TRIPARTITE GROUP

LEAKAGE TARGET SETTING FOR WATER COMPANIES IN ENGLAND AND WALES

SUMMARY REPORT

March 2002

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1. CONTEXT

This report summarises the key findings of the study which was jointly commissioned by the Tripartite Group comprising Ofwat, the Environment Agency and the Department for Environment, Food & Rural Affairs (DEFRA).

The full details of the study can be found in the two detailed reports:

- Best Practice Principles in the Calculation of the Economic Level of Leakage Calculation, WRc Report UC 3914A, February 2002
- Leakage Performance Indicators, WRc Report UC 3894-2, February 2002

The two reports are complementary and together represent the current best practice for leakage target setting through economic analysis including how social and environmental costs should be included. They also discuss alternatives to the economic level of leakage for target setting and recommend the use of performance indicators to support the target setting process.

2. OBJECTIVES

The overall objective of the study was:

- To consider how companies should undertake a fully integrated appraisal of the financial, social and environmental aspects of their leakage reduction and other operations to ensure the efficient use of water resources now and in the future.

Specific objectives were also developed for the individual aspects of the study:

- The objectives of the Best Practice Report were:
  - to establish a set of key principles to be followed when calculating the Economic Level of Leakage arising either from best practice aspects of companies' methodology or other improvements proposed by the consultant.
  - to develop a forward looking approach taking into account possible changes in technology or practices to reduce the cost of leakage detection and repair and changes in future demand patterns and climate change.
  - to estimate the future trends in technological change and the likely impact on the economic level of leakage.
  - to considers whether the economic level of leakage is the appropriate target setting methodology, and if alternative approaches could provide a better basis.

- The objective of the Leakage Performance Indicators Report was:
  - To develop a set of Performance Indicators to assess leakage management performance which support the leakage target setting process.

3. BENEFITS

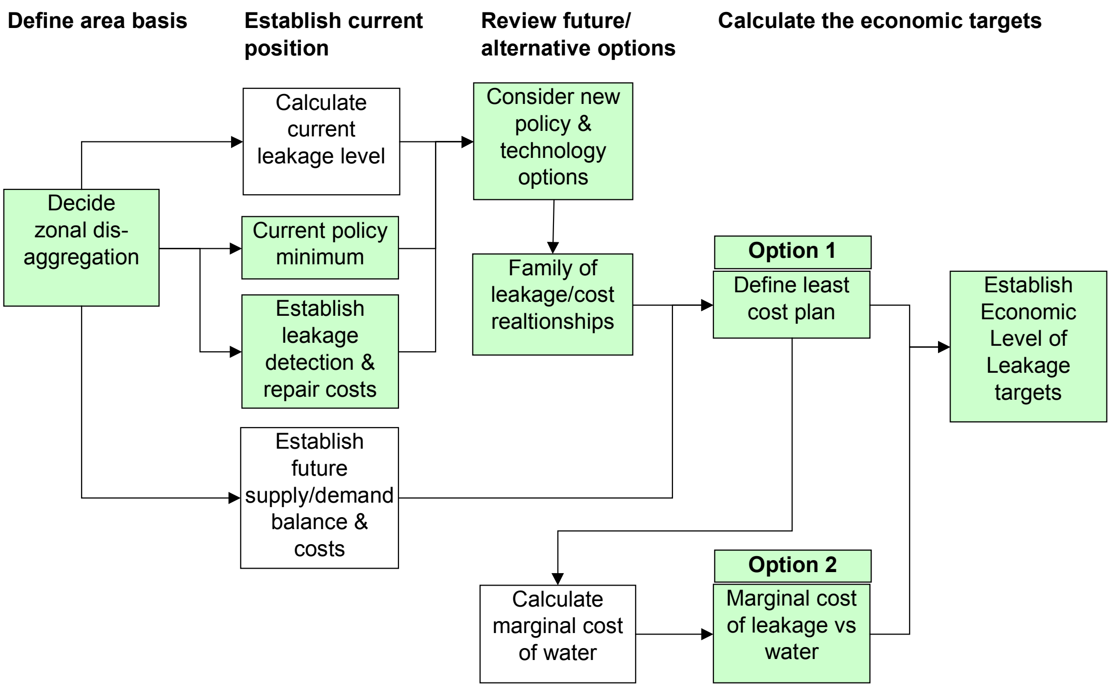
The identification of key principles will allow existing water company methodologies to be improved to an acceptable standard where necessary without requiring companies to implement prescribed detail at each stage.

The identification of Leakage Performance Indicators will allow the Regulators to obtain a consistent view of company performance using a set of clearly defined indicators.

4. APPROACH

Figure 1 shows a simplified process map for developing leakage targets for the economic level of leakage (ELL). All of the processes which are shaded in the diagram have been considered within the project.

Figure 1 ELL target setting process map



5. SUMMARY OF KEY FINDINGS

Given the wide scope of the study it is not possible to present all findings within this summary document; the reader should refer to the individual reports for full details.

5.1 Best Practice Principles

I. **Current leakage levels** should be calculated based on the July return methodology, with trends through the year used to estimate future transitional costs.

II. **The current policy minimum leakage levels** are critical to the development of a robust ELL analysis. The policy minimum leakage estimates the lowest level of leakage that can be achieved with the current policy. It should be based on company specific data and will depend on leakage control policy and system conditions.

III. **Leakage control activities and leakage cost relationships.** Two distinct approaches are currently used by water companies to evaluate and model leakage control activities and costs. The first considers total costs which are split into steady state costs (the cost of maintaining leakage at a given level) and transitional costs. The second considers unit costs and estimates the cost of reducing leakage assuming a natural rate of rise. The first of these methods is considered more reliable.

The form of the relationship is not significant – it is more crucial that actual company costs should be used which are **consistent with leakage budgets**. Actual costs versus levels of leakage should be compared to modelled values over a number of years.

IV. **New policy and technology options** - The ELL should be determined for the current leakage policy to give a baseline. Other leakage policies may then be evaluated against this baseline. New policy options that should be considered include improvements in district metering, pressure management, leak survey technology, efficiency of leakage surveys, repair times and costs, additional household metering and system rehabilitation/replacement.

V. **Calculating the economic level of leakage -** A least cost planning approach, which minimises the net present value of costs of managing the supply-demand balance over a long term (25 - 30 years) planning horizon should be used. The least cost plan should be updated at least every five years or following significant changes to the supply-demand balance.

An approach using the long run marginal cost of water will provide consistent values to the least cost planning approach if appropriate values for the marginal cost of water are used. This approach only considers the trade-off between leakage and resource/treatment options. This should be used at least annually to assess the impact of changing leakage management costs on the economic level, although formal reporting to Ofwat should remain on the current 2-year cycle.

A best practice framework for including environmental and social costs and benefits is provided. It is recommended that a desk-based study, making use of benefits transfer is undertaken to determine the likely impact on the ELL. Only if this indicates a significant impact should a full social and environmental costing be undertaken. A worked example of a desk-based study is included to illustrate the process.

Over time the increase in the number of properties will make maintenance of constant volumetric (e.g. Ml/d) targets increasingly difficult. Targets should be set on the basis of per-property or per-km. New properties will therefore tend to result in increasing volumetric leakage, however efficiency savings and the need for supply-demand investment will tend to cause leakage to trend downwards.

Company leakage targets should be based on the average over a number of years. This is more difficult to monitor when companies are driving leakage down, but when in steady state the level of leakage may fluctuate about the target. Over or under achievement of the target, due to external factors, should not cause the following target to change. For example, a company that 'beats' it leakage target by 1 Ml/d should not be required to maintain this new lower level in future years.

New technology will result in efficiency savings. Until supply-demand investment is required the water company will look to maintain the current level of leakage – new technology will therefore result in lower costs. When supply-demand investment is required the new technology will result in a lower economic level.

5.2 Target Setting Methodologies

A range of alternatives to the current method for setting economic leakage targets are discussed. These range from methods that can be used to validate companies ELL calculations, to setting leakage targets based on a theoretical relationship through to a system of trading in leakage permits/credits. A discussion is also included of the different ways to regulate leakage.

5.3 Leakage Performance Indicators

The ELL methodology is the method currently used to define leakage targets. These targets reflect a balance of costs that takes into account the relative value of water resource development and leakage management. However, they do not allow independent assessment of the efficiency of leakage management processes and the operational conditions that apply in leakage management areas. Thus a higher ELL may be the result of inefficient practices, the supply-demand position or a difficult operating environment. This means that it is not possible to make valid comparisons of targets set by different water companies using the ELL methodology alone.

The LPIs presented below have been developed to support a leakage target set by ELL or by some other means. Targets should continue to be set on achievement of the level of leakage, and not on individual LPIs.

The final set of LPIs is summarised in Table 1. They are part KPI (they measure the efficiency of the leakage detection process) and part explanatory factor (they measure the leakage characteristics of the system).

Table 1 Leakage Performance Indicators

Status	KPIs
Primary	1 Leaks found per survey property 2 Leaks found per inspector 3 Repair time (by type)
Secondary	4 Leakage repairs per 1000 properties (by type) 5 Detected repairs per 1000 properties (by type) 6 Percentage detected leakage repairs 7 Policy Minimum level of leakage
Leakage Management System Descriptors	1 Number of ‘district meter’ areas in the company 2 Number of ‘waste and combined metering’ areas in the company 3 Number of PRVs in the company 4 Average Zone Night Pressure (AZNP) target divided by AZNP

The study has focussed on LPIs that provide performance measures rather than cost comparators. This is primarily because cost definitions are difficult to standardise due to differences in data collection methods and allocation of overhead costs. The LPIs are intended to measure the effectiveness of the selected policy. The least cost leakage control policy (including pressure management, DMA size and coverage, use of new technology) is defined as part of the ELL analysis.

The leakage management system descriptors are additional data that should be collected in addition to the data already collected as part of Table 10A of the Ofwat Return. These provide a clearer assessment of the leakage management system in place in the company now that most companies have fully implemented district metering.

It is considered that the LPIs produced have the potential to support to the current Ofwat reporting requirements and to assist the regulators in their understanding of water companies ELLs. It is recommended that a wider data collection exercise be undertaken to confirm both the availability of data and the robustness of the indicators.