

Pollution Prevention and Control Northern Ireland

Guidance for Operators on Preparing an Agricultural Water Audit for IPPC Farming installations.

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Record of changes

| Version | Date | Change |
|----------------|--------------|---|
| 1 | | Document created |
| 2 | July 2008 | Updated version. |
| 3 | January 2011 | Water audit included as a separate template |
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| | | |
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1. Introduction:

Agriculture obtains water principally from mains supply or abstraction from ground water sources.

Water can be a significant cost – for information on water charges, check your last bill from Northern Ireland Water.

It is common in NI to use high quality drinking water (mains supply) for a wide range of uses. However, some uses of water on the farm do not require such a high quality standard, and it may be possible to substitute lower quality water sources. Depending on the circumstances on the individual farm, this could involve substituting harvested rainwater for some uses on your farm such as cleaning. It is recognised that hygiene and farm assurance requirements may mean that this is not always possible.

2. Water audit

Following the key steps in this simple water audit will allow you to manage your water more effectively and devise a farm water management plan. This approach compares theoretical water use with actual use to identify potential areas for improvement.

STEP 1: Identify all sources of water and how much you use.

Identify all the sources of water on the installation. The quantity of water used should be monitored over a period of at least 12 months using a water meter or meters. Monitoring water use in this way will enable you to pinpoint problems such as leaking pipes or faulty drinking systems.

Step 2: Assess the theoretical demand for water.

Given the number of animals on the installation, it is possible to calculate the theoretical demand for water for the site. Comparing these figures against the actual usage will enable you to identify the scope for saving water.

Step 3: Comparison of theoretical and actual water use.

Having calculated the theoretical demand for water, compare this against the actual quantity of water used in the year. Can you account for any discrepancies?

STEP 5: Identify how much you pay for water.

It is important to include not just the cost of the water, but also the operating costs associated with pumping and distributing water around the farm.

Appendix 1: Conversion factors

| Conversion factor | Multiply by: |
|--|---------------------|
| UK gallons to cubic metres | 0.0045 |
| UK gallons/ hour cubic metres/hour | 0.0045 |
| UK gallons/ minute cubic metres/ hour | 0.2728 |
| Cubic metres litres | 1000 |
| Cubic metre/ hour litres/ second | 0.2 |

Appendix 2

Please retain the guidance section (pages i to vi) for your own information and submit the audit (pages 1 to 5).

Water Audit

Installation Details.

| |
|------------------------------|
| Permit Number: |
| Operator: |
| Name of Installation: |

STEP 1: Identify all sources of water and how much you use.

| | |
|--------------------------------|--|
| Date monitoring period started | |
| Date monitoring period ended | |
| | Quantity Used (m³) |
| Mains Water | |
| Abstraction – Groundwater | |
| Recycled water | |
| Stored Rainwater | |
| Other | |
| Total | |
| Poultry Only | |
| Number of crops | |
| Average water used per crop | |
| Pigs Only | |
| Number of years | |
| Average water used per year | |

Step 2: Assess the theoretical demand for water.

| Broilers Only | | | | | | |
|---|-----------------|-------------------------------------|-------------------------|--|-------------------------------|--------------------------|
| Type of bird | Number of birds | Drinking requirement | Total drinking (L/Crop) | Cleaning Water | Total Cleaning Water (L/Crop) | Total Water use (L/Crop) |
| | A | B | C | D | E | F |
| | | | $A \times B / 1000$ | | Area x D | E + C |
| 2kg broiler | | 6300 litres per crop per 1000 birds | | 6.8 L /m ² house area /crop | | |
| 2.5kg broiler | | 7900 litres per crop per 1000 birds | | 6.8 L /m ² house area /crop | | |
| Total water in Litres used per crop | | | | | | |
| Total water in m³ used per crop | | | | | | |

| Layers Only | | | | | | |
|---|-----------------|----------------------------------|--|----------------|-------------------------------|--------------------------|
| Type of bird | Number of birds | Drinking requirement | Total drinking (L/Crop) | Cleaning Water | Total Cleaning Water (L/Crop) | Total Water use (L/Crop) |
| | A | B | C | D | E | F |
| | | | $A \times B \times \text{days} / 1000$ | | Area x D | E + C |
| Layers | | 200-300 (L/day) (per 1000 birds) | | | | |
| Total water in Litres used per crop | | | | | | |
| Total water in m³ used per crop | | | | | | |

| Pig Farms Only | | | |
|----------------------------|--------|--|---------------------------|
| Type of animal | Number | Drinking requirement (l/year) per animal | Total drinking (L / year) |
| Sows in milk | | 9000 | |
| Sows in pig | | 3500 | |
| Boars | | 3300 | |
| Growers/ Finishers (20kg+) | | 1500-2200 | |
| Weaners (to 20kg) | | 750 | |
| | | | |
| | | Grand total | |
| | | Add 5% (washing) | |

Step 3: Comparison of theoretical and actual water use.

| | ACTUAL (from Step 1) | THEORETICAL (from Step 2) | DIFFERENCE |
|------------------------------------|--------------------------------|-------------------------------------|-------------------|
| Water Use (m³) | | | |

Step 4: Can I use less water?

| Measure | YES | NO |
|---|------------|-----------|
| Minimising losses from leaks | | |
| In winter, do you drain down and close off all lengths of pipe that are not in use? <i>Prevents freezing, bursts and overflowing which wastes money</i> | | |
| Do you insulate pipes properly? (Lag all exposed pipe-work within 750 mm of ground level) | | |
| Are drinking systems installed properly? (Fix all nipple drinkers / troughs and pipe-work securely. Check all nipple drinkers / troughs frequently) | | |
| Do you read your water meters frequently? (If you detect an unexpected increase in water flow it is probably a leak) | | |
| Do you know how to locate a leak? Use stop taps to isolate lengths of water pipes step by step. When the unexpected flow stops, you have found the leak. | | |
| Can you use a sounding rod to listen for leaks? Noise means water is flowing. If the noise stops when the stop tap is turned off, then the leak is downstream of the tap. | | |
| Do you have plans of all farm pipelines? In the event of a large pipe burst, readily available plans of the pipeline system can speed up repairs and reduce costs. Position of pipes, fittings and type of material should be noted. | | |

| Measure | YES | NO |
|--|-----|----|
| Reducing Water Use | | |
| Do all hoses, hand lances and washing equipment have trigger controls? Fit triggers to all hoses. Consider the use of pressure washers to improve efficiency of cleaning and reduce water use. Don't waste water between jobs. | | |
| Do you use tank covers? Covers prevent algal growth, contamination and evaporation. | | |
| Do you brush or blow any solid waste away before washing down? The removal of solid waste before washing down can significantly reduce the amount of water used. | | |
| Have you installed stock drinkers which avoid spillage? <i>Use bite type for pigs, nipple for poultry.</i> | | |
| Do monitor and adjust drinkers height and water pressure on a regular basis? | | |
| Reuse of Water | | |
| Are there any opportunities to re-use water or to use collected clean rainwater? | | |

STEP 5: Identify how much you pay for water.

| | Total volume m3 (| Cost per | Total cost |
|--------------------------|-------------------|----------|------------|
| MAINS WATER | | | |
| Actual water | | | |
| Standing charge | | | |
| | | | |
| ABSTRACTION WATER | | | |
| Actual water | | | |
| | | | |
| | | | |
| OPERATING COSTS | | | |
| Labour costs | | | |
| Fuel costs | | | |
| Maintenance costs | | | |

Contents of this submission

It is an offence under Regulation 33 of the Pollution Prevention and Control Regulations (Northern Ireland) 2003 to:

- Make a statement which you know to be false or misleading in a material particular
- Recklessly make a statement which is false or misleading in a material particular, where that statement is made in purported compliance with a requirement to furnish any information imposed by or under any provision of the Regulations.

Name:

Signature:

Date: