Wastewater Regulation Reform

Regulatory Principles

Summary Report

Version 1
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Contributors & Reviewers	Done	Comments
[redacted]	17/10/22	Draft Report v 0.1
	24/10//22	Draft Report v 0.2 Review
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Wastewater Regulation Reform – Concept Regulatory Principles

1. Background

NIEA have commenced the development of a project to reform Water Regulation. The project will cover all of the regulatory functions carried out by NIEA in relation to Drinking Water, Wastewater and Groundwater Protection. Protection of public health and the aquatic environment are the key drivers for the reform.

Specifically, the Reform will radically change how NIEA regulates wastewater discharges. It will include the development of new consenting and compliance assessment methodologies to deliver UK Alignment as UK exits the EU, improved protection of raw water quality for drinking water, protection of sensitive waters (Natura 2000 sites, Shellfish Waters and Bathing Waters) and the wider delivery of Water Framework Directive (WFD) objectives.

A Wastewater Regulation Reform Group has been established to act as the interface between NIEA and NI Water on the delivery of Wastewater Regulation Compliance Reform. It is recognised that the outcome of the proposed change will result in new evidence, which will highlight non-compliance across the NI Water wastewater asset base.

The Wastewater Regulation Reform (WWRR) aspect of the reform project is at the forming stage, with pilots proposed during PC21, to inform new ways of undertaking wastewater compliance assessment. The WWRR programme comprises of three key regulatory elements for WwTWs improvement and two new regulatory elements for networks improvement:

1. Unannounced Sampling
2. Priority Substances
3. Flow Compliance
4. Event Duration Monitors (EDMs)
5. Environmental Modelling (EMs)

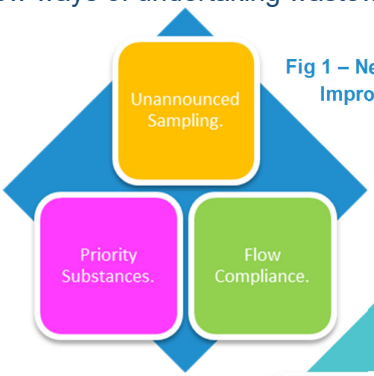

Fig 1 – New Regulatory Reporting Improvements for WwTWs

Fig 2 – New Regulatory Elements for Network Improvements

The aim of the new improvements across the 5 programmes is to broadly bring environmental performance reporting of wastewater treatment and networks in Northern Ireland into alignment with UK reporting requirements. The 5 programmes will be progressed in PC21, in preparation for the introduction of wastewater regulatory reform within the PC27 reporting period (April 27-April 33).

The Roadmap for Change (see Annex 1) sets out a number of workstreams to be collaboratively progressed in order to deliver on the desired reform of wastewater regulation. The delivery of Environmental Modelling (EMs) by NI Water will play a fundamental role in provision of the supporting evidence and justification needed to reform the consenting approach.

The purpose of this document is to define the high-level regulatory principles associated with each of the new regulatory reporting elements.

2. Unannounced Sampling

NI Water will plan for the transition to an Unannounced Sampling regime, whereby the Operational staff do not have foresight of the sampling dates for wastewater samples collected under the Operator Self-Monitoring (OSM) scheme for wastewater quality monitoring purposes.

This will ensure that operational maintenance is sufficient to maintain steady state levels of compliance day to day, month to month.

Pilot unannounced sampling programmes will be undertaken during PC21 to enable identification of WwTWs where there is a risk to final effluent compliance, including insights and ability to identify where upper tier failures may occur following introduction of a fully unannounced sampling regime. This data will inform the setting of new baseline Wastewater Compliance KPIs for future Price Controls.

Additionally, the project will include the replacement of the fleet of automatic samplers at all Urban Wastewater Treatment Directive (UWWTD) qualifying sites. [redacted] NI Water will test the market for sampling equipment technology and continue to engage with NIEA at the appropriate point during the procurement stage, to seek agreement on the regulatory principles for UWWTD sampling.

A quality compliance register of findings will be held by NI Water.

It is recognised by NIEA that the outcome of the proposed change will result in new evidence, [redacted] This is likely to generate unconstrained needs in terms of capital projects for PC27. Consideration will also be given to operational and capital interventions to best design the lowest Totex solutions, whilst delivering the environmental outcome.

3. Priority Substances

Reformed compliance assessment will lead to other consented parameters above the sanitary parameters, known as Priority Substances (PS), being included in the overall compliance assessment. This project is designed to examine the impact on compliance from:

1. Inclusion of currently (known) consented PS
2. Potential for new parameters (as identified via NIEA monitoring programmes)
3. Contaminants of emerging concern
4. Analytical techniques for measurement to required levels

These will be undertaken in a similar manner to the Unannounced Sampling programme and help us to identify measures to control at source or after collection at the WWTW. Considerable engagement with Traders is anticipated to potentially change the way they are regulated.

The data and information garnered from this project will inform the setting of new baseline Wastewater Compliance KPIs for future Price Controls.

4. Flow Compliance

As part of Water Reform in the mid 2000's and in preparation for the formation of NI Water on 1st April 2007, Water Order Consents (WOCs) were issued by the environmental regulator (then Environment and Heritage Service), based on information provided by Water Service in applications for consent over the period 2005-2006. The applications were submitted in good faith, based on information to hand at that time. All WOCs define a number of flow requirements for each WWTW. It is recognised by NIEA that the flow requirements within the WOCs are outdated and onerous, in terms of measurement points on each site.

The aim of the Flow Compliance Project is to align compliance assessment to the rest of the UK by including volume treated as part of the overall WWTW compliance assessment.

Agreement of the Flow Policy is a fundamental step in this project, to set out the regulatory requirements for the qualifying sites for flow measurement/monitoring.

Subject to available funding, NI Water will deliver flow meters to record the volume treated (either Flow to Full Treatment or Final Effluent, depending on site constraints) on all sites listed in the numeric compliance assessment. Furthermore, Event Duration Monitors will be installed at agreed locations within the WWTW boundary (eg storm tank overflows, Formula A overflows), to enable records of when such overflows are operational. NI Water currently has 129 existing flow monitors at WWTWs, with additional monitors to be installed within the PC21 period.

A flow reporting management system (Digital Solution) will be put in place to facilitate reporting to NIEA at the agreed reporting interval (currently monthly for sites with flow meters installed).

A Quality Management System will be operated by NI Water to ensure integrity of the data being reported and appropriate maintenance and calibration of the measurement equipment installed.

The data gathered by the Flow Compliance project is proposed to be used to identify WWTWs where FFT flows:

1. Are never reached within the WWTW indicating potential early escape of wastewater flows from the network
2. Have no boundary flow control within the WWTW indicating that the biological process might be washed out after heavy rainfall. This may be complemented with EDM monitors to capture boundary spills.

3. Discrepancies between consented flows and theoretical design flows, where a consent might be changed to reflect new evidence and hence bring a WWTW into or out of compliance.

A Flow Compliance Register of findings will be collated by NI Water. It is anticipated that this information is likely to generate unconstrained needs in terms of capital projects for PC27.

5. Event Duration Monitors

During PC15 NI Water installed a total of 279 Event Duration Monitors (EDMs) at prioritised locations (namely within 2km of bathing and shellfish waters). Within PC21, funding has been allocated for the installation and reporting of an additional circa 650 EDM. NI Water will engage with NIEA to agree the prioritisation for locations to install monitors.

The spill event information (live and historic) will be used for two main purposes.

1. It will enable NIEA to classify storm overflows on the Discharge Register, as well as provide support and confidence in modelling activities.
2. The data would also enable insights for the NI Water Operational teams on a daily basis, and in future our intention would be to provide live alerts to the public of spills.

The EDM Data is anticipated to not be used for setting and/or enforcing regulatory measured spill targets at individual or agglomerated locations. Rather, it will provide valuable information to help target future investment at the appropriate locations to deliver the best environmental outcomes.

A reporting management system (Digital Solution) will be put in place to facilitate spill event reporting to NIEA at the agreed reporting interval and format.

A Quality Management System will be operated by NI Water to ensure integrity of the data being reported and appropriate maintenance and verification of the measurement equipment installed. Rainfall data and other innovative technology will be applied in this Digital Platform to provide assurance on spill performance from assets.

6. Environmental Modelling

It is accepted that the conventional approach to consent setting requires reform, with NIEA leading on the Reform workstreams for Scoping Consenting Methodologies and Source Apportionment Techniques. The Environmental Modelling (EM) undertaken by NI Water, managed through the Catchment Based Outcomes Group, will provide new evidence to support and justify a new approach to consent setting.

During PC21 NI Water will continue to deliver a programme of EMs, as agreed through the Catchment Based Outcomes Group. The evidence provided by the EMs Model Output Reports will be presented to the Investment Group to support appropriate design standards for capital works investment, whilst still achieving the desired environmental outcome.

It is accepted that the information provided by the EMs may be used to inform WOC reviews, which may tighten or relax current consent standards.

7. Reformed Consent Policy

NIEA will work towards using the evidence provided by EMs (Urban Pollution Models, Drainage Area Plans, Integrated Environmental Models and Integrated Drainage Models) to define new consenting methodologies and deliver a risk-based source apportionment consent policy review by mid PC21, where evidence is available.

NI Water will continue to work collaboratively with NIEA to support this workstream.

8. High Level Timeline for Wastewater Regulation Reform Programme

This timeline, running to PC27 Outline Capital Submission (OCS, June 2025), sets out the key measures and milestones / objectives to enable incorporation of the Wastewater Regulation Reform within the PC27 Business planning process.

Successful delivery of this programme will require close collaboration between both NI Water and NIEA to achieve. Progress will be tracked through the monthly Reform Group, with quarterly reporting to Regulatory Sub-Group (RSG) and Reform Board

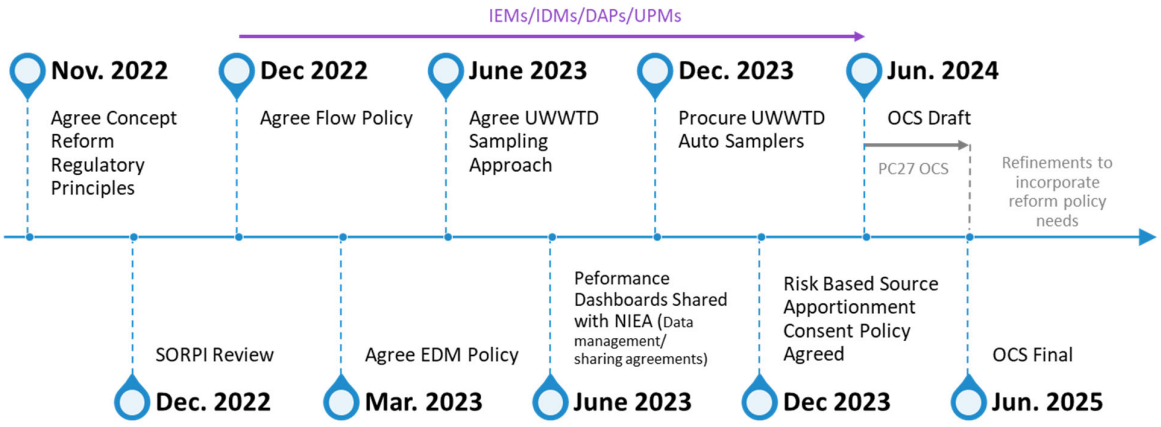

Fig 3 – High Level Timeline for Wastewater Regulation Reform Programme

9. Dashboards

NI Water will develop a number of PowerBI Dashboards to display data in visuals rather than spreadsheets/tables of text and figures. Dashboards will be developed for the following areas:

<u>Flow Compliance</u>
Aim to display all flow data from recorded sites, and compare against FFT (and DWF) to monitor compliance, e.g. percentage exceedance of FFT. This will also show a graphed reading of recorded flows vs. FFT (and DWF) consent lines.

Unannounced Sampling
Tabular display of sample results, showing number of fails per parameter per site, as well as highlighting number of Upper Tier failures, and whether sample parameter failures result in a Failing or At Risk WwTW.

Priority Substances
Similar to the Unannounced Sampling dashboard, this dashboard will show Failing/At Risk sites by parameter – potential to update with comments around sample date (e.g. Trade Effluent activity prior to sample date).

EDMs
Compile data from EDMs, showing spill frequency, approximate volumes, Top spillers and ability to filter by date (month/quarter) and drainage area.

EMs
Dashboards to track DAPs, IEMs etc.
These would include agreed approach to modelling and risks.

10. Conclusion

The Reform Group has been formed to enable collaboration between NI Water and NIEA on proposals for additional/updated compliance measures anticipated to be introduced in the future (e.g. PC27).

It is hoped that by agreeing the proposed programmes regarding the regulatory concepts, NI Water will be able to work in conjunction with NIEA to further improve compliance and environmental conditions, while also delivering data/information on each project in a beneficial format for ease of understanding – and awareness of constraints, from both financial and resource areas.

11. Annex 1 Reform Roadmap for Change