THE INSTITUTION OF ENGINEERS OF IRELAND

DELIVERING WATER SERVICES FOR THE 21st CENTURY

SUBMISSION TO GOVERNMENT

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SUMMARY AND RECOMMENDATIONS

High quality water services are essential to the economic and social wellbeing of the country. The Institution of Engineers of Ireland believes that if the future provision of water services in Ireland is to comply with domestic and EU legislative and sustainability standards, there must be major changes in the organisation and financing of our water services.

Key objectives to be met include: -

- ⇨ Delivering high quality water services, to best international standards;
- ⇨ Reducing leakage losses (from a 2000 average of 47% average to 20%);
- ⇨ A major upgrade of the water pipe network, much of which is in very poor condition, and
- ⇨ Meeting the challenges of climate change.

Ireland has over one million domestic and 160,000 non-domestic water customer connections. Water usage by customers and water leakage in Ireland is significantly greater than that pertaining elsewhere in Europe, including the UK. Here, daily domestic consumption of water by customer is 160 litres, compared to 135 litres in England and Wales, and 115 litres in other European countries. The percentage water loss in distribution (due to leakage) in Ireland is up to 50%; in England and Wales it is about 24%, and in other European countries it is less than 10%.

Since the Institution of Engineers is committed to creating the best possible infrastructure in this country, it has identified the following key requirements for affecting the delivery of sustainable, quality water services over the next 20 years: -

- The need to account for the impact of global warming on rainfall patterns and water storage requirements
- A charging mechanism to stimulate water saving.
- Major ongoing capital investment to meet new water quality objectives and wastewater standards.
- Renewal of existing assets, particularly the pipe networks, many of which are in poor condition by virtue of age and degradation.
- Environmental management of water resources in accordance with the objectives of the EU Water Framework Directive (WFD).
- Achievement of best value for money, while recognising the need for economic and environmental regulation in order to protect the consumer.

Critical to addressing these issues is the provision of a secure and reliable revenue stream for effective planning without the uncertainty that exists within the current financing arrangements.

Among the key recommendations of the Institution of Engineers of Ireland in this report are the following: -

ORGANISATION STRUCTURES:

- A comprehensive review of the organisational arrangements for delivery of water services should be carried out, and a regional approach based on river catchments adopted.

- Local/regional water authorities should be established for the management and delivery of water services.

- A Water Services Regulator should be established to set standards and targets for service delivery by these water authorities, and to approve water charging mechanisms and charges.

FUNDING:

- Adequate provision should be made by water authorities, in consultation with the Water Services Regulator, for the capital and operational expenditure needed to deliver a sufficient supply of high quality water into the future, and to ensure effective collection and treatment of wastewater.

- While ensuring water authorities are incentivised to deliver an economic service, the need for possible Government subvention for particular water authorities should be addressed by the Regulator.

- Any funding requirement from the Central Exchequer to water authorities should be based on approved business plans and be provided on a formally approved five year rolling budget basis.

CHARGING AND METERING:

- A water charging regime based on full cost recovery from all consumers should be implemented, phased in over a five-year period to mitigate the impact on domestic consumers.

- An equitable and transparent system of charges should be established on a regional basis for domestic and non-domestic customers with minimum cross-subsidy between sectors.

- All non-domestic users should be metered.

- All new domestic connections should be metered, with the installation of water meters being a requirement to secure planning permission. Initially these could be self-read by the householder, subject to an annual audit. Further metering, for existing domestic connections, could be promoted by lower tariffs for normal usage compared with fixed charge, with metering imposed in situations of known high demand.

- For non-metered domestic connections, a flat or stepped annual water charge based on floor area or household size should be introduced. The charging regime between metered and non-metered connections should be such as to promote water conservation and promote the installation of water meters

- Mitigating arrangements should be made for domestic consumers with special health needs, or who can demonstrate inability to pay.

- The balance between fixed and variable components of all charges should be transparent and should be optimised to incentivise reduction in water usage and losses while ensuring secure recovery of all costs.

1. INTRODUCTION:

1.1 BACKGROUND:

Throughout the 1980s and 90s, a water charge for domestic and non-domestic users was an established and evolving revenue stream for virtually all local authorities in Ireland, with Dublin Corporation being a noticeable exception. However, in the mid 1990s, the drive to introduce charges nationally at realistic levels in line with international practice led to political controversy. The government decided to abolish domestic water charges and this was given effect into Irish law by "S.12 of the Local Government (Financial Provisions) Act, 1997". Commercial and industrial users of water and wastewater continued to be charged on both metered and non-metered bases.

The capital cost of major infrastructure was traditionally borne by central government. Planning contributions levied by Local Authorities on domestic and non-domestic development were used mainly for small capital improvements. These contributions were set at uneconomically low levels and were not related to the real cost of providing the infrastructure. In the late 1990s, the capital cost of providing new infrastructure was part financed through securing significant and realistic contributions from industrial and commercial users of water and wastewater services. This was all the more understandable given that the required investment in water services infrastructure through the National Development Plan and beyond was estimated at €3 to €4 bn.

1.2 RECENT DEVELOPMENTS:

In line with international practice and EU policy, Ireland has moved towards making the full cost of water and wastewater services transparent and securing cost recovery from customers. In autumn 1998, the government adopted a "Water Services Pricing Policy" Framework requiring: -

- No cross subsidy of domestic service from non-domestic charges
- Non-domestic charge to include a maximum 20% allowance for leakage
- Recovery of "average operational" and "marginal" capital costs of water services from all non-domestic users
- The completion of the metering of all non-domestic users by 2006
- The maintenance of the status quo of not charging for provision of domestic water services. Domestic operational costs are to be met through the "Local Government Fund" and capital costs through the Department's "Capital Program".

Many see this framework as significant progress towards the development of a more sustainable approach to water services management by identifying and internalising the economic costs of water usage and waste

water service. The implementation of this pricing policy has been advanced incrementally by the Department of the Environment, Heritage & Local Government (DoEHLG) and by Local Authorities in the context of the National Development Plan. Local Authorities are systematically identifying and metering all their non-domestic customers with a view to realising justifiable income while at the same time costs are being optimised through economic procurement and efficient operations. The use of competitive 20-year Design, Build Operate (DBO) contracts is now the norm for new treatment facilities. The DoEHLG is endeavouring to ensure that Local Authorities are refunded the full cost of the domestic service through the Local Government Fund. This may be difficult to achieve given the emerging high operating cost of new treatment plants.

All this makes the cost of water services more explicit and transparent to all customers and is in keeping with the application of the Polluter Pays Principle and the requirements of the EU Water Framework Directive.

Whereas the capital cost associated with existing domestic users is to be met from central funds, a significant local contribution is required in respect of other users. Commercial and industrial costs are calculated on a marginal basis. The cost of infrastructure for future housing is also calculated on a marginal basis and is additionally grant aided from state funds up to 40% of the cost. In order to meet these local costs, Local Authorities are currently developing their "Water Pricing Schemes" and "Development Contribution Schemes".

In addition to public schemes, approximately 2,500 group schemes provide water supply for 145,000 households nationwide. In early 1997, the "National Federation of Group Water Schemes" (NFGWS) began to emerge in direct response to the Government decision to abolish domestic water charges. With financial support and commitment from the DOEHLG, significant progress is being achieved in addressing the widespread water quality and distribution problems in this sector. A large number of schemes have been or are currently being bundled into DBO contracts all over the country. These contracts are managed in the context of the partnership between Local Authorities, DOEHLG, NFGWS and the Groups themselves. Generous grants, for both the Design/Build phase and for the operational phase, are available through the Rural Water programs. Preferential subvention is available in respect of "operational contracts" rather than operation by the Groups themselves. There remains a significant problem of sustainability due to leakage in private networks. This has to be addressed in the context of conservation of resources and ever increasing costs of treatment.

1.3 CHALLENGES:

As implementation of the pricing framework has evolved, a number of contentious issues have emerged: -

- There has been a dramatic increase in operational costs as a consequence of the need to properly manage the substantially enhanced water services infrastructure now being provided. Critically, the capacity of the Local Government Fund to meet the operational cost of domestic water services is clearly in doubt. In 2002, a City & County Managers Association (CCMA) survey of all local authorities showed that, on average, 32% of each County and City Council's annual "Local Government" grant was required to provide free domestic water services in 2002. The predicted cost for 2008 was estimated at €344m which would represent on average, 63% of each local authority grant. Recent further work by the CCMA has found these figures to be conservative. Given the current pressures on Local Government finances, many local authorities now question the affordability of their major capital water services programs and are reluctant to sign long-term DBO contracts due to doubts about being able to have a secure uncapped income stream to meet the domestic portion of any DBO contract.

- Charges to non-domestic users in respect of "unaccounted-for-water" (UFW) are limited to a 20% allowance. Many supplies especially older urban ones experience leakage levels as high as 60%. Recent investment in leakage control measures and pipe rehabilitation has reduced UFW levels particularly in large urban areas. The cost and practicality of reducing to and maintaining the 20% level is questionable across the board Consequently, the burden of UFW above 20% falls to be met as part of the domestic cost.

- Many practitioners question the economic sense of universal metering for all NDUs. While the marginal cost of water supply is 10 - 20 cent per cubic metre, the annual cost of installing and maintaining a consumer meter, based on a 10 year life cycle, is currently estimated to be in excess of €100 per year. However, against this must be balanced the ever increasing cost of providing water to consumers especially in the context of global warming and the accepted impact that this will have on rainfall patterns and the resulting greater storage capacity requirements.

- Many local authorities have formulated 10 year capital investment plans. The provision and operation of the proposed infrastructure is heavily dependent on central state funding, the future availability of which is uncertain. This uncertainty is further compounded by the "scheme by scheme" system of approvals in the context of investment programs. Also, individual local authorities must separately predict and forward fund future industrial and commercial requirements.

- Many group schemes are reluctant to enter long-term contracts without assurances of ongoing annual operational grants from Government. However, these operational grants are not guaranteed for the 20 year duration of DBO contracts.

In the following chapters, the IEI reviews the arrangements for delivery of water services in Ireland. Given the recent publication of the Water Services Bill, this is also considered very timely. This review considers how "best international practices" might apply in the Irish context with particular reference to the most effective business model for delivery of the service. The objective is to provide a sustainable financial and administrative framework for delivery of Water Services in the 21st Century.

2. INTERNATIONAL BEST PRACTICE

2.1 INTRODUCTION:

A review of International Best Practice is summarised in order to determine the principles and methodologies in use to deliver water services to domestic and non-domestic customers. This requires consideration of the structures and the management and financial frameworks used to deliver: -

- Compliance with defined service standards
- Environmental sustainability
- Economic sustainability
- Public accountability
- Social equity and public service (fire, etc.)

2.2 ENGLAND AND WALES:

Historically, water services in England and Wales were provided by Local Authorities under Public Health Legislation that was closely paralleled by the Public Health Acts of 1878 in Ireland. In the 1960s, catchment based Water Authorities were established (Thames, Severn Trent, etc.) to deliver water services on a regional basis based on river catchment boundaries. This structure recognised the need for an integrated approach to catchment resources and provided a significant scale factor to produce economies in the development and operation of water and wastewater infrastructure. A number of private water companies operated historically throughout England and Wales in local areas, for example, Folkestone, Dover, Bristol, etc.

Approximately 15 years ago, the water industry in England and Wales was fully privatised by the Government. The principal motivation for privatisation was the need for massive capital investment in the water services infrastructure to reinstate the quality of the existing assets, meet new environmental standards such as the Urban Wastewater Treatment Directive, etc. Privatisation was seen as a vehicle to raise the necessary capital funding without impact on the Exchequer balance sheet.

Privatisation resulted in the following structures: -

- The assets and resources of the Public Authorities were transferred into Private ownership resulting in the establishment of large Public Limited Companies (Plc's) in each of the Water Authority areas.

- The establishment of a Water Industry Regulator (Ofwat) charged with regulating the industry through setting of standards, approval of pricing

structures and monitoring of investment levels against approved investment programmes.

- Government remains responsible for Legislation and overall National Policy while the Environment Agency is responsible as Water Quality Regulator (abstractions and discharges).

The privatised Water Companies in England and Wales and the regulatory regime are now well established and the industry is entering the fourth investment programme phase (Asset Management Plan 4 - AMP4). Under each Asset Management Plan, the individual companies develop their investment programmes to meet stated policy objectives and these are submitted to the Regulator as part of the price setting procedure. Within the price structure, defined provisions for capital investment and operational expenditure are provided. The Regulator seeks to establish defined Key Performance Indicators (KPIs) and best Value for Money.

Customer charging to non-domestic customers is based on metering with a proportion of fixed charged users targeted for full metering over time. For domestic customers, the charging mechanisms are: -

- Some 78% pay a fixed sum based on rateable valuation
- Approximately 17% are metered
- The balance pay a flat fee

There is very limited social provision based on "Vulnerable Groups" restricted to large families and people suffering from medical conditions, who have low incomes and a metered supply. Because of the multiple conditions attaching, take-up is very low (1% of households in the category).

The successes of the privatisation of the industry in England and Wales could be considered to be: -

- A strong focus on guaranteed levels of service and their general adoption by the industry.
- A significant level of investment in both asset renewal/upgrading and new infrastructure such as Water and Wastewater Treatment.
- Significant progress in the reduction of leakage.
- An integrated business approach to the management of Water Services as a utility, with integrated capital and operational budgets and investment prioritised according to agreed multi-annual investment programmes and objectives.

- Significant innovation in the procurement and implementation of schemes using partnership, target price and fixed price contract mechanisms, both for capital schemes and outsourcing of services.

Negative aspects of the privatisation of Water Services in England and Wales were: -

- In the early years, there was considerable public dissatisfaction with profit levels, executive pay levels and perceived value for money to the customer.

- Initially, the Plc's engaged in a wide range of activities with potential conflicts of interests and concern that the water customer might be subsidising other business sectors in the Plc. This has been a particular focus of the Regulator in recent years and has resulted in streamlining of the companies.

- The private companies have a limited remit which may not cover the full range of social and public service requirements. For example, they have no responsibility for fire-flows and the interface with Local Authorities in regard to flooding, road drainage and sustainable urban drainage systems is problematic.

2.3 WATER SERVICES IN SCOTLAND:

Until recently, water services in Scotland were delivered by three Public Water Authorities - East, West and North of Scotland. In the last year, however, these have been integrated into a single public Water Authority covering the whole of Scotland.

The framework for delivering water services in Scotland is now generally along the following lines: -

- The Scottish Parliament has overall responsibility for policy and regulation.

- The Scottish Water Authority is responsible for delivering water services, including charges and collection of revenues from domestic and non-domestic customers.

- There are two industry Regulators, one a Financial Regulator who is concerned with economic efficiency of the service and a Quality Regulator who defines the service standards to be achieved with respect to the customer and the environment.

- The Scottish Environmental Protection Agency (SEPA) operates independently in the setting of consents and environmental policy.

Currently, there is major focus within the Scottish Water Authority on improving efficiency and value for money in the delivery of services. This is being addressed through Framework Agreements and Partnership Contracts, outsourcing of services and restructuring of the organisation.

This system would appear to provide the mechanisms for an integrated approach to the planning, funding and implementation of water services in a Public Authority Framework. Progress on major investment appears to be somewhat behind that in England and Wales but significant capital programmes are in place to meet the requirements of the Urban Wastewater Treatment Directive and other Regulatory standards. These are being delivered through: -

- Private Finance Initiative (Design-Build-Operate-Finance) contracts have been used for some major infrastructure projects.
- Design-Build and Design-Build-Operate contracts have also been employed widely.
- Framework Contracts for integrated network planning, leakage control, drainage area planning and the like.
- Use of relatively sophisticated GIS based data management systems for network management allowing centralised surveillance of performance and providing for decision making in the context of strategic planning and management.

Non-domestic customer charging is based on metering with a fixed charge applied to low consumption customer categories while domestic customers are generally fixed charge.

2.4 WATER SERVICES IN NORTHERN IRELAND:

In Northern Ireland water services are delivered by the Department of the Environment with no charges to the domestic user. In March 2003, the Government published a consultation document entitled "The Reform of Water and Sewerage Services in Northern Ireland" which identified: -

- The need for massive investment estimated at £3 billion over 20 years in Water Services in Northern Ireland to obtain public health, environmental and economic benefits of higher water quality and more effective wastewater treatment.
- That investment is predicated on major reform of Public Services as part of a major review of public administration.
- The paper is underpinned by the proposal to move Northern Ireland's water and sewerage services onto a self-financing basis to give certainty to long term planning.

- That, in principle, this would require introduction of domestic water charges, phased in over a number of years to lessen the impact on households.

The adoption of new structures and funding arrangements for delivering water services in Northern Ireland is seen as necessary to meet the future challenges facing these services in a sustainable economic framework.

The Government has published the results of public consultation in Northern Ireland. This showed general discontent at domestic charges for water. If a change is to apply, the public view was that a flat rate charge is inequitable with a metered charge preferred with payment related to use. The public strongly opposed transfer of state assets to the private sector (i.e., privatisation).

2.5 EUROPE AND BEYOND:

In France, water services are generally owned and controlled by the public authorities. However, there has been a tradition of long-term concession contracts whereby private sector utility companies are charged with the management and operation of the water services in long term contracts (typically 25 years). Within these contracts, provision is made for funding of infrastructure improvements, operation, maintenance and asset renewals. Customers are fully metered and service standards are generally high in terms of: -

- Quality and quantity standards to customers.

- Security of supply with significant residual capacity in terms of production and storage being provided.

- Leakage levels are generally low reflecting lower economic levels of leakage corresponding to higher costs of water supply.

Elsewhere throughout the EU a similar approach is taken with substantial private sector involvement under various contract regimes to the public authorities. Metering is generally universal with full recovery of costs and limited exchequer involvement in funding of water supplies.

In Eastern Europe the water services are generally provided by public authorities, along similar lines to Ireland. In these countries, the major challenge is to upgrade facilities to deal with demand growth, environmental standards, etc.

In the United States, water services are generally provided by local public authorities, with full customer charging of non-domestic and domestic consumers. Facilities are generally publicly owned and run, with new projects let through various contract models from traditional to turnkey.

In Australia, the private sector is increasingly involved through long term concession type contracts covering a full integrated service including capital upgrading, full operation, financing and revenue collection. These contracts are also used in many other countries where there is need for significant improvement on existing standards.

As a result of these trends, there are now a number of very large international private water utility companies. For example, the Veolia Water Group currently supplies water to approximately 110 million people world-wide as well as engaging in PFI, PPP and traditional contracts in the water industry.

2.6 EU WATER FRAMEWORK DIRECTIVE:

The Water Framework Directive (WFD) provides for an objective of "good water quality for all waters" across the EU, with river basins as the basic unit for water planning and management actions. The Directive incorporates the "User Pays Principle" except for social reasons. In Ireland, this exception has been employed to exempt all domestic water consumers from user charges. However, this interpretation may be open to challenge since such an exemption favours all domestic users, regardless of income, and may be seen as a substantial subsidy which could be better devoted to other social areas such as health or education, for example.

The User Pays Principle for water services has been advocated by the OECD since 1989 and is implemented in practice in most European countries. The Directive requires consideration of the economic value of water and DoEHLG is commencing a study to determine this in Ireland. Also at the heart of the WFD is a holistic catchment based approach to water resource management, including abstractions and discharges. This can be served by a regional approach to management of water services which respects major river catchment boundaries.

2.7 INTERNATIONAL PRACTICE REVIEW:

Different models are used in different Countries to deliver water services using various combinations of public and private participation. All of the models, however, have certain core elements, for example: -

- Overall policy and regulation is determined by Public, (EU, National or Local) Authorities.

- Charging for water outside of Ireland is practically universal for both domestic and non-domestic customers and is the primary source of revenue. While metering is commonplace in Europe, household

charging is primarily on fixed charge in Britain with the majority of charges relating to rateable value of the property.

- Capital and operational budgets are developed in an integrated manner against defined priorities and programmes. These programmes generally contain service standards, including the achievement of environmental or other policy objectives.

- Given the monopoly nature of Water Service Undertakers, the available models provide for regulation to deliver a quality service, to control prices and drive efficiencies and value for money.

- The capital and operational budgets are linked to the revenue stream, with surpluses generated to provide future capacity as in any other utility undertaking.

- Water services planning must have regard to economic, environment and social needs as enshrined in the Water Framework Directive.

- Integrated organisation combining overall management, strategic planning, capital and operational programmes, programme management, financing and billing is vested in one organisation.

2.8 BEST PRACTICE CONCLUSIONS:

The Best Practice conclusions from this overview are: -

- **Levels of Service:**
  Any good business model requires defined levels of service which are appropriate, achievable and affordable. Levels of service comprise compliance with statutory requirements, general service standards (including customer and company obligations) and provide a platform for future growth. These can all be encompassed within a "Customer Charter". The management, operational and investment strategies can then be evolved to meet those level of service objectives and prioritised accordingly. Key requirements are security and quality of supply. Setting of key performance indices is consistent with the recent initiative of the Minister for the Environment, Heritage & Local Government for local authority services.

- **Environmental Sustainability:**
  Requires the setting of environmental standards and objectives by an appropriate regulatory authority separate from the Water Services Undertaker in line with legislation and public policy. Environmental policy must support sustainability through protection of the ecosystem and conservation of resources.

- **Economic Sustainability:**
  Requires balanced revenue and expenditure streams to cover day to day operational costs and funding of investment at a level appropriate to the condition of the assets and the level of service objectives. The water-charging framework should be transparent to the consumer and be equitable as far as practicable. The key requirement is for a stable financial regime to underpin long term planning and management of water service.

- **Financial Accountability:**
  Requires external economic regulation, in lieu of market competition, to ensure overall value for money and achievement of performance standards. This requires an appropriate external regulatory regime competent to review and approve budget programmes, test efficiency through benchmarking, monitor performance against stated budget objectives and make appropriate allowance for investment needs.

- **Social Equity and Public Service:**
  Requires an overall political control that reflects public needs and aspirations consistent with the foregoing. These considerations will influence the remit of the Water Undertaker, the roles of the Regulators and may involve exchequer subsidies or other mechanisms to ensure that social objectives are satisfied.

Within the local authority structure, water service must embrace the full spectrum from water supply, wastewater management to environmental management of water resources. Within this context, these principles apply to all of the associated activities including pollution control, water quality monitoring and management. The duties to provide for fire-flows must also be accommodated.

3. A STRATEGY FOR SUSTAINABLE WATER SERVICES IN IRELAND

3.1 CONTEXT FOR CHANGE:

Ireland has 1.04 million domestic and over 160,000 non-domestic water customer connections. Water usage by customers and water leakage in Ireland is significantly larger than that pertaining in Europe and in other industrial countries cf table 1.

	Daily Domestic use per capita	Overall % Water Loss in Distribution
Ireland	160 l/d	40-50% *
England & Wales	135 l/d	20-24%
Typical European	115 l/d	< 10%

* the National Water Study 2000 estimated 47% water losses

The scale of Ireland's water supply requirements is highlighted in the May 2004 EPA Report "Ireland's Environment" which states "… approximately 1,600,000 m^3/d of water is abstracted specially for the production of drinking water."

In the context of ensuring satisfactory levels of service to customers in terms of quantity, quality and security of supply, IEI has identified the following key limitations in existing arrangements: -

- The need to account for the impact of global warming on rainfall patterns and water storage requirements in planning the future delivery of water services in Ireland.
- The need for a charging mechanism which stimulates water saving.
- The need for major ongoing capital investment in the services to meet new Water Quality Objectives and Wastewater Standards, and to achieve essential renewal of existing assets, particularly the pipe networks, many of which are in poor condition by virtue of age and degradation.
- The need to provide adequate resources for operation of water services to achieve higher water and wastewater quality standards, reduce losses and maintain water services infrastructure to a satisfactory standard.
- The need to provide additional operational resources to provide for the environmental management of water resources in accordance with the objectives of the Water Framework Directive (WFD).

- The need to streamline the management and delivery of water services in terms of policy, planning, operation and investment delivery, to give best value for money, while recognising the need for economic and environmental regulation in order to protect the consumer.

A key requirement, therefore, is the provision of structures and a sustainable financial framework which can deliver an integrated and consistent programme of management and investment in water services from both the capital and operational viewpoint, over the next 20 years and beyond. Critical to this is the provision of a secure and reliable revenue stream for effective planning without the uncertainty that exists within the current financing arrangements.

3.2 GOALS OF A SUSTAINABLE WATER STRATEGY:

The three pillars for sustainability for water services are:

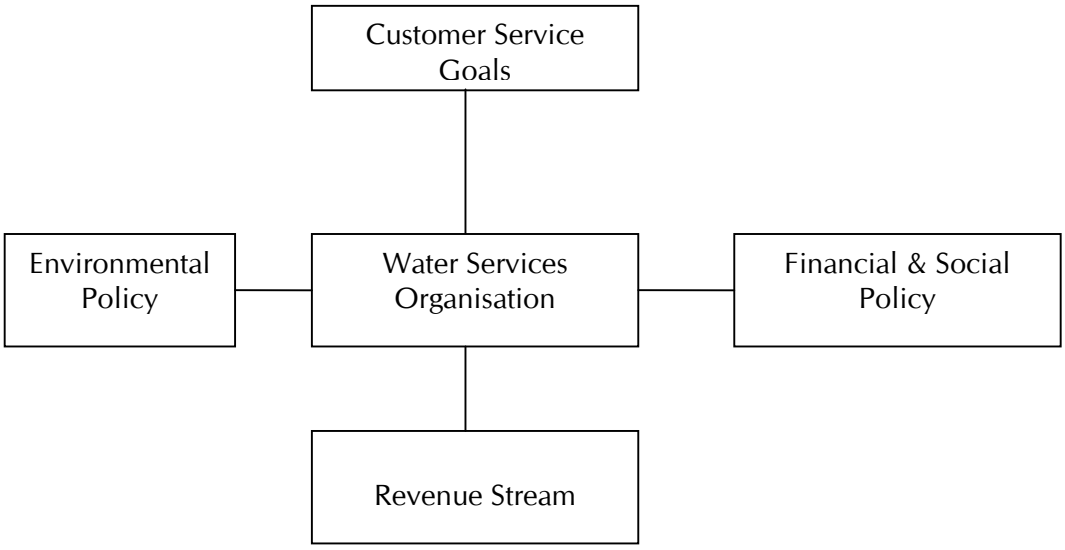
- **Economic:**
  Requires the delivery of an appropriate water pricing structure to meet the needs of the service while balancing incentives to the water producer and consumer to use water resources optimally. Consistent high quality water services are required across the Country to promote social and economic development. Funding to meet these standards must be met by an equitable system of charges. The basis for charging should be transparent and equitable between the sectors. Revenues should provide an appropriate economic return to finance and maintain investment needs into the future, while meeting safety and security of supply requirements.

- **Environmental:**
  Requires protection of the ecosystem while making essential strategic provision for customer needs, stimulating savings in water use and minimising losses. This requires that the economic cost of water abstraction be incorporated as far as practicable into water charges. Continuing growth in per-capita water usage, currently growing at 1-1.5% per annum is ultimately unsustainable. As climate change progresses there will be increasing pressure on water resources, requiring reduced dry weather abstractions. The normal mechanism for controlling growth by application of tariffs is frustrated by the absence of domestic user tariffs in Ireland.

- **Social:**
  Requires the protection of vulnerable households where health and hygiene requirements could be compromised by inability to pay for essential water needs. This requires consideration of social subsidy, flexible budget payment and debt recovery provisions.

The following chart summarises the requirements whereby the water services organisation delivers defined customer services goals in the context of: -

- A sustainable environmental policy (EU and National Government).
- Financial and social policy (National Government)
- Revenue stream to be administered by the Water Services organisation in accordance with policy.



3.3 ORGANISATIONAL NEEDS AND INTERFACES:

There is a range of organisational requirements to deliver effective water services in the context of the foregoing goals: -

- **Government (Local and Central):**
  Would continue to establish the policy framework within which water services must operate. This would include environmental policy standards. It would also include financial policy to a limited degree. It is considered that Government would contribute financially to Water Services provision in respect of: -
  - Social provisions to protect disadvantaged users from any deficiency affecting health and hygiene
  - Capital infrastructure investment over an interim period to deal with the backlog of asset upgrading needs

- **- Quality Regulator and Customer Charter:**
  The office of Regulator recently established within the EPA will be a key player in setting consent requirements for water abstractions and discharges. This is in addition to the EPA role in collating and reporting on water quality standards generally. Future quality regulations should support a comprehensive 'Customer Charter' consistent with good international practice to include:

- Compliance with quality standards in National Regulations
- Adequate quantity and service pressures in the supply
- Security of production and storage, with adequate headroom
- Integrity standards in the network to contain leakage and limit supply failures
- Standard criteria for customer service and response to supply queries or complaints
- Auditing for compliance with these criteria.

Financial Regulator:
Could be separate from Government involving a financial regulatory function to protect the consumer interest in relation to the setting of charges in order to balance the budget needs of the water services organisation with the requirement for continued value for money and affordability of the service.

Note: There is a strong case to be made for combining the regulatory functions relating to the setting of service standards, approval of pricing structures and the monitoring of investment levels in one Water Services Regulator, as is the case in England and Wales (Ofwat).

Local Water Authority:
As owners and operators of the water services assets, charged with delivering the services within the budget framework, including implementation of long term planning and capital investment.

Regional Dimension:
It is perceived that there is a need for a strong regional dimension which could logically mirror the River Basin District (RBD) structure put in place to deliver the Water Framework Directive (WFD). This regional approach to water services management would facilitate an integrated approach to water resources, water quality improvement, monitoring and management on a river catchment basis. A regional structure should also result in potential economies of scale in the production, treatment and bulk distribution of water, particularly taking into account security of supply and back-up considerations.

Compared with existing arrangements, the development of regional water services organisations, within the public sector presents the opportunity for effective management and delivery of water services on a regional basis in a cost effective and environmentally sustainable manner. Such organisations would facilitate devolution of responsibility for the planning and implementation of investment programmes with national approval being limited to overall budgets and policy formulation. This approach should lead to integrated financial management (capital and operational), with accountability to Government and any Regulator appointed by Government.

The interface between regional organisations and local authorities would have to be carefully worked out. A number of options exist:

- Establishment of fully self-sufficient water services organisations drawing from the existing local authority and staff resources in the region with full transfer of assets, resources and staffing.

- Regional water services organisation effectively delegating day-to-day operation of the services to the existing local authorities with agreed budgets and responsibilities and with capital investment and charging policy retained within the regional authority.

The policy must also provide for supporting satisfactory water service delivery to up to 145,000 households serviced by approximately 2,500 private group schemes. This will require that financial and technical support be maintained by Water Services Authorities consistent with policies for public supplies.

Recommendations:

- A comprehensive review of the organisational arrangements for water services in Ireland should be carried out. This review should focus on a river catchment based regional approach to delivering the services consistent with the foregoing including, integrated investment and revenue functions.
- Local/regional water authorities should be established for the management and delivery of water services.
- A Water Services Regulator should be established to set standards and targets for service delivery by the water authorities, to approve water charging mechanisms and charges and to approve and monitor investment programmes.

3.4 INVESTMENT AND A SUSTAINABLE WATER CHARGING POLICY:

An investment profile for water services in Ireland over a 10-20 year period should cater for the following:

- Meet the water quality objectives of the WFD.

- Satisfy the requirements of water quality standards to all consumers.

- Provide for security of supply and an adequate supply/demand balance across the services.

- Meet sustainable objectives in terms of reduction in losses and water conservation.

- Provide for the maintenance and upgrading of water supply infrastructure, including a major programme of asset renewal and rehabilitation.

- Provide for sustainable growth in the future

This exercise can be informed by the "Assessment of Needs" carried out by individual local authorities and submitted to Government recently. The exercise will identify the following: -

- Overall capital investment needs for the treatment of water and wastewater, including the treatment and disposal of sludges and the renewal of the assets

- Operational needs to deliver the services to the required standards, operating and maintaining the treatment facilities, replacing and updating the technologies and equipment as an ongoing integrated process.

The development of a sustainable charging policy for water services is a challenging one and requires detailed consideration of the following factors: -

- Assessment of the true cost of delivering water services in order to meet the required operational costs and ongoing investment needs.

- Providing for transparency of costs to the customer. This would envisage that costs be itemised between water and wastewater services, water services delivery and environmental protection and may also distinguish between operational and capital investment components.

- Equity of charges requires that cross-subsidisation between sectors is minimised. In practice, this can be extremely difficult. For example, given that 50% of the cost of water services is considered to be related to the network (U.K.), it follows that the cost of services in a densely populated area will be significantly less per household than in a sparsely populated rural area. To a significant extent, therefore, cost is not necessarily currently related to usage so much as the cost of making the supply available locally to the customer.

  However, this does not take account of the impact of global warming on rainfall patterns and the resulting need for increased storage capacity. Reducing usage will reduce the investment required to increase the capacity of the networks as the number of connections grow and to increase storage capacity.

- Environmental sustainability, however, requires accountability for water use within the charging policy, wherever practicable, in order that minimisation of use will be achieved. Apart from metering, this can include incentives to utilise water saving devices, metering of non-essential uses such as sprinklers with full cost recovery, etc.

- Social considerations will require that the framework for water charges does not impact on health or hygiene requirements of consumers in poor financial circumstances. This can be dealt with by a "waiver system", whereby other consumers effectively subsidise those with an inability to pay. Alternatively, the under-recovery of costs from such consumers could be dealt with by Government subsidy under the social welfare code or direct to the water services organisation.

Universal metering is frequently advocated as the most equitable and sustainable basis for charging for water use. However, in a discussion paper published by the National Consumer Council (U.K.) in November 2002 "Towards a Sustainable Water Charging Policy", it was concluded that "the case for widespread metering has been over-sold compared to the results so far". This conclusion was arrived at in terms of: -

- **Economic Efficiency:**
  The long run marginal cost of water is relatively small compared to the overall cost of making the supply available so that the reduction in water use times the marginal cost may not meet the cost of metering and volumetric charging.

  However, the cost of installing meters in new houses would be significantly cheaper than installation in existing houses.

- **Environmental Sustainability:**
  Price elasticity of demand for water is relatively low from experience with consumption tending to rise with income to a greater extent than any noticeable decline with price. In practice, savings resulting from universal metering would be likely to be in single figures at most. Nevertheless, metering could be very beneficial where water resources are scarce or where the cost of water is relatively high. In addition, with global warming and changing rainfall patterns, these latter factors now come in to play.

- **Social Justice:**
  If the cost of funding the introduction of universal metering is to be borne by consumers, then it will be likely to result in higher charges both to fund the installation of meters and to pay for their running costs. It is also assumed that the tariffs associated with metering would be set at a rate that would penalise people with heavy domestic water use. Such an approach could penalise large families and people who are forced to use a lot of water by job or medical condition reasons. However, the UK report quotes a system used in Chile, which allows for a system of rebates discounted from the bill to low-income customers, where these rebates are then refunded to the water company by Government. With this mechanism, the cost of such subsidies is not borne by other consumers.

If universal metering is not to apply to existing domestic consumers, and it would appear that it would be unlikely to be universal, at least in the

immediate term, then the basis for charging domestic households needs further consideration. There are a number of approaches that could be used as follows: -

- **Rateable Valuation:**
  Which is generally used in the UK. The UK report found that this approach had significant anomalies and performed poorly in terms of environmental sustainability and social justice.

- **Flat Rate License Fee:**
  Reflecting the structure of costs in the industry across a single region. This method acknowledges the high proportion of cost which is relatively fixed (up to 90%) but makes no allowance for volume related costs. It scores poorly on the environmental sustainability and itself does not satisfy the requirements of social justice.

- **Hybrid System:**
  Involving fixed fee and variable metered element is used in Australia (69% fixed), the Netherlands (65% fixed) and Sweden (32% fixed) reflects in practical terms the concept that industry costs are a mix of fixed and variable. The standing charge element could be incorporated into systems of social support as a form of partial relief, in the same way as could be achieved in the case of full fixed charges.

The May 2004 EPA Report "Ireland's Environment" states " … the EEA has identified metering as a powerful tool for decreasing demand for water, with reductions of 10-25 per cent achievable. Metering can also be a useful tool in identifying water losses …"

Ultimately, it would appear that the option of universal metering in the long term is likely to be the most acceptable method incorporating a mixture of fixed and variable charges, and policies and strategies should have the objective of achieving this. In the short term, for existing domestic users, economic considerations would require that a fixed charge or stepped charge based on household population or house floor area, for example, could be used. A system of social supplements would be required to deal with inability to pay, which should be funded by Government.

Recommendations:

- A water charging regime based on full cost recovery from all consumers should be implemented, phased in over a five year period to mitigate the impact on domestic consumers.
- An equitable and transparent system of charges should be established on a regional basis for domestic and non-domestic customers with minimum cross-subsidy between sectors.
- All non-domestic users should be metered.
- All new domestic connections should be metered with the installation of water meters made a requirement to achieve planning permission. Initially, self reading would be promoted with annual audit for verification
- For non-metered domestic connections, a flat or stepped annual water charge based on floor area or household size should be introduced. The charging regime between metered and non-metered connections should be such as to promote water conservation and promote the installation of water meters.
- Special arrangements should be made for domestic consumers with special health needs or who can demonstrate inability to pay.
- The balance between fixed and variable components of all charges should be transparent and should be optimised to incentivise reduction in water usage and losses while ensuring secure recovery of all costs.

3.5 CONCLUSIONS:

IEI is satisfied that the satisfactory delivery of water services in Ireland in the context of National and EU Legislation and policy objectives requires a fundamental re-think of the organisation and financing of these vital services. Full implementation of the Water Framework Directive (WFD) is consistent with the requirements for a stable financial framework for the future of these services, based on full cost recovery from all consumers. The development of a regional approach can deliver significant benefits in terms of economic efficiency based on scale and strategic planning while facilitating a coherent response to the environmental management of water resources developed on a River Basin District basis.

The water charging framework can be developed to be consistent with the requirements of economic efficiency, environmental sustainability and social equity by incorporating the following key features: -

- Combination of standing charge and variable charge allows security of cost recovery while incentivising water conservation.

- The high cost of installing meters on existing connections can be postponed by initially adopting a fixed charge approach which could be stepped based on house size or household population, while making the installation of meters on new connections mandatory.

- Social issues can be resolved by means of an appropriate subsidy system based on the social welfare code or having regard to household income levels, to be funded by Government.

- An independent Water Services Regulator would oversee implementation of a customer charter to ensure the protection of consumers and the public through regulation of the water services organisations within the terms of legislation and public policy, to be controlled by Government.

The benefits of these proposals, if implemented, would be consistent high quality water services delivery in a cost-effective manner with integrated planning, investment and operation of the services for existing and future needs.

IEI believes that these proposals provide a more effective model for delivering water services that will: -

- Deliver self-financing of Water and Waste Services on a Regional basis within 5 years

- Produce a sustainable, equitable and transparent charging system for all customers

- Provide a more consistent level of service to Customers, now and for future needs

- Achieve better overall Value for Money through integration of capital and operational budgets for defined levels of services.

- Promote social equity by means of a subsidy scheme dedicated to socially disadvantaged consumers

- Promote environmental sustainability through awareness of the value and cost of water and by promoting water conservation.

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