water Safety Plans and monitoring programme.

Confirmation of ongoing discussions with local Drinking Water Quality teams

Highlight any areas of concern identified by the monitoring programme and proposed mitigation.

Time line for the approval of any regulation 31 approval required.

Gate three submission – in addition to the requirements of gates one & two:

Confirmation of ongoing discussions with local Drinking Water Quality teams

Highlight any areas of concern identified by the monitoring programme and proposed mitigation.

Evidence of ongoing testing of products undergoing regulation 31 approval; this means confirmation that BS 6920 testing has been satisfactory and product testing has been issued.

Gate four & five submission – in addition to the requirements of gates one, two and three:

Updated DWSP and monitoring programme

Evidence of ongoing or approval of key products under regulation 31

Confirmation of SRO design, commissioning and operation

- 7.8 For the Inspectorate to assess whether these criteria are met for the purposes of each gate, scheme sponsors should ensure that they have engaged with the Inspectorate prior to, and alongside, each RAPID gate submission. Detailed analysis of proposals will be carried out by the Inspectorate to support RAPID, and this may be best facilitated by the submission of scheme information covering the following areas:
- Basic explanation of the scheme;
 - Summary of drinking water quality implications of the scheme, including site operability and sustainability;
 - Plans to address drinking water quality risks identified including any impact of Covid-19;
 - Plans to maintain drinking water quality at relevant sites during planning and construction;
 - Plans to maintain drinking water supplies during extreme weather events whilst planning and construction is underway;
 - Comprehensive plans to address any regulation 31 issues, particularly for those products on the critical pathway; and
 - A plan for the regulation 15 new source risk assessment process.
- 7.9 The Inspectorate will work with RAPID to keep these requirements under review as schemes are progressed through the Gates and will ensure that lessons are learned throughout the process, updating this Guidance Note as necessary.
- 7.10 In addition to this Guidance Note, the Inspectorate has provided advice on other related matters that can be accessed on our website as shown below:

Regulation 15 – New sources	dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/03165754/Part-05-Monitoring-Additional-Provisions-B.pdf dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/24101243/06-2012.pdf
Regulation 27 – Risk assessments and drinking water safety plans	dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/03165744/Part-08-Water-treatment-B.pdf
Regulation 31 – materials in contact with drinking water	dwi-content.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/11/03165745/Part-08-Water-treatment-C.pdf

8 Contact details

It is expected that water resource planners will seek advice on this Guidance Note in the first instance from their water quality colleagues.

Further advice and guidance may be obtained from Brenda Caymen; Brenda.caymen@defra.gov.uk or Caroline Knight; caroline.knight@defra.gov.uk, or from the supplier's DWI Liaison Inspector.