

Impacts of the Dispersed Rural Population on Water Quality in Northern Ireland

Purpose

The purpose of this project is to improve knowledge of the impacts of Northern Ireland's dispersed population on water quality, and to inform future legislation, policies and procedures to address diffuse pollution in Northern Ireland. The project also aims to provide scientific evidence to support government policy on rural development and the associated impacts on water quality.

Scope

On-site wastewater treatment systems (OSWTS) include conventional septic tank systems, on-site proprietary systems (package treatment plants) and small wastewater treatment works (WWTWs). By definition, OSWTS are not connected to mains sewerage systems and discharge treated wastewater by percolation through soil or to surface water bodies directly.

Within the scope of this project the following OSWTS systems are included:

- Septic tanks serving single domestic dwellings
- Septic tanks serving housing clusters
- Septic tanks serving commercial premises
- On-site proprietary systems serving single domestic dwellings
- On-site proprietary systems serving housing clusters
- On-site proprietary systems serving commercial premises
- Small wastewater treatment works serving Population Equivalents of < 250

The systems identified above may be owned and operated by members of the public, private companies or by Northern Ireland Water.

Work Package 1: Review of Legislative Requirements and Responsibilities and Identification of Best Practice – On-Site Wastewater Treatment Systems

This work package aims to clarify the legislative requirements with regard to OSWTS. It will identify all the relevant policies, procedures and guidance within GB, RoI and NI in relation to such systems, including:

- application process,
- administration of consenting,
- validation of system type and location and
- regulation and enforcement.

A comparison of the processes and legislation will be used to produce recommendations for the revision of policies, procedures and guidance within NI based on identified best practice.

Interactions between the responsible authorities will also be considered and opportunities for improved coordination and more effective working relationships between the relevant organisations will be identified.

Work Package 2: Scientific Literature Review

A scientific literature will be conducted to identify, compare and contrast current and recent historical information in the following areas:

- nutrient and microbial loadings from OSWTS and small WWTWs to the water environment
- the cumulative impacts of OSWTS and small WWTW on a catchment basis

The literature review will also identify the impact of poorly maintained systems on water ecosystems and may identify best practice methods that have been developed to address these impacts.

Work Package 3: Data Validation and Integration

A desktop study will be carried out to validate records within Water Management Unit's Domestic Consents database to ensure accurate spatial reference. A comparison with relevant datasets held by other Government Departments, Agencies and companies will also be conducted. The feasibility of combining these datasets will be assessed and a methodology for integrating these datasets will be developed, if required.

An interim dataset of OSWTS and small WWTWs will be produced and used in Work Package 4).

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Work Package 4: Ground Truthing of Domestic Consents Data in Pilot Catchments

Using the interim dataset, field investigations will be carried out within identified pilot catchments to establish the properties of OSWTS, including:

- presence / absence
- location (appropriately / inappropriately sites)
- system type
- effluent discharge method / location of soakaway
- maintenance level.

Work Package 5: Field Study to Investigate Impacts on Water Ecology

This work package aims to assess the impact of discharges from OSWTS and small WWTW on the water ecology within pilot catchments. The methodologies applied will be based on the scientific literature review carried out in Work Package 2.

Work Package 6: Review of Consenting Policy and Application Process for OSWTS

This work package will review the recommendations and scientific evidence from Work Packages 1-5 to inform the drafting of an updated consenting policy for OSWTS and the development of a revised application process.

Work Package 7: Review of Domestic Consents Database

A review of the current data storage arrangements for OSWTS will be carried out. This will be used, in conjunction with the outputs from Work Packages 1-6, to:

- identify an interim procedure for data entry,
- produce a work programme to update historical data, and
- produce an updated database.

(This Work Package may be combined with Work Package 6.)

Project Delivery

Work Packages 1 and 2 will be delivered by the Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) and are due to be completed by the end of March 2008.

Work Package 3 will be delivered through the INTERREG IIIA funded project, NS Share, and is due to be completed by the end of March 2008.

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	Part A	Part B
Work Packages	On-Site Wastewater Treatment Systems	Small Wastewater Treatment Works
WP1: Review of Legislative Requirements and Responsibilities and Identification of Best Practice	Recommendations for updated legislation, policies, procedures, guidance, roles and responsibilities, and data handling. Identification of best practice for consenting, administration, data handling, regulation and enforcement of OSWTS.	Legislation, policies etc already identified and in place.
WP2: Scientific Literature Review	Methodology for estimating/quantifying nutrient and microbial loadings from OSWTS and small WWTWs within NI context and the impacts on the water ecology within catchments. Work programme to establish the fate of nutrients and microbial loadings in the water environment and to investigate evidence of impacts on a catchment basis.	
WP3: Data Validation and Integration	Work programme for validation of data's spatial reference. Production of interim dataset of OSWTS and small WWTWs. Integration of internal datasets and datasets identified in WP 1.	
WP4: Ground Truthing of Domestic Consents in Pilot Catchments	Field study to validate the information held on the Domestic Consents database against what is observed in pilot catchments i.e. system type, discharge method etc.	Programme of site visits to validate data held on small WWTWs database and to assess impacts on water ecology.
WP5: Field Study to Investigate Impacts on Water Ecology	Field study to assess impacts on water ecology.	
WP6: Review of Consenting Policy and Application Process for OSWTS	Consenting policy for on-site wastewater treatment systems based on best practice and information gathered through above WPs. Updated application process.	Subject to the outputs of WP 1 and 2, a review of small WWTWs consenting may be required.
WP7: Review of Domestic Consents Database	Updated database for domestic consents.	