



The NFGWS
**Quality
Assurance
Scheme**

Introduction

The Quality Assurance Scheme is a concept developed by the National Federation of Group Water Schemes in response to the water quality problems on privately-sourced group water schemes. Recent EPA reports and monitoring programmes undertaken by the National Rural Water Monitoring Committee have highlighted the deficient state of drinking water on group water schemes (GWS).

According to the World Health Organisation, “*drinking water should be suitable for human consumption and for all domestic purposes*”. However, on some 66% of privately-sourced group water schemes, there has been evidence of bacteriological contamination, thereby making it unfit for human consumption. Under the Rural Water Programme, water quality is the number one priority. Group schemes are availing of capital grants to remedy their quality deficiencies by either installing a water treatment works or, alternatively, connecting to a public water supply.

A system of quality control has long been regarded as a necessity in the operation of a GWS. A scheme must be able to deliver quality water to the consumer’s tap and it is at this point that water is tested, to determine quality. It is not feasible, even in the most modern of schemes, to deliver quality drinking water without monitoring, checking, inspecting and auditing: control is essential to ensure success. The Quality Assurance Scheme is, therefore, being targeted at GWS that are providing fully treated water to their consumers.

Legislation

New drinking water regulations (SI439/2000) oblige schemes supplying more than 50 people (15 houses) to comply with specific drinking water standards and place the onus for compliance on the individual GWS. The regulations also apply to smaller schemes where there is commercial or public activity along the network, such as a school, public house or B&B. Interim regulations (SI259/2003), introduced at the insistence of the EU Commission, allow for non-compliant schemes to be penalised where an action plan is not put in place capable of resolving their water quality problems. All of this legislation is laid down to ensure drinking water does not compromise the health of the consumers especially, the young, old and immunocompromised.

In conjunction with this, forthcoming Water Services legislation will require a GWS to be licensed in order to supply water to consumers. One of the main requirements for this license will be the GWS supplying drinking water that complies with regulatory standards.

Developing a Quality Assurance Scheme

In 1999-2000, a year-long monitoring programme took place on all group water schemes in County Roscommon. Over 70% of private sources tested positive for coliforms, indicating bacteriological contamination. One of the recommendations of the Roscommon Rural Water Monitoring Project was that a system of quality control be introduced, as it was found that the majority of group water schemes had no regular monitoring either at source, within their treatment plant (if any), or on their distribution systems. Sporadic or frequent periods of contamination of water could occur, therefore, without ever being detected.

Hazard Analysis Critical Control Points or HACCP has been a food safety system in existence since the 1960s. Since 1998 legislation has stipulated that all food businesses in the Republic of Ireland and the EU implement a food safety system based on the basic principles of HACCP, in order to ensure that production and operation is done in a quality-assured manner.

HACCP is a systematic preventive and recording approach, involving the identification of present or possible hazards and formulating the steps which may be taken to minimise or eliminate them. This system has been specially adapted by the NFGWS to provide a more user-friendly, simple and straightforward Quality Assurance Scheme for the group scheme sector.

Why the Need for a QA Scheme?

Under EU Law, water is also a foodstuff and there are steps along the path to producing a quality product which is free from contamination, be it physical, chemical or biological.

As a water supplier, a group scheme must ensure that water is of a potable quality, consistently reaching the standards expected by consumers and demanded by the legislation. To achieve and sustain quality, a water supply requires source protection, a monitoring programme (i.e. water sampling and testing) and, most importantly, effective treatment.

Privately-sourced schemes installing a design, build and operate (DBO) treatment works will have a clean and wholesome drinking water delivered into their distribution network by the DBO operator. It is their responsibility to treat the raw water and to ensure that when it reaches the reservoir, that is up to the required standard. As it is the group scheme's responsibility to

deliver this ‘clean and wholesome’ water to the consumer’s tap, a system of maintenance and constant monitoring is required to avoid recontamination in the distribution network.

Similarly, publicly-sourced group schemes supplied with treated water from their local authority must ensure that the water is not recontaminated once it enters their network.

Objectives of Quality Assurance

The objectives of the Quality Assurance Scheme are as follows:

- To achieve a drinking water fit for human consumption
- To comply with the Drinking Water Regulations and enable a GWS to become a licensed water provider
- To allow for greater control through a set of documented procedures and standard activities
- To ensure a proactive response is maintained, through daily, weekly and monthly checklists to be filled out by the operators
- To be complimentary to the working knowledge of the operators, and be user-friendly, thus ensuring full commitment

How does the QA Scheme Work?

The specific aim of the scheme is to closely monitor critical points of the water supply and to carry out remedial actions where quality is seen not to be up to the required standards. The control points on a sample group scheme would be as follows:

- Source
- Filtration
- Disinfection
- Reservoir
- Distribution Network
- Consumer’s Tap

The quality of the water can be affected at any of these points, so there are standard operating procedures (SOP) which can be followed to prevent problems arising. Different courses of corrective actions are outlined, depending on the event that has arisen. Any actions carried out are then recorded on a checklist for future reference.

The following example sets out the procedure for a scheme in the event of there not being enough free residual chlorine in their network.

Hazards	Control Options	Critical limits (to measure the control options)		Corrective action
		What to check	Signs that action is needed	
Event: NOT ENOUGH FREE RESIDUAL CHLORINE Possible hazards: <i>Pathogenic bacteria not killed</i>				
<ul style="list-style-type: none"> • Dosing malfunction 	<ul style="list-style-type: none"> • Routine maintenance of dose controller and dosing pump • Replacement of dose controller, if suspect 	<ul style="list-style-type: none"> • Free residual chlorine • Microbiological quality from routine samples • That maintenance SOP is being carried out • That manufacturer's guidelines are adhered to 	<ul style="list-style-type: none"> • Free residual chlorine concentration is less than 0.2 mg/L • Faecal or total coliforms detected in 100 ml sample of water leaving the treatment plant • Frequent repairs recorded • Manufacturer's guidelines not being heeded 	<ul style="list-style-type: none"> • Identify cause of fault and rectify • Manually dose reservoir with chlorine until controller repaired • Replace controller

Implementation of the QA Scheme

Each participating GWS is required to complete a survey sheet to allow the Quality Assurance Manager prepare a set of documents tailored to their particular needs. Following a site visit by

the Quality Assurance Manager/Development Officer, an induction course is provided for the person responsible for implementing the QA Scheme. The GWS set of documentation includes:

- A simple reference table (summarising the QA Scheme for their water supply)
- A set of pre-prepared Standard Operating Procedures (SOP) Checklists (to record duties carried out on a daily/weekly/monthly basis)
- Instructions on filling in documents

Ongoing support and advice will be available from the Quality Assurance Manager and NFGWS Development Staff.

For a Quality Assurance Scheme to be successful, it is imperative that there is an independent verification process, to check that the SOPs and checklists are being documented and recorded. It also requires the full support and continued commitment of the Board of Directors/trustees/committee.

The scheme involves:

- a recording and checking system with standardised documents implemented by a group water scheme operator
- identifying hazards to the water supply
- applying points of control along the water supply where those hazards can be eliminated
- record keeping procedures for monitoring at control points along the supply
- regularly recording all tasks and duties relating to the operation of the QA process and integrating them into the current management of the group scheme

Pilot of QA Scheme

The pilot programme for the QA Scheme took place over a six-month period in 2002 on three schemes near Tuam, County Galway – Barnaderg, Caherlistrane and Cahermorris/Glenreevagh. Site visits were carried out on each of the schemes and regular meetings took place between NFGWS staff and the operator/committee to ensure that proper procedures were being adhered to. Where appropriate and following feedback from those involved, revisions were made to the documentation and to the implementation of record keeping duties. The three GWS involved in this pilot continued implementing the QA Scheme following completion of the initial pilot project. Monthly samples are taken and tested for the bacteria *Escherichia Coli*, using the Colilert system.

Benefits to your group scheme

The National Federation of Group Water Schemes, the Department of the Environment, Heritage and Local Government (DoEHLG), the Environmental Protection Agency and the National Rural Water Monitoring Committee all recommend the implementation of a Quality Assurance Scheme as the best means of ensuring the delivery of a quality product to rural consumers and compliance with Drinking Water Regulations. For group schemes, there are specific benefits to be derived. The Quality Assurance Scheme:

- reduces or removes the ad-hoc approach to maintaining the quality of water supply
- minimises problems by providing more control of the water supply from source to tap
- permits the development and regularising of operating and quality checks
- introduces regular and standardised documentation

- increases confidence in water quality amongst group scheme members
- improves compliance with Drinking Water Regulations and reduces the risk of penalties
- is a condition (under DoHELG guidelines) for drawing down 100% capital grant aid and for the increased subsidy (€196.85) where a DBO or O&M contract is in place

Group schemes wishing to implement a Quality Assurance Scheme are requested to complete the attached form and forward to the following address:

**Sinéad Higgins,
Quality Assurance Manager, NFGWS,
Unit 29,
N17 Business Park,
Tuam,
County Galway**

If further information is required, please contact 093-28712/087/2930204.

Quality Assurance Scheme

Registration Form

Name of GWS:

County:

Contact Person:

Address:

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Phone (daytime): Mobile No:

Email Address:

No. of Connections: Domestic..... Agricultural..... Commercial

Is your GWS supplied from a private source.....or Local Authority.....

If private source, what type of source do you have?(Please tick)

Lake..... River..... Borewell..... Spring..... Other

Is your scheme: pumped..... gravity fed both.....

What types of disinfection/treatment does your scheme have in place?

Chlorination UV Ozone..... Other.....

Is your scheme participating in a DBO (design build operate) bundle
..... or will it continue to operate the treatment itself.....

Has anyone on your scheme attended any of the following training
courses? Water Quality Leakage Detection.....

Distribution System Operation and Maintenance None.....

Other.....

**I wish to register on behalf of GWS
for participation in the NFGWS Quality Assurance Scheme.**

Signed:..... **Date:**.....

Return to NFGWS, Unit 29, N17 Business Park, Tuam, Co. Galway

