National Guidance Document on the Provision of Water for Firefighting

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4th

Edition

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Water UK, on behalf of the UK Water Industry

The National Fire Chiefs Council, on behalf of The Fire and Rescue Service (FRS)

Contents

1. Introduction and purpose

The purpose of this document is to facilitate and promote liaison between Fire and Rescue Services (FRS) and Water Undertakers in England and Wales through guidance, that identifies the issues that Water Undertakers and FRS should consider when preparing their own local agreements and providing water for firefighting purposes. It is not the intention that this document should impose any additional legal obligations on them. The document should not be taken as legal advice or engineering guidelines and does not take precedent over any local agreements without prior agreement between both local parties.

Water Undertakers operate within a regulated environment and the exercise of their functions are governed by statute and the Instrument of Appointment. Water Undertakers are required to provide the highest levels of service to their customers, including the FRS, at levels of costs that reflect good value for money, and have a general duty under Section 37 of the Water Industry Act 1991 to maintain an 'efficient and economical' supply system.

Water Undertakers as a group consist of: Water and Sewerage Companies (WaSCs), Water Only Companies (WOCs), and New Appointment and Variations (NAVs). A WaSC will supply both drinking water and sewerage services while a WOC will only provide drinking water services, NAVs on the other hand exist as a company which will provide water and/or sewage to an area previously served by a WaSC or WOC.

The FRS is a public emergency service and is provided under statute in accordance with the Fire and Rescue Services Act 2004 In addition, The Civil Contingencies Act 2004 sets out FRSs responsibility to react to emergencies as a category 1 responder.

Taking account of these operating parameters, the document is aimed at developing a set of principles to support good local liaison. It is only through a thorough understanding by both parties of each other's statutory duties and procedures that the day to day working relationships will effectively deliver the service expected by the public from both organisations. To promote a good understanding, it will be necessary for effective communication links to be developed at all levels. It is considered that the foundation for these, lies in structured training and education supported from a firm commitment by those involved.

Both the FRS and Water Undertakers are developing and adjusting their operational procedures, where possible, to take account of the environmental impact of their operations and the impact operations may have on customer service and the quality of water provided to those customers. This may require the parties to work closely together to evolve their procedures to adjust to changes in standards and expectations.

2. Governance

This document has been produced through collaboration between the FRS, the National Fire Chief's Council, Water Undertakers and Water UK. The document has been approved by senior water industry committees and Water UK.

The governance structure managing the relationship between the FRS and Water Undertakers is explained in the table below:

	Attendees	Topics	Frequency
National	**Mandatory:** Water UK NFCC **Optional:** HSE DEFRA	• National Issues • Future Policy • Future Legislation • Technical Developments • National Guidance	6 Months
Regional	**Mandatory:** NFCC Water Officer Group Water Company Senior Managers	• Regional Strategic Issues	Quarterly
Local	**Mandatory:** Water Company Local Representatives Local FRS Representatives	• Local Risks/Horizon Scanning • Escalation needs to Regional forum	Quarterly

In order to maintain this document's accuracy, the NFCC and Water UK Water for Firefighting Working Group will undergo two review timescales:

- Legislative changes will always cause a review of the document
- Change requests should be made through the above governance structure, feeding into the National Group
- A short review each year to capture any minor or emergency changes, ensure the document is still being utilised effectively and verify document links. If at this review no changes are identified then no republishing of the document will take place
- A total content review every five years to review the whole document and incorporate the previous five years of learning. Following this review the document will always be republished following approval

3. Fire and Rescue Services Background Legislation

The Fire and Rescue Services Act 2004 sets out both the duties and powers under which water for firefighting should be provided. It requires that the FRS takes all reasonable measures to ensure the provision of an adequate supply of water and securing its availability for use in case of fire.

The Fire and Rescue Services Act 2004 also requires the Water Undertaker to take all necessary steps if requested by the FRS to provide a greater pressure or higher flow supply than normally available. This could include shutting off supplies from other mains. The legislation is available online via the following link: Fire and Rescue Services Act 2004 c. 21 Part 5 - Water Supply

4. Water Undertakers Background Legislation

Obligations on Water Undertakers are contained in the Water Industry Act 1991 (WIA), the Security and Emergency Measures Direction 2022, the Water Supply (Water Quality) Regulations 2016 (England), 2018 (Wales), and the Instrument of Appointment (the Licence) issued by Ofwat. The WIA and Licence are supplemented by directions and regulations. The WIA and associated regulations include obligations on Water Undertakers to:

- Develop and maintain an efficient and economical water supply system and provide water to those who request a supply;
- Supply water that is wholesome and within defined quality parameters. Water Undertakers could be subject to prosecution by the Drinking Water Inspectorate in the event of water quality breaches;
- Install fire hydrants at the request and expense of the FRS (or the person who requests the hydrant). Hydrants are fixed at locations specified by the person requesting the hydrant (but cannot be fixed to trunk mains);
- Allow water to be taken from a hydrant to fight fires. Water taken for fighting fires or for testing and training is not chargeable;
- Keep hydrants in good working order;
- Subject to operational requirements, to ensure that water in mains used to supply water for domestic purposes or which have hydrants fitted to them are laid on constantly and at a pressure to reach the top of the top-most storey of every building within the undertaker's area, but there is no obligation to supply water at a height greater than that to which it will flow by gravity (see Sec 65 of the WIA for full details).
- Provide water for domestic purposes at an agreed minimum flow and pressure and report to Ofwat where this is not achieved, and to supply water without interruption, which if they occur on an unplanned, unnotified basis must be reported to Ofwat. Both measures are used by Ofwat as one of the principal indicators of customer service performance in the water industry;
- Provide new water mains and associated apparatus at the request and expense of the developer of new buildings. Water Undertakers do not have powers to require developers to size apparatus to meet any firefighting requirements or to provide fire mains that meet a minimum specification.
- The legislation also states that recklessly interfering with any resource, water main or other pipe is an offence.

5. Local Agreements

The relationship between the FRS and the Water Undertakers is critical to maintaining public safety. Whilst this document provides clear guidance on the key roles and responsibilities for both parties, the nature of each water region and organisation construct is very different and thus, it's recommended that the parties document how they will work together in the form of a local agreements document or equivalent (Fire and Rescue Services Act 2004, Section 39). To help drive consistency in approach, local agreements should where possible aim to adhere to the guidance and confirm as such but detail any specific deviations from the guidance.

It should also be noted that the Water Undertakers and the FRS do not share common boundaries and in some cases will need to work with several different authorities and where appropriate, maintain separate local agreements.

A guideline and template providing a guide to contents included within a local agreements document can be found in appendix 4 & 5**.**

Dispute Process[1]

Where possible, any disputes should be resolved through the governance structure outlined in section 2 of this document. Specific dispute resolution steps are outlined in appendix 2 "Model Disputes Procedure".

[1] We are currently working with regulators on developing an update dispute procedure.

6. Education & Training

To enable the effective and joined up response to fire incidents, it is recommended that personnel required to support such incidents from both the FRS & Water Undertakers receive an appropriate level of education and training so that they know their role and responsibilities, what to expect and have an appreciation of the key technical aspects that are required to ensure a joined up and effective response.

It is also recommended that FRS/Water Undertakers prepare Incident Best Practice Guidelines and playbooks that can be used to support training and act as a checklist to follow during a fire incident.

Each Water Undertaker and FRS will operate slightly differently and have different challenges depending on things like the geography, population density and the nature of industry in an area etc. This guidance therefore sets out recommended approaches and themes for education and training, but more specific details should be set out in local agreements Both Water Undertakers and the FRS should support one another in delivering and arranging training in their area of expertise.

Water Undertakers and the FRS have a responsibility to consolidate and share national learning through the relevant forums detailed in Section 2.

Water Undertaker personnel:

It's important that personnel deployed to support a fire incident, have the appropriate basic capability and competence to undertake their normal standard duties. It should be noted that not all Water Undertaker personnel will have training and competence to support fire incidents and thus additional education and training may be required.

It is recommended that all Water Undertaker personnel who play a role in the incident response to a fire are competent to do so. This should include having an overview of typical fire incidents, the role of the FRS and the typical nature of their response. They should be able to undertake all necessary tasks required to support the provision of water for firefighting purposes, whilst managing risks to water quality, damage to water mains and where appropriate the safe discharge of firefighting run off into Water Undertaker sewerage systems.

Education and Training should be tailored to reflect the regional differences and should include but not be limited to:

1. Overview of the Civil Contingencies Act and the role of the FRS & Water Undertakers as Category 1 & Category 2 responders.
2. Overview of legislation and the duties of Water Undertakers in supporting the FRS during Fire Incidents.
3. Overview of a typical incident structure and the roles and responsibilities of key personnel such as the Incident Commander and the Bulk Media/Tactical Advisor, Water Officer etc.
4. Overview of standard communication protocols including the process for direct communication with the FRS and the role of the Local Resilience Forums (LRF) and when and how to communicate with and through them.
5. Overview of the typical set of up of a fire ground, including type of fire appliance and equipment deployed and their typical flow requirements.
6. Overview of FRS Flow requirements and the options around how these may be met whilst minimising the risks such as pipe bursts and water quality failures.
7. Overview of basic water hydraulics including key terms such as flow, pressure, and head loss etc.

8. Overview of Fire ground safety. This should include a review of Water Undertaker essential safety standards, risk assessments and safe systems of work.
9. Overview of the FRS Water Quality and Pollution Control Guidelines which detail how to protect the environment including the management of discharges directly into, or indirectly through any system that will lead to, controlled waters and Water Undertaker Sewerage Systems and any potential impact on downstream receiving water and wastewater treatment works.
10. Involvement in Fire Service exercises (as appropriate) to help build relationships, share knowledge and test procedures around the use of water for the purpose of firefighting.

Additionally, this guidance strongly recommends that water industry personnel plan and undergo regular training exercises with the FRS to reinforce the learning detailed above.

Not all Water Undertaker personnel will require this additional education and training for fire incidents, and it is recommended that each Water Undertaker retains a training matrix within its local agreements that set out the key personnel required to support a fire incident, defines which of the items above are required for each role and the nature/frequency of the training to be provided. It is also recommended that records of education and training is retained.

FRS personnel:

It's important that personnel deployed to support a fire incident have the appropriate capability and competence to undertake their normal duties.

In addition to these standard duties, it is recommended that FRS personnel have an overview of typical fire incidents, the role of the Water Undertaker and the typical nature of their response. This should include but not be limited to:

1. Overview of the Civil Contingencies Act and the role of the FRS & Water Undertakers and as Category 1 & Category 2 responders
2. Overview of legislation and the duties of Water Undertakers in supporting the FRS during Fire Incidents.
3. Overview of a typical Incident Structure and the roles and responsibilities of key personnel such as Water Undertaker Incident Managers, Control Room Staff, Network Engineers, and Field Technicians.
4. Overview of communication protocols, including the process for direct communication with the Water Undertakers and the role of the Local Resilience Forums (LRF) and when and how to communicate with and through them.
5. Overview of a typical fire ground set up, including type of fire appliance and equipment deployed and their flow requirements.
6. Overview of FRS Flow requirements and the options around how these may be met using a range of solutions including local water courses and Water Undertaker fire hydrants and washouts whilst managing risks such as pipe bursts or water quality failures.
7. Training on how to operate fire hydrants in a way that prevents pressure surges that have the potential to damage pipes.
8. Overview of basic water hydraulics including key terms such as flow, pressure, and head loss etc.
9. Where they exist, an overview of hydraulic modelling tools provided by Water Undertakers and set out in Section 8.

10. Overview of Fire ground safety. This should include a review of FRS essential safety standards, risk assessments and safe systems of work and how to ensure the safety of Water Undertaker personnel when present at a fire ground.
11. Overview of the FRS Water Quality and Pollution Control Guidelines which detail how to protect the environment including the management of discharges directly into, or indirectly through any system that will lead to, controlled waters and Water Undertaker Sewerage Systems and any potential impact on downstream receiving water and wastewater treatment works.

It is recommended that each FRS retains a training matrix within its local agreements that set out the key roles that play a part in a fire incident, defines which of the items above are required for each role and the frequency that training will be required.

It is also recommended that records of education and training is retained.

7. Incident Management

In order for both parties to be able to satisfactorily meet their obligations it is imperative that there is early dialogue between FRS and Water Undertakers during the incident response phase. This applies equally to incidents to which the FRS is responding that may affect Water Undertaker assets or supplies, and incidents upon the water supply infrastructure that may impact on the supply of water for fire-fighting purposes.

When notifying Water Undertakers of incidents, consideration should be given to the use of the Joint Emergency Service Interoperability Principles (JESIP) 'METHANE' mnemonic to ensure information is provided in a consistent, precise, and understandable format.

Major Incident Declared

Exact Location

Type of Incident

Hazards Present or suspected

Access – routes that are safe

Number, type and severity of casualties

Emergency services present and those required

Furthermore, the purpose of the notification must be made clear i.e., for information only, or for a supporting response.

Roles and responsibilities

FRS should notify Water Undertakers as set out below, however this is not to be considered exhaustive and local agreements may supersede any notification requirements. To assist notification, it is recommended that Water Undertakers provide direct access to Water Undertaker Control Rooms and contact centres etc.

a) Incidents where potable water is required to be drawn off mains supply.
   - Fire Incident - Urban > 6 pump fire or equivalent - Phone notification to the Water Undertaker as set out in their local agreement
   - Fire Incident - Rural > 3 pump Fire or equivalent - Phone notification to the Water Undertaker as set out in their local agreement
   - Planned Flow/Pressure Testing – To be agreed in advance with minimum 7 days' notice – Communication method to be set out in local agreements.

b) Incidents where a FRS requires additional water for fire-fighting purposes from Water Undertaker potable water or raw water mains etc.

c) Large fires in the open without mains connection, such as moorland fires (see Section 9 on use of alternative water supplies)

d) Incidents where access to or use of areas of open water assets owned by Water Undertakers such as impounding reservoirs is required

e) Incidents involving persons and/or personnel in reservoirs

f) Incidents where firefighting run-off or hazardous materials have entered, or may enter, the wastewater network or local water course.

Where the FRS require the Water Undertaker to provide support for an incident, they should provide details of the incident, the type and nature of response required and enable the Water Undertaker to recommend a range of available options to meet the firefighting needs whilst managing any potential risks (See Sec 8 Water for Firefighting).

Water Undertakers should notify the FRS of any incidents that may impact on the availability of water for firefighting purposes. This may include but not be limited to:

g) No-water events (planned or reactive)
h) Poor-pressure events (planned or reactive)
i) Rota outages, where for example, parts of the water network are isolated to protect wider supplies in periods of drought or large-scale water supply interruption incidents.
j) Temporary supply arrangements e.g., where a water tanker is being used to supply an area during times of planned or reactive maintenance.

This information will allow the FRS to consider the most effective response to fire incidents in the areas impacted

Below is guidance for when to notify the FRS of changes in water supply. Due to regional differences, this should be confirmed through local agreements.

- No Water - Urban > 500 properties for 6 Hours
- No Water - Rural >100 Properties for 6 hours
- Low Pressure – Urban >500 Properties for 24Hours
- Low Pressure – Rural >100 Properties for 24Hours

Environmental impacts of firefighting

Firefighting activities can have several impacts on Water Undertaker assets that may lead to wider environmental impacts such as pollution to watercourses.

If firefighting run-off enters wastewater sewers, it has the potential to impact biological processes at wastewater treatment works as the substances in the water may be harmful to biological life. This in turn can impact the effectiveness of the sewage treatment process, can cause the Final Effluent Quality to be impacted, leading to regulatory compliance failures or pollutions.

Due to the variables involved i.e., sewer flow, dilution, chemical composition, size of receiving Wastewater Treatment Works etc, it is not possible to predict the impact that firefighting run-off will have. The FRS should undertake an assessment and where risks may be present such as in fires at commercial or industrial premises or involving hazardous goods, then they should notify the relevant Water Undertaker (this could be different based on water and sewerage arrangements) as soon as possible.

There is also a risk where firefighting run-off enters a watercourse upstream of a water abstraction point. Again, the treatment process and therefore Water Quality may be impacted, preventing onward distribution and the potential for loss of potable water supplies to customers. In addition to surface water abstraction, groundwater abstraction can be affected where firewater runoff can enter the ground and transport to the groundwater table upgradient of a water abstraction point. As with surface water, the treatment process and therefore Water Quality may be impacted, preventing onward distribution and the potential for loss of potable water supplies to customers. The FRS should notify the Water Undertaker as soon as possible of firefighting run-off entering the watercourse, so

that it may check for downstream and downgradient abstraction points and take appropriate action to safeguard supplies and public health.

The use of Source Protection Zones maps that identify the most sensitive catchments where water is abstracted will support where water companies should be notified immediately.

8. Incident Flows

The availability of water for firefighting from the potable water network will vary significantly depending on several factors including the design, construction, configuration, performance, and demand etc.

Water systems are designed to meet and where possible exceed standards set out in regulation/legislation, ensuring that customers always receive adequate flow and pressure. However, systems are not specifically designed to meet firefighting requirements and doing so would be highly inefficient leading, for example, to oversized pipes and pumping equipment etc that would need to operate outside their optimal performance parameters. The over-sizing of infrastructure can lead to water quality issues as lower water velocities leads to settlement and retention of particulates in pipes and an increased age of water, leading to loss of chlorine residual and an increased risk of a water quality failure and risk to public health.

It's important therefore that developers and property owners consider how firefighting needs will be met and in doing do, should consider a range of solutions and not just water from public fire hydrants. This could include on-site storage tanks, fire suppression systems, dedicated fire mains, or the use of nearby water courses etc. It's also important that this is done in consultation with the FRS and Water Undertakers to ensure an optimal solution.

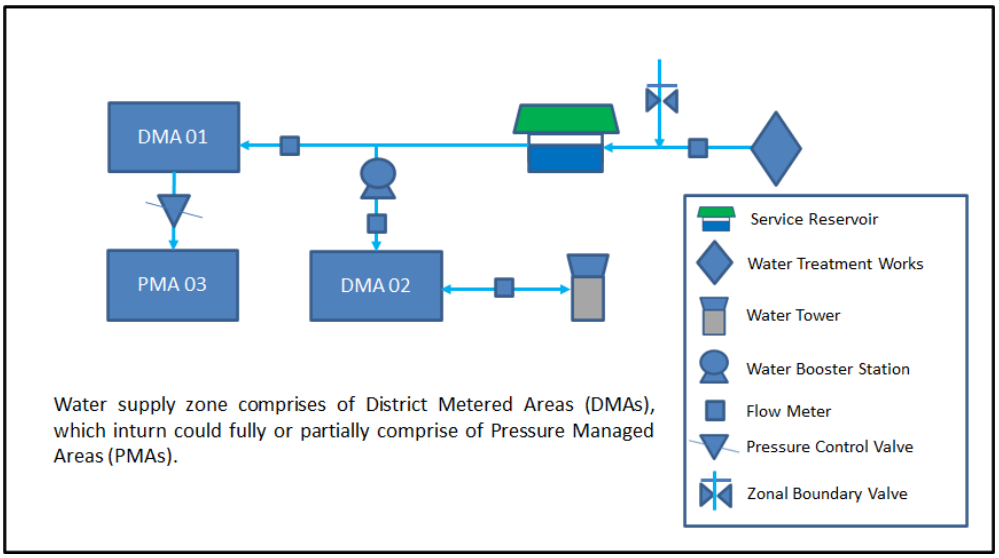
The FRS rely on hydrant flow rates to effectively perform their roles. As such Water Undertakers should reasonably endeavour to respond to any requests for additional flow at a specific location during an incident in accordance with the Fire and Rescue Services Act 2004, c. 21, Part 5, Section 40 - Emergency supply by water undertaker .

Hydraulic Water System

Water systems will vary in construction, but typically consist of a one or more primary inputs from a Water Treatment Works or Pumping station. Large diameter water mains then transport treated water in large volumes to Water Supply Zones (WSZ's), where they then branch off into smaller discrete areas of distribution mains called District Metered Areas (DMA's) which transport water to people's homes and businesses. Most systems will also contain a level of storage via covered potable water storage reservoirs or water towers.

Whilst the pipes are connected hydraulically, pressures throughout the system will vary. The boundary between WSZ's and DMA's can be opened to maintain pressure and water flow during planned/reactive works or to support the provision of water for firefighting, but in each case, this will require the Water Undertaker to undertake a risk assessment to ensure that the activity does not impact water quality or cause damage to pipes. This risk assessment also needs to consider the risk to life that is affected by the fire. The boundary between adjacent DMA's can also be opened to maintain pressure and water flow, where the neighbouring DMA has sufficient capacity and where it contains higher pressure than the receiving DMA. Again, this will require a Water Undertaker Risk Assessment.

Typical Water Supply Zone



Each water system will be designed with the capacity to meet a level of water demand (flow of water) whilst maintaining and where possible exceeding minimum pressures and whilst meeting defined water quality parameters. Capacity may vary throughout the year due to planned and reactive maintenance or as domestic and commercial use responds to external factors, such as the weather. As capacity and demand changes, Water Undertakers will adjust operating parameters either manually or automatically to ensure flow, pressure and water quality is maintained.

Many modern water systems are now fitted with pressure management systems, to reduce water loss through leaks and reduce the stress on the pipes. These will vary in type, but typically will respond to the changes in demand with the pressure control valve (PCV) opening or closing to maintain a set pressure within the system.

Water for Firefighting

When Fire Hydrants (FH's) are used for firefighting, additional demand will be placed on the hydraulic system and there are several issues to consider:

a) What is the additional demand (flow of water) required to fight the fire? This will require expertise from the FRS to estimate the size and nature of the fire and the flow requirements of the equipment that will be required to fight it. Understanding fire-flow needs is critical in determining the most effective way to meet the fire-flow requirements.
b) Is there spare capacity in the system to meet the additional demand? Water Undertakers once understanding the flow requirements set out by the FRS will be able to do some basic analysis using flow and pressure data and other available information relating to the age, condition, and health of the system to determine whether the fire-flow can be met. Increasing levels of demand on the system above its design capacity will cause pressures to fall and could increase the velocity of water flow in pipes leading to water quality issues.
c) Are there sufficient Fire Hydrants in the vicinity of the fire to enable the level of fire-flow to be extracted from the water system? Where insufficient hydrants are available on either the private property or on the Water Undertaker network, the Water Undertaker may be able to identify alternative public Washout Hydrants (WO) that may be used instead. These are often

constructed in the same way as a standard FH but may be subject to a different maintenance regime. The FRS should also consider a range of alternative options as set out in Sec 9

d) How much flow can be extracted from each fire hydrant? This can be very difficult to determine without more detailed hydraulic modelling and would not be possible at the time of the fire. Water Undertakers may be able to undertake a basic assessment as set out in (b) above. They may also endeavour to develop more sophisticated modelling tools that use a range of information and statistical data to estimate available fire-flows in each part of a hydraulic system. This may only act as a guide and may vary in accuracy depending on the nature of the modelling and the quality of data inputs. This information may be used by Water Undertakers and FRS to aid proactive planning or used at the time of a fire to aid decision making.
e) Where there is insufficient capacity within a hydraulic system to provide the level of fire-flow required, Water Undertakers will consider options to increase capacity such the opening of valves to infuse water between WSZ's or DMA's, bypassing manually controlled pressure management systems in cases where they are not programmed to respond automatically or increasing pumping. Each option will require the Water Undertaker to undertake a risk assessment to ensure that the action will provide benefit without causing a risk of damage to pipes or impact water quality.

It should be noted, that raising the pressure in water mains above normal operating pressures may increase the likelihood of a pipe burst that could significantly reduce fire-flows.

To aid an effective incident response, it is essential that the FRS communicate the precise fire flow needs as soon as possible and maintain communication should these needs change throughout a fire incident. As the approach to communications will vary, it is advised that the approach be agreed between parties and set out in local agreements.

Fire Hydrants

Fire hydrants (FHs) are manufactured to BS750, which was first published in 1937 and revised in 2023 (new version due in 2025). The current version of the standard requires that the FH fitting itself has a flow coefficient (*Kv*) of 92, which corresponds to a flow rate of 2000 l/min from the outlet when provided with a constant pressure of 1.7 bar at the inlet under laboratory conditions. This requirement has been in place since at least the 1984 version, and likely earlier, but older FHs may have been manufactured to different specifications. Importantly the actual performance (flow and pressure) of each installed FH will depend on multiple factors such as: the design of the wider hydraulic system, the design of the pipe that the FH is connected to, system demand, age and condition of pipework, leakage and flow restrictions caused by partially shut valves etc. It's also important to understand that any equipment connected to the FH, whether that be a standpipe, lengths of fire hose, or other fire-fighting equipment, will introduce further frictional losses that will further reduce both the flow and pressure of the water being delivered through the FH. Although in principle the flow rate from a FH can be increased by raising the supply pressure, the hydraulic relationship between pressure and flow rate is such that, in approximate terms, even doubling the mains water pressure would only result in a 40% increase in flow rate from a hydrant. In practice, if increases above normal operating pressures are possible, they will be considerably smaller than this and so the actual flow increase achieved may be minimal.

Preparatory works & Risk Assessment

As the availability of water for firefighting will vary from system to system, it is recommended that the FRS undertake risk assessments and preparatory works to enable firefighting plans to be developed and where appropriate tested, particularly at high-risk sites. These should also be periodically reviewed to ensure they reflect the current situation. Collaboration between the FRS and Water Undertakers will enable risks to be understood and more effective plans to be established by the FRS.

9. Alternative Supplies of Water for Fire Fighting Services

In certain situations, alternative supplies of water may need to be considered to support firefighting instead of, or in addition to, treated water from public (statutory) fire hydrants. In these situations, it will be the responsibility of the FRS to identify and locate alternative sources. Examples of instances which may require this may include.

a) There is no treated water network in close proximity to the incident (i.e. fires in rural areas)
b) The size of the fire requires a significant amount of flow which cannot be provided or sustained from the water network.
c) There are known planned operations or emergency water network issues (e.g., there is currently no supply to the area due to a pre-planned operation or burst water main)

Types of alternative water supplies for firefighting that may be considered by the FRS will include:

a) Potable water from Water Undertaker washout hydrants. The FRS may request information on the location of Water Undertaker washouts should they be required during an incident. It should be noted that Water Undertaker washout hydrant may not be subject to the same maintenance as fire hydrants.
b) Water from Water Undertaker raw water mains or impounding reservoirs.
c) Non-Water Undertaker owned untreated water sources such as springs, rivers, canals or ponds
d) Water from amenities such as local public or private swimming pools
e) Mobile Water Tankers that may be provided by the FRS, Water Undertakers or Private Tanker Companies.
f) Through the FRS making a request for mutual aid.

Use of Water Undertaker owned impounding reservoirs

Where a FRS are planning to abstract water for firefighting purposes or use impounding reservoirs for incident testing and exercising etc, the Water Undertaker must be notified in advance. This applies in all instances whether pumping water from the asset or aerial collection via scooping planes.

The Water Undertaker and FRS will need to consider known hazards and risks to ensure that suitable mitigation plans are in place. Key risks to consider may include:

a) Impact to raw water quality and the subsequent production of treated water
b) Availability of raw water and depth of reservoir (i.e. reservoirs may be very low or empty during prolonged dry periods)
c) Above and below ground structures that may be damaged or cause damage to FRS.
d) Harm to members of the public or Water Undertaker personnel working on site or using leisure facilities such as walking, cycling, sailing, and fishing etc

FRS and Water Undertakers should proactively work together to identify key impounding reservoirs which may be used in an incident and prepare plans.

High volume pumping

In certain situations, the FRS may wish to deploy high volume pumps. These pumps are more likely to have inadvertent effects on water main pressure, cause pipes to burst and impact water quality.

Use of such pumps would typically require the connection to hydrants on larger diameter strategic (trunk) water mains. Water undertakers do not under normal circumstances allow connection to such

mains as the impact of pipe and water quality failures can be far greater. The use of such pumps should only be done with expression permission of the Water Undertaker and ideally be agreed in advance as part of proactive works to mitigate the risk at a high-risk location.

The approach to deploying such equipment should be set out in local agreements.

10. Managing Water System Change

There are several circumstances where Water Undertakers are required to undertake changes to the water network including:

a) Installation of a new pipe
b) The upgrade, reline or replacement of an existing pipe
c) The diversion of a pipe
d) The removal or abandonment of a pipe etc

Throughout the lifecycle of the proposed works, the aim should be to minimise the number of touchpoints, provide processes that enable clear, timely and effective communication and engagement and ensure that there is a record and audit trail of activities undertaken and information exchanged. Communication and engagement of the local FRS is key, to ensure the works meet future firefighting requirements.

The below principles should be considered when undertaking such works. As processes vary between Water Undertakers and FRS, it's important that these processes be documented and agreed through local agreements.

Works may be initiated by 3rd Parties including Developers and Self Lay providers, Water Undertakers, NAVs or by the FRS themselves. The process for managing these works remains broadly the same but the example below sets out the suggested processes for work instigated by a developer.

1. Developer submits request to the Water Undertaker setting out the details of the proposed development and the flow requirements.
2. The Water Undertaker reviews the need and undertakes a study to confirm whether it can meet the need using existing infrastructure or whether network reinforcement etc is required. This study may include hydraulic modelling or flow testing where appropriate.
3. It should be noted that the infrastructure design will be based on nominal demand requirements and will not be sized to meet any specific firefighting flows as this could lead to mains being over-sized and causing future water quality issues.
4. The Water Undertaker will complete the outline design for the proposed mains works and this will be sent to both the developer and the FRS for review and comment.
5. The FRS will inform the Water Undertaker should they require any new public (statutory) fire hydrants to be installed on the new mains or whether they require an existing Water Undertaker washout hydrant to be adopted. The cost of such works will be borne for the FRS.
6. The details of how parties will communicate with one another and the timing for these should be set out in the local agreements. It is recommended that this be a formal process that provides a record of interactions and approvals that can be available for future review and audit.
7. Once the developer and FRS have accepted the proposed design and informed of any Fire Hydrants required, the project will move to construction.
8. Throughout construction, the Water Undertaker will retain records of the work undertaken and may compile 'As Laid` drawings.
9. Once construction is nearing completion, the FRS shall be invited to attend the post construction walk-off. Attendance is at the discretion of the FRS, but to aid attendance, it is advised that a minimum of 2 weeks' notice be provided.
10. Once complete, the FRS shall provide formal approval of the works and the Water Undertaker will update its network drawings to reflect the changes made.
11. In many cases, the Water Undertaker will require sign-off by the FRS once the water main is installed, commissioned, and connected to the live water system. This can often be at a stage prior to the developer completing the final road surfaces leaving the risk that hydrant boxes can become damaged or obstructed during the remaining phases of development. It is recommended that the FRS set their maintenance frequency to ensure that any subsequent

defects can be identified and addressed within defect liability periods (typically 12 months). This will enable the works to be corrected at the developer's costs. Failing this, the Water Undertaken can still look to recover defective works costs through 3rd party claims processes, but this would require evidence that the damage was caused by the developer and is not always easy to prove.

11. Water Quality & Loss of Supply

All Water Undertakers must comply with the Water Supply (Water Quality) Regulations 2016 (England) or 2018 (Wales) and no dispensation is given for impact to water quality caused by firefighting. It is important that FRS and Water Undertakers work together collaboratively to ensure that the approach taken to firefighting and the maintenance of fire hydrants considers the risk to water quality which can impact public health.

Some water systems are more susceptible to Water Quality issues than others and Water Undertakers are required to maintain drinking water safety plans that sets out any known risks.

Factors associated with firefighting and fire hydrant maintenance that may impact the supply or quality of potable water include:

a) Drawing too much water which may lead to depressurisation. This can cause a loss of water supply and contamination of the water system through the ingress of untreated water.
b) Shutting off hydrants/valves/appliances too quickly may create pressure transients which can lead to pipe damage and loss of the water supply.
c) Disturbing sediment in the main by changing the speed or direction of flow resulting in discolouration of the water supply.

The consequence of detrimental impact to water quality or loss of supply may be severe, particularly in the case of contamination which could lead to widespread impact to public health. Loss of supply would also impact the ability to respond to the fire incident. It is therefore essential that:

a) FRS inform Water Undertakers prior to using the potable water network for firefighting or flow testing as set out is section 7.
b) Water Undertakers support the FRS through undertaking water quality risks assessments, providing guidance and where necessary, provide an operational response.
c) Water Undertakers and FRS should regularly engage to review fire incidents, share learning, and develop action plans to drive improvements.
d) FRS should take a risk-based approach to flow testing of hydrants and consider the value to be gained through this activity. Where flow testing is undertaken it must be agreed by both local parties in advance and be performed collaboratively to minimise risk (see section 12 for guidance). Other alternative options that do not pose as great a risk to water quality should be considered as an alternative such as the use of estimated flow calculators and/or hydraulic models.
e) All equipment utilised by the FRS must conform with appropriate water hygiene best practice.
f) Actions should be undertaken in line with calm networks principles. Examples of equipment should include installing slow closing/opening valves on fire appliances or utilising ramps on lay flat hoses crossing roads to prevent vehicles causing a sudden stop in flow.
g) Contamination of the mains supply with any solids or liquids must be avoided. If negative pressures are observed by FRS personnel the Water Undertaker should be informed immediately (i.e., a hydrant suddenly ceases to provide water or appears to be sucking air)
h) Covered potable water reservoirs must not be used for firefighting purposes. It may however be necessary to consider the installation of a fire hydrant at the boundary of the reservoir site.
i) All equipment used by the FRS on the potable water network, must be adequately maintained, stored, and cleaned.

12. Inspection Testing and Abandonment of Hydrants

Objectives and issues for consideration in formulating policy

The joint objectives of FRS and Water Undertakers in relation to fire hydrants are:

a) To ensure that there is access to water for firefighting purposes.
b) To maintain hydrants efficiently at minimum costs.
c) To prevent discolouration of water supplies
d) To prevent damage to pipes

The prime concerns of Water Undertakers are the impact of hydrant inspection, testing and flow testing activities by FRS on the quality of water in their distribution systems and the potential harm caused to pipes through pressure surges etc. The prime concern of FRS is the validity of hydrant testing, inspections, and the resulting cost of repairs.

Any maintenance strategy should consider a balance of risk versus cost and should be agreed through local agreements whilst ensuring that all legal obligations are met.

Taking a risk-based approach will enable the frequency and nature of maintenance to be varied based on specific circumstances such as, the age and condition of the hydrants, historic failure rates and the nature of the property being served. Local collaboration between parties will enable risk to be effectively assessed, understood and for the appropriate maintenance regimes to be implemented and regularly reviewed.

As technology has evolved new approaches such as hydraulic models can be used to estimate the availability of water for firefighting at a given location. The accuracy of models will vary based on the quality and availability of data inputs and calibration techniques, but they are a useful tool in helping to determine maintenance strategies and reduce the need for full flow and pressure testing.

FRS may undertake inspections on fire hydrants within their respective areas, they may undertake repairs at their own cost, if agreed within the local agreements or they may raise work orders for Water Undertakers to undertake maintenance work on their behalf.

When operating and maintaining fire hydrants, both the Water Undertaker and FRS should do so in accordance with their respective safety standards and consider any known hazards.

It's important that fire hydrants remain in good working order. The definition of good working order (relating to specific scenario's) was clarified through a High Court ruling and is set out in case: [2009] EWHC 3109 (QB). Sec 57 of the WIA provides full details on the obligation for water undertakers to keep potable water hydrants in good working order.

Hydrant inspection and testing methodology

It is recommended that future inspection and testing of hydrants should consist of one or more of the three examinations:

a) Above ground
b) Below ground
c) Wet pressure test

Whilst the use of flow and pressure testing is not preferred due to the risk to water quality and pipe damage etc, this should still be considered in a range of options, ideally mitigated where possible using other techniques such as the use of hydraulic models etc, but if still necessary, then activity should be planned jointly and carefully between both parties.

It should be noted that flow and pressure testing will only provide an instantaneous view and may not represent the conditions available at the time of a fire including the weather, time of day, status of the water system and the effect of connecting equipment to the hydrant such as lay flat hoses etc.

Above Ground Examination

This will involve a visual inspection of the hydrant frame, cover, surface surrounding the hydrant and the hydrant indicator plate. It's important to ensure that the FH is compliant with Sec 81 of the New Roads and Street Works Act 1991 (NRSWA).

The inspection frequency should be risk assessed and consider location, age, material, failure history and fire risk.

For example, a hydrant situated in the pavement of a residential urban area free from vandalism, may require less frequent inspection, whereas a hydrant set in a country lane that has regular farm traffic driving over it may need inspecting more frequently to ensure it is clear of mud, etc.

Below Ground Examination

This will involve the visual inspection of the hydrant pit and the hydrant itself. Defects, which would affect the ability to deliver water for firefighting purposes or create a hazard should be reported immediately. Again, inspection frequency should be risk assessed and consider location, age, material, failure history and fire risk.

Wet Pressure Test

The hydrant test is conducted by fitting a standpipe to the outlet and then partially opening the valve to allow a small amount of water to flow (equivalent to a domestic tap). A blank cap is then fitted in the standpipe head, or the valve in the head closed and the hydrant fully opened. Whilst under pressure, all joints are visually inspected for signs of leakage and only those leakages that would impair the hydrant for firefighting purposes, or cause a hazard, should be reported to the Water Undertaker. The hydrant should then be turned off slowly and without excessive force, pressure released, and the standpipe removed.

Hydrants following use by FRS at operational incidents

Following use at an operational incident, the FRS should take the opportunity to record the hydrant number/location and to note any defects, which would otherwise have been found during a hydrant examination highlighted above. This will reduce the time FRS have to spend inspecting hydrants and will provide a record of when the hydrant was last used.

Maintenance costs

Cost is driven by several factors but includes the number of hydrants in a FRS area, inspection and testing policy, direct maintenance practices and administrative procedures. There will be a wide range of local circumstances that contribute to current practice across the country. The following points may help Water Undertakers and FRS to question and therefore improve current practice through liaison and agreement.

Number of Fire Hydrants

a) FRS to review through a risk assessed approach the number of hydrants required for a given area.
b) Review policy for the provision of new hydrants.
c) Consider a phased programme of abandonment, where fire hydrants are not required. This may be spread over several years.
d) Consider a policy to abandon hydrants as an alternative to repair.

e) Consider opportunistic abandonment of hydrants during Water Undertaker mains renewal, rehabilitation or diversion schemes.

13. Service Levels for Fire Hydrant Maintenance

As part of their duties, the FRS will undertake a fire hydrant inspection programme. During this work, the FRS may undertake basic repairs as agreed with the Water Undertaker and as set out in the local agreements document.

As part of the maintenance strategy for Fire Hydrants, its essential that defective fire hydrants are maintained and made operable within a timely fashion. Both parties recognise however that undertaking such work is not always straightforward and can require a range of pre-requisite tasks such as: obtaining highways permits; traffic management arrangements; risk assessments for pipe isolation and water quality clearances etc. Whilst these challenges are understood, it's important that

Water Undertakers prioritise this activity and work with the various agencies to ensure the safety critical nature of this work is understood

To assist the prioritisation of work, the FRS should firstly consider whether the issue renders the Fire Hydrant inoperable and whether it could be used safely to aid firefighting should it be needed. It should then assess the risk of each inoperable asset. This should consider its location the number and type of properties that it serves, the availability of other assets, or other alternative fire- fighting options such as open water etc and therefore, its ability to fight a fire should this asset remain unavailable. When raising a task, the authority will complete the risk assessment and specify the appropriate priority. The below table provides a guide to service levels, but due to regional differences, these should be agreed within local agreements.

Priority	Resolution Time (Working Days)	Percentage completed with SLA	Risk Description
1a (High risk)	30	85%	Inoperable fire hydrant, unavailable for firefighting with no suitable alternative.
1b (High risk)	2	85%	Hydrants presenting a physical health and safety risk e.g. broken or missing covers.
2 (Low Risk)	90	85%	Inoperable Fire Hydrant, but suitable alternate available.

The table above sets out recommended service levels, including the average time in working days it is expected to take the Water Undertaker to resolve a defect reported by the FRS and the percentage of jobs that are likely to be completed within that time frame. This recognises that there are tasks that will need to be completed that may take some time and are not always in Water Undertakers control. These may include, obtaining permissions from the local highways authority, waiting for conflicting highways works to be completed, obstructions such as construction site hoardings and scaffolding etc and Water Undertakers own activity.

Where delays occur, the Water Undertaker should inform the FRS as soon as this information becomes available so the FRS may consider steps to mitigate the risk.

The FRS having identified a defect, will issue a work order to the Water Undertaker. On receipt of the work request, the Water Undertaker will ensure that all the details required to complete the task including the priority are provided. Where this is not the case, the task should be rejected and passed back to the FRS inclusive of the details. The SLA duration will be measured from the date of receipt of a valid work request.

In the event of a safety defect being identified, the Water Undertaker should attend and make safe immediately, with the defect being resolved within the recommended service level or as set out in local agreements.

Whilst there may be delays in completing some defects, no hydrant activity should take longer than 12 months to complete and, in this instance, it is recommended that the Water Undertaker and the

Fire Rescue Authority discuss an appropriate course of action. This could include abandoning the fire hydrant where suitable alternatives exist or installing an alternative asset at an agreed location.

Due to regional differences, service levels may vary and so should be confirmed in local agreements. Should the Water Undertaker fail to perform in-line with the agreed service levels, then the parties should agree and document actions and a duration to make the required improvements. Where issues persist, this should be escalated through the local and regional forums.

14. Maintenance Charges[2]

Sec 57 & 58 of the Water Industry Act 1991 set out the requirement for Water Undertakers to maintain and where necessary replace fire hydrants. Details of the relevant legislation is set out below:

Sec 57 (3) – it shall be the duty of every Water Undertaker to keep every fire hydrant on any of its water mains or other pipes in good working order and for that purpose, to replace any such hydrant when necessary.

Sec 57 (5) – the expenses incurred by a Water Undertaker in complying with its obligations under subsections (2)-(4) shall be borne by the FRS.

[2] This a guidance document and Ofwat is currently reviewing the charging rules. Ofwat's work includes raising awareness/ increasing transparency for charges.

Sec 57 (5A) – Where a fire hydrant is damaged as the result of any use made of it with the authority of a Water Undertaker, other than use for the purposes of firefighting or for any other purpose of a Fire and Rescue authority, the fire and rescue authority is not liable for the cost of repairing or replacing the hydrant.

To reduce the cost of maintenance, Water Undertakers will maintain rather than replace fire hydrants, if it is practical and economically viable to do so. Replacement shall be the last resort and will only apply where the asset is unrepairable, or where the age and condition of the Fire Hydrant warrants.

The following principles should be considered between Water Undertakers and FRS in agreeing maintenance charges and these should be set out in the local agreements between the parties prior to the commencement of work.

Charges associated with the maintenance of Fire Hydrants requested by the FRS should include all costs incurred by the undertaker in complying with its duties. These costs shall include, but not be limited to:

a) Planning, Scheduling, Enabling, Traffic Management, Permits, Lane Rental charges, Parking Bay Suspensions and road closure fees.
b) Network switching to isolate the asset and associated pipework or undertake preparatory works such as infusing or flushing for water quality purposes.
c) Water quality risk assessment, sampling, and testing.
d) Excavation, Repair, Reinstatement.
e) Management overheads.
f) Due to a drive across industry to improve customer service, reduce interruptions to supply and reduce impact on water quality/maintain quality on water standard, Water Undertakers are required to develop techniques to enable maintenance work to be undertaken without the need to isolate supplies. This has led to the development of approaches such as the use of line-stopping technology and would be deployed in circumstances where the fire hydrant needs to be isolated but would lead to customer supplies being interrupted. As a result of this change in approach, the cost of installing such technology will be included in the maintenance charges. The cost deriving from such work is still under review.
g) To locate missing and buried Fire Hydrants
h) 3rd party defects - Costs incurred by the Water Undertaker in repairing or replacing a defective Fire Hydrant caused directly by a 3rd Party other than the FRS, shall be borne by the FRS. Where the FRS can provide formal evidence of the 3rd Party that caused the damage, then the Water Undertaker may reasonably endeavour to recover the cost of rectification from the 3rd party, rather than passing costs on to the FRS. Evidence should include information such as: company Name; vehicle registration; and time stamped photos etc

Where maintenance work undertaken by the Water Undertaker is deemed defective, any costs associated with rectification, should be borne by the Water Undertaker.

The provision of maintenance activity set out above, will vary between Water Undertakers and thus the method with which the undertaker will calculate its costs should be set out and agreed as part of the local agreements.

Where the Water Undertaker employs a 3rd party supplier to provide its maintenance activity, it should ensure that this has been subject to a formal procurement process and that in doing so, value for money can be demonstrated.

Charging schemes should be agreed annually with the timing for agreeing such charges set out in the local agreements. This will enable both parties to set budgets and obtain appropriate internal approvals. It is expected that charges will rise and fall in-line with inflation and where charges change for reasons outside of inflation such as contractual changes, change of suppliers etc then these should be discussed and agreed at the earliest opportunity.

Both parties acknowledge the challenges each other face in driving operational efficiency and reducing costs and Water Undertakers will continue to explore new techniques that enable the overall cost of maintenance to be reduced and will only look to use expensive techniques such as line stops where there is a risk of interruption to customer supplies.

The FRS should consider educating Highway Authorities and other utilities of the criticality of fire hydrants and the risks that can arise should hydrants be impacted by highway works.

15. Guidelines on flow requirements for fire fighting

The following flows represent the ideal requirements for new developments, infrastructure changes, and when the use of a building changes. In some locations the existing distribution system will not allow the delivery of such flows. In these cases, developers and should engage with the local FRS to come to an agreement that meets the need for firefighting including the use of fire suppression systems etc.

It should be noted that these flows do not reflect those that could be expected in existing water networks as outlined in Sec 8.

The flow rate data below aligns to firefighting flow-rate data identified within BS Application of fire safety engineering principles to the design of buildings – FRS intervention (PD 7974:2014+A1:2020 which in turn, relates to research undertaken at 5,400 working fires (2012-2015) by Glasgow Caledonian University (GCU) and associated NFCC operational guidance for firefighters.

Specification	Minimum required flow
Residential (dwellings) to three storey town-house (ADB Group 1)	10 Litres/sec
Residential flats below 18m to highest occupied floor (ADB Group 1)	10 Litres/sec
Residential flats below 18m to highest occupied floor but with Dry Riser required due to access provision (ADB Group 1)	25 Litres/sec
Residential flats above 18m to highest occupied floor (ADB Group 1)	25 Litres/sec
Residential institutional and other (ADB Group 2)	14 Litres/sec
Office (ADB Group 3)	14 Litres/sec
Shop and commercial (ADB Group 4)	14 Litres/sec
Assembly and recreation (ADB Group 5)	14 Litres/sec
Industrial Buildings, factories (ADB Group 6)	25 Litres/sec per 900m2
Industrial Estates *Based on Fig.A3 BS PD 7974:2014+A1:2020 (p41)*	To 1 Hectare – 67 l/s 1-2 Hectare – 77 l/s 2-3 Hectare – 85 l/s 3-4 Hectare – 87 l/s >4 Hectares – 100 l/s or according to *Fig.A3 BS PD 7974:2014+A1:2020 (p41)*
Storage buildings and car parks (ADB Group 7)	25 Litres/sec per 900m2
Firefighting stair in any purpose group	25 Litres/sec per 900m2
Mixed usage buildings	25 Litres/sec
Transportation Hubs (Bus/Train stations)	14 Litres/sec

Table 1: Adequate firefighting water - Note: *Minimum flow in this case represents the requirements of flow to fight a fire and not the expected flow from a hydrant.* The above flow-rate guidance may be reduced in fully sprinkler protected buildings, but only with documented justification and approval by the relevant building regulator, Local FRS and Authority Having Jurisdiction (AHJ).

Appendix 1: Fire Safety – Contribution on Building Regulations

The Building Regulations 2000 (as amended) apply in England & Wales to building work, typically the erection, extension or material alteration of a building. Separate legislation applies in Scotland and Northern Ireland.

They seek to ensure reasonable standards of health and safety for persons in or about buildings, by providing functional (i.e. performance-based) requirements for building design and construction in terms of what is appropriate, reasonable or adequate.

Fire safety is covered in Part B, the requirements of which are broadly to provide appropriate means of early warning of fire and appropriate means of escape; to reasonably inhibit the spread of fire within the building and from one building to another; and to provide reasonable access and facilities for the FRS.

Approved Document B (AD B) gives practical guidance on one way of meeting the requirements of the Building Regulations with respect to Part B, **including guidance on the provision of sprinklers and fire mains**. It is for the Building Control Body to decide, in consultation with the relevant FRS where necessary, what will be required to meet the functional requirements of the Regulations on a case-by-case basis.

Copies of the Building Regulations and Approved Document B (ADB) may be found on the Ministry of Housing, Communities and Local Government of the United Kingdom website, here.

Appendix 2: Model Disputes Procedure[3]

1. In the event of a dispute between either party, attempts in the first instance must be made to resolve the matter locally at the appropriate level.
2. If local liaison fails to satisfy either party and without prejudice to either party's legal rights and obligations, the matter may then be referred to the Regional Liaison Group for joint group resolution.
3. If Regional liaison fails to satisfy either party and without prejudice to either party's legal rights and obligations, the matter may then be referred to the National Liaison Group. The role of the National Group is not to arbitrate but to facilitate resolution by encouraging constructive discussion and debate to aid resolution.
4. During all the above stages, in the interest of achieving timely and satisfactory resolution, publicity should be avoided. Any media involvement has the risk of either distortion through lack of all the facts or being exploited by pressure groups to further their own interests.

[3] We are currently working with regulators on developing an update dispute procedure.

Appendix 3: Glossary of Terms

Authority
The Water Services Regulation Authority (Ofwat) is the economic regulator of the water and sewerage industry in England and Wales. Before 1 April 2006 these functions rested with the Director General of Water Services.

Cross contamination
Introduction of water of unknown quality into the water mains network.

DEFRA
Department for Environment, Food and Rural Affairs.

Fire and Rescue Service
Local Government organisation a public emergency service and is provided under statute by FRS in accordance with the Fire and Rescue Services Act 2004

Fire hydrant
A valve allowing immediate connection to a water main, usually for Fire Service purposes.

Fire hydrant installation
Includes the fire hydrant, pit chamber, surface box, post and plate and where the hydrant is offset from the main, the interconnecting pipe work.

Guaranteed Standards Scheme
Customer Service Standards agreed by Ofwat which results in a payment to customers where they are not met by the Water Undertaker.

Lead Officer
Nominated Fire Service or Water Undertaker Officer responsible for inter-agency consultation and liaison.

LGA
Local Government Association. Representative body of all Local Authorities including Fire Authorities in England and Wales.

Local authority
As respects England and Wales, the Council of a County Borough, London Borough or County District.

Low Pressure
The reference level of service is flow of 9l/min at a pressure of 10m head on the customer's side of the main stop tap. Due to difficulty in measuring pressure at every stop tap, a surrogate of 15m head in the adjacent distribution main may be used.

MHCLG
Ministry of Housing, Communities & Local Government

NFCC
National Fire Chiefs Council

No Water

When water is lost from the first cold water tap at a property – taken as being operationally equivalent to ≤3m pressure at the main (adjusted for any difference in ground or property level).

Normal demand conditions
Anticipated water consumption requirements.

Ofwat
See 'Authority'

Permanent system changes
Changes to the configuration of the mains system by opening or closing of valves or the installation of apparatus, which is intended to remain in place for a long period of time.

Rural
Areas including open swaths of land with low population density with limited development and a low density of human structures such as houses, buildings, roads, bridges, and railways.

Urban
Areas including towns, cities and suburbs that have high population density and are heavily developed including a high density of human structures such as houses, commercial buildings, roads, bridges, and railways.

Wash Out hydrant
A valve allowing immediate connection to a water main, usually for a Water Undertakers purposes.

Water Carrier
A vehicle for conveying large quantities of water to a fire where it is difficult to obtain and adequately supply water for fire-fighting purposes.

Water Industry
The Water Undertakers responsible for supplying water in England and Wales.

Water UK
Representative Association for all of the Water Undertakers in the UK.

Water Undertaker
A company licensed for the provision of clean water to the customers in a defined geographic area. Some companies are responsible for supplying water only and others for removing and treating the sewage as well.

Appendix 4: Points Requiring Consideration when Drafting Local Agreements.

When entering into discussions on local agreements the following points are a guide to suggested topics:

1) A governance framework for liaison at all levels and circumstances including:
    a) Routine liaison and contact points.
    b) Emergency liaison including procedures for increasing flows during emergencies. (see section 7)
    c) Liaison to facilitate review of both routine and emergency performance.
2) Procedures for dealing with planning, new developments and redevelopment sites including sharing of information and consulting with Local Authorities.
3) Procedures for the notification of intention to carry out work both temporary and permanent changes including how previous significant changes not notified should be managed (see section 10)
4) Planning hydrant installations on existing, new, renewed and rehabilitated mains.
5) Use of Water Undertaker washouts (see section 9)
6) Installation, inspection and adoption procedures for hydrants
7) Hydrant inspections and tests (see section 12).
8) Service levels for fire hydrant maintenance (see section 13)
9) Flow requirements for fire fighting (see section 8).
10) Use of water for firefighting including procedures for notification of incidents that could impinge on water quality (see section 7).
11) Statutory notices.
12) Use of hydrants for non-firefighting purposes, including illegal use and how this may be controlled, leak detection, licensed standpipe usage and exercising valves etc.
13) Charges and guarantees for work undertaken by Water Undertakers (see section 14)
14) Abandonment of hydrants.
15) Disputes procedure.

Appendix 5: Guideline Template for Local Agreements

To review the template for Local Agreements, please use the following - Link.