

# Model Agreements for Water Services

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## **Context:**

The Government of Ireland's National Water Pricing Policy Framework requires the charging of non-domestic customers of water services so as to recover the full costs of providing such services to these customers. This is in accordance with national and EU policy on the application of the "polluter pays" principle, including the EU Water Framework Directive (2000/60/EC).

In order to progress with the implementation of the national water services pricing policy, local authorities are required by the Department of the Environment and Local Government to develop an action plan, to include the following steps:

- **Identify Customers:** Initiate a process for the comprehensive identification and charging of all non-domestic customers with full water and waste water services cost recovery. Gather data on the existing and known non-domestic customers, and the existing meter stock, and compile this information into a database.
- **Identify Costs:** Develop and/or refine mechanisms that clearly identify and effectively segregate non-domestic and domestic costs. Determine the annual operating costs and marginal capital costs of providing the water and waste water services for the non-domestic sector across the functional area of the local authority.
- **Develop a Rate:** Develop from the foregoing, a volumetric rate (per cubic metre) for the provision of water and waste water services for the general non-domestic customers, on the basis of the "water in / water out" principle, including an allowance for unaccounted-water losses (inter alia).
- **Install Meters:** Review metering requirements and prepare a schedule for the implementation of universal non-domestic metering. Let a contract to install meters, to probably include the reading of the meters and the issuing of bills to the non-domestic sector.
- **Communicate:** Introduce procedures that advise domestic customers of the cost associated with the provision of their water service.

## **Model Agreements:**

The Department of the Environment and Local Government has sought to provide Irish local authorities with the necessary tools and guidance to implement the water pricing policy; resulting in the launch of a set of "**Model Agreements and Guidance on the Implementation of Water Services Pricing Policy**", in March 2002. These documents were prepared to assist in the development of a comprehensive and transparent system of charging for water and waste water services to the non-domestic sector. They were developed as a guide to local authorities in the preparation of agreements with non-domestic customers for the provision of these services.

Volume One of the Model Agreements contains a "Charter of Service" for general non-domestic customers who, in the considered opinion of the local authority, do not individually make a significant demand on water or waste water services. The "Charter of Service" has not been formulated as a contract, but it is intended to set out the basis upon which the services are provided by the authority to the customer.

It has been determined by the Department of the Environment and Local Government that general non-domestic customers of water services (water and waste water) should pay a single local authority-wide consolidated charge. The Model Agreements provide guidance (inter alia) on the approach to be used in the determination of the costs of providing water and waste water services to the non-domestic sector.

Where the water services being provided to a specific non-domestic customer represent a significant proportion of the capacity of a treatment plant, the local authority should normally require that such a customer

enter into a reserved (in the case of waste water) or an assigned (in the case of water supply) capacity agreement. Volume 2A is a model form of agreement for waste water and Volume 3A is a similar agreement for water supply. Volumes 2B and 3B are their respective Notes for Guidance.

The Model Forms of Agreement (Volumes 2A and 3A) have been prepared in order to address a number of objectives in addition to the application of national water pricing policy. These “**Reserved Capacity Agreements**” offer a means of prescribing the volume and characteristics of waste water that may be discharged by non-domestic customers, and the capacity of water treatment assigned to a customer. They also make provision for appropriate insurances and indemnities between the parties, termination of the service and dispute resolution. These agreements developed out of contracts that were negotiated in Clonmel, Co. Tipperary between Clonmel Borough Council and significant local non-domestic customers for the provision of waste water collection and treatment services at the Clonmel Waste Water Treatment Plant which was completed in 1999.

### **Principles:**

The *Model Agreements* are intended to form the basis of commercial agreements between a local authority and a non-domestic customer. Accordingly, it is important that they embody key principles that would be found in similar contracts and agreements employed in the wider community.

The Agreements between the local authority and the customer must be **fair**, and must only provide for the recovery of the costs associated with the provision of the service. They must also be **equitable** and prevent any form of cross-subsidisation of the domestic sector by the non-domestic sector. The customer must be satisfied that the arrangements continue to offer **value**, based on the most efficient operation of the facilities by the local authority through the life of the agreement. The rates charged by the authority under the agreement must be **traceable** and allow verification if necessary.

In accordance with the Freedom of Information Acts, the agreements must be **transparent**. They must also be **compliant** with national and EU policy, directives, regulations and legislation. The terms and conditions of the agreements must be **defensible**, and based on sound engineering, environmental and management principles.

Over the long term, the agreements must be **robust** so as to protect the local authority from unforeseen events. The agreements must be **manageable** and easy to implement. Finally, the agreements should be **flexible** to cope with changing circumstances. It is through the implementation of these agreements over the coming years that we shall see how well they meet these requirements.

### **Customer Classification:**

The *Model Agreements* describe the customer as the “non-domestic producer of waste water and/or consumer of water supplies”. It is anticipated that the overwhelming majority of customers will not be deemed to have a significant impact upon their local treatment plant or network, and will not be required to enter into reserved (or assigned) capacity agreements. These are known as the **General Non-Domestic Customers**, and it is anticipated that their water consumption and effluent characteristics will be largely domestic-type in nature.

The **Significant Non-Domestic Customers** are those that would be required by the local authority to enter into reserved (or assigned) capacity agreements, which would be drafted in accordance with the Model Agreements where possible. In the case of a waste water treatment plant, these customers are likely to pursue an IPC-licensable activity, and discharge an effluent that has a significant impact on the operation of the facility due to its volume or strength.

### **Charging Policy:**

The Charging Policy is set out in a companion document to the *Model Agreements*, which is appended to this paper. Charges on the non-domestic sector are based on the Marginal Capital Cost and the Average Operating Cost of both the treatment facilities (water or waste water) and the network (collection or distribution). In this case, the Marginal Capital Cost is defined as “the additional cost incurred by the authority in the provision of the facility over and above the cost that would have been incurred if it had to service the domestic sector only”.

## **Sligo Metering Project:**

Following the publication of the Model Forms of Agreements for Water Services, Atkins (in association with H<sub>2</sub>O Water Services) has been engaged by Sligo County Council and Sligo Borough Council, who are currently facilitating a pilot project, on behalf of the Department of the Environment and Local Government, to procure a water metering and billing service through a Design, Build and Operate (DBO) form of contract. In order to implement the national water services pricing policy, local authorities are required to achieve universal metering of the water supplied to the non-domestic sector by 2006.

It is the primary objective of the Sligo Water Metering Project to procure a comprehensive water metering and billing service of the non-domestic sector for Sligo County Council and Sligo Borough Council. A Preliminary Report has been issued and we are currently engaged in the pre-qualification of candidates to tender for the role of Private Service Provider (PSP).

The second objective of the project is to report upon the Sligo Water Metering Project in a manner that will assist national rollout of water metering in the non-domestic sector. In pursuit of the second objective an interim set of Notes for Guidance was issued to all local authorities in Ireland in July 2002, and February 2003. A Customer Service Manual is also under preparation.

The Sligo Water Metering Project is a demonstration project and is not necessarily intended as a template for implementation by other local authorities. Indeed, several other local authorities have made progress in this respect, and non-domestic metering coverage averages 37% (April 2002) and is as high as 90% in some administrative areas. However, all local authorities are required to identify their own requirements in this matter and initiate a process that will lead to universal water metering of non-domestic customers in their own functional area by 2006.

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*(Note to Editors: Kevin Murray is a Group Engineer with Atkins Water, based in Cork, Ireland. He is a Chartered Member of the Institution of Engineers of Ireland and is the Project Manager for both the "Model Forms of Agreement for Water Services" and the "Sligo Water Metering Project". Atkins would particularly like to acknowledge that this article has been written with the kind permission of the Water Services Policy Unit of the Department of the Environment and Local Government, Clonmel Borough Council, Sligo County Council and Sligo Borough Council.)*

# Model Agreements and Guidance on the Implementation of Water Services Pricing Policy



Presentation and Workshop Sessions  
Charging Policy

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# **Model Agreements and Guidance on the Implementation of Water Services Pricing Policy**

## **Charging Policy**

**February 2002**

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## **1. INTRODUCTION**

- 1.1 This paper has been prepared by WS Atkins as a guidance document to develop the mechanisms of charging non-domestic customers for water services. These principles have been laid down in the Notes for Guidance to the Model Forms of Agreement for Water Services, which should be read in conjunction with this paper.
- 1.2 It is intended that this paper will outline the alternative methods that are available for the computation of charges for non-domestic customers. It will provide guidance on how the charges may be computed and it will recommend some acceptable methods of computation.
- 1.3 The paper has been developed following the experiences gained from the application of the “Polluter-Pays Principle” at several locations in Ireland.
- 1.4 WS Atkins has engaged in a series of pilot studies to further inform this process and test the charging models. These studies used data gathered in a number of locations, and are reported upon in more detail in a separate paper.

## **2. MODEL WASTE WATER AGREEMENT**

2.1 The Model Form of Agreement for Waste Water Services (Reserved Capacity) contains a number of schedules, each of which describes a distinct element of the charging mechanism. The customer should be charged for the following:

- Marginal Capital Costs of the Treatment Plant
- Marginal Capital Costs of the Collection System
- Average Operating Costs of the Treatment Plant
- Average Operating Costs of the Collection System

2.2 The method employed to calculate each of these cost items is described in the following sections.

### **MARGINAL CAPITAL COSTS (TREATMENT PLANT)**

#### ***Background***

2.4 The non-domestic customers should pay the marginal capital cost of the construction of the Treatment Plant. This marginal cost is broadly defined as the additional cost incurred by the authority in the provision of the facility over and above the cost that would have been incurred if it had to service domestic<sup>2</sup> sector only.

2.5 The marginal capital cost will be the balance of the costs outstanding after the domestic proportion of the capital costs has been determined for grant purposes by the Department of the Environment & Local Government. A copy of the approved computation of the marginal cost should be made available by the authority for inspection by the customer. The subsequent agreement between the authority and the significant customers will address the apportionment of the marginal capital cost between customers, rather than the evaluation of the marginal cost.

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1 Circular L4/00 Application of the Polluter Pays Principle - A Framework for Water Pricing.

2 The domestic load in this case is best described as everything that is not specifically identified as discharged by a non-domestic customer.

- 2.6 Therefore, insofar as this paper considers the evaluation of the marginal capital costs, it is for the purpose of providing the authorities with some guidance on the methods available to determine such marginal capital costs. It is expected that over time a relationship between the average capital costs and the marginal capital costs will become apparent. Therefore, an authority should take care in the rigorous application of formulae and methods.

### ***Theory***

- 2.7 It is not difficult to obtain the total cost of the construction of the treatment plant. That will be the contract sum(s) and will be available first as an Engineer's Estimate, then as a Tender Total and finally from the Final Account Total. The Total Cost includes both the non-domestic Marginal Cost (NDMC) and the cost of the "Domestic" element of the works that are paid from the Exchequer. If we want to obtain a figure for the NDMC, we must first calculate a cost for the provision of a theoretical plant that would satisfy the domestic load alone. The method used to calculate the Full Domestic Cost (FDC) must be robust and accepted as being objective. We can express the relationship as:

$$\text{Total Capital Cost} = \text{FDC} + \text{NDMC}$$

- 2.8 As the calculation of the NDMC is dependent on the determination of the population equivalent (p.e.)<sup>3</sup> for the domestic and non-domestic effluent streams, it is vitally important that these figures are accurately calculated at the preliminary design stage. The authority must also be willing to reassess the apportionment of the NDMC and offer rebates if it is found after the plant has been commissioned that the p.e. estimates were incorrect.

### ***Methodologies***

- 2.9 A number of local authorities and their professional advisors have addressed the determination of the marginal capital cost recently. Some of these approaches are outlined below.

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<sup>3</sup> Population Equivalent is defined by the Council of the European Communities (1991) as the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60g of oxygen per day.

- 2.10 The marginal capital costs could be derived from first principles for each element of the treatment plant. In this case, the non-domestic loading is calculated as a percentage of the design capacity of each element and the marginal cost is calculated for each element on this basis. The overall marginal cost is then the total of the marginal costs calculated for each element. Those elements whose design is fully independent of the non-domestic loading have zero marginal cost. We have referred to this as the “Elemental” approach.
- 2.11 Alternatively, the authority could calculate the FDC by undertaking a preliminary design of a second theoretical treatment plant with a reduced capacity that excludes the non-domestic element of the load. The tender rates from the full scheme could then be applied to the theoretical scheme to give a value for the FDC, and hence a value for the NDMC. This “Virtual” approach should give a reasonably accurate value for the marginal capital cost. Indeed the “Virtual” and the “Elemental” approach are broadly similar.
- 2.12 In other cases, an attempt has been made to find a “Global” method that is accepted as independent of the parties involved in the Agreement. This was suggested previously by the use of a formula developed by O’Donoghue (1994) and quoted by the ESRI in their report “Waste Water Services: Charging Industry the Capital Cost”. This formula offers a relationship between Population Equivalent (p.e.) and the outturn cost of the Waste Water Treatment Plant (WWTP). The formula is expressed<sup>6</sup> below::

$$\text{Cost (€)} = \text{Cost Factor} \times (\text{p.e.})^{0.75}$$

- 2.13 The ESRI report notes that this formula implies that the marginal cost of providing additional capacity (p.e.) at the WWTP is 75% of the average cost of p.e. capacity<sup>7</sup> in the plant. If one were to accept this methodology, then one could simply calculate the average cost of p.e. capacity from the contract sum and the design capacity of the plant, and multiply the non-domestic p.e. capacity by 75% of the average cost to get the NDMC.

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4 The design capacity can be expressed in BOD, SS, Flow or any other significant design parameter, and the costs disaggregated across each parameter.

5 Site Purchase, Site Development, Buildings, Storm Water Tanks, Roads & Landscaping.

6 The formula has not been revised to take account of inflation since it was developed. Cost Factor = 3175.

7 This relationship is proposed for plants with a p.e. capacity of between 10,000 and 100,000.

2.14 While the O’Donoghue formula was developed from estimated plant costs in the early part of the 1990s, it does require validation against current data derived from recent tenders. One of its disadvantages is that it includes elements that may have zero marginal cost. Analysis from the Pilot Studies suggests that the marginal costs may represent a significantly smaller proportion of the average costs.

2.15 A “Customised” method has been proposed that uses the ESRI / O’Donoghue formula, but applies it only to those elements of the treatment plant the design of which are related to the non-domestic component of the waste water. The approach first deducts the cost of all of those elements of the treatment plant that are fully independent<sup>8</sup> of the non-domestic waste water (i.e. would have had to have been provided in full simply for the domestic waste water load) from the total cost of the treatment plant.

$$\Rightarrow \text{Modified Cost} = \text{Total Cost of Treatment Plant} - \text{Cost of Independent Elements}$$

2.16 The Customised method then uses the ESRI formula based on the Modified Cost as calculated above and the total design p.e., to calculate a new “cost factor”. The ESRI formula is then applied with the new cost factor to the domestic p.e. to get a theoretical cost of the dependent elements if they were to be designed for the domestic load only. The marginal cost is therefore the Modified Cost less the latter theoretical domestic cost.

$$\Rightarrow \text{“New Cost Factor”} = \text{“Modified Cost”} / (\text{p.e.}_{\text{TOTAL}})^{0.75}$$

$$\Rightarrow \text{“Theoretical Domestic Cost”} = \text{“New Cost Factor”} \times (\text{p.e.}_{\text{DOMESTIC}})^{0.75}$$

$$\Rightarrow \text{NDC} = \text{“Modified Cost”} - \text{“Theoretical Domestic Cost”}$$

2.17 All of the above methods provide for disaggregation of the marginal capital cost across the design loading parameters. The “Elemental” and “Virtual” methods are more closely related to the detail of the Waste Water Treatment Plant (WWTP) in question, and are based on professional judgement. The “Global” method has produced higher marginal costs in the examples that we have studied, and would require additional data to validate the model. The “Customised” method applies the ESRI formula using the estimated cost of the particular plant to calculate the marginal cost, while excluding those elements whose design is independent of the non-domestic load.

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<sup>8</sup> The cost of any element that is fully dependent on the non-domestic sector should be charged in full to the non-domestic sector.

- 2.18 By way of analogy, the “Global” and “Customised” methods takes a single slice of the cost “cake” as the marginal cost. The “Elemental” method slices the “cake” into cost elements and then attempts to take a sliver off each slice. The authority needs to be cautious in the assessment of the marginal capital costs that the underlying assumptions are valid, because their influence may be additive. Therefore, there is a strong argument to suggest that the “Elemental” or “Virtual” methods be employed, but tempered by the “Global” method, which is essentially the effect of the application of the “Customised” method.
- 2.19 The foregoing has dealt with the calculation of the non-domestic marginal capital cost (NDMC). Once the Department of the Environment and Local Government has determined a figure for grant purposes, the next step for the authority is to determine a method for the apportionment of the NDMC between the different non-domestic customers.

#### ***Apportionment of Marginal Costs***

- 2.20 The first step would be to aggregate the general non-domestic customers as a single significant customer with an aggregate set of parameters for its effluent. The overall marginal capital cost for the general customers will emerge as a “remainder” from the disaggregation process described below. The  $NDMC_{GC}$  for the General customers is to be aggregated later with the figures derived from any other schemes in the functional area of the authority for computation of the consolidated charges for the General customers.

$$NDMC = NDMC_{GC} + NDMC_{SC}$$

2.21 The Marginal Capital Cost that is associated with the significant customers (NDMC<sub>SC</sub>) must be apportioned between those customers in a fair and reasonable manner. The nature of industrial effluents is such that p.e. often hides abnormally high BOD<sup>9</sup> loadings (for example). Therefore, a more comprehensive approach is proposed, where the marginal capital cost may be disaggregated across four (or more) charging parameters; BOD, SS<sup>10</sup>, P<sup>11</sup> & Flow. The methodology is as follows:

- Each major element of the WWTP is identified separately and its proportionate relevance to each of the charging parameters is assessed. By way of illustration, flow may have been the design parameter for the inlet works and therefore 100% of the cost of that element is attributable to flow. In some cases, the design of an element would have been based on a combination of the parameters.
- The contract cost of each element of the works is extracted from the report on the tender or the report on final account, and distributed across the charging parameters according to the percentages determined above.
- The overall costs associated with each charging parameter can then be aggregated across the treatment plant.
- These proportions can then be applied to the marginal capital cost (NDMC<sub>SC</sub>) to get the marginal cost in terms of BOD, SS, Phosphorus and Flow, rather than in terms of p.e..

$$\text{NDMC} = \epsilon_{\text{BOD}} + \epsilon_{\text{SS}} + \epsilon_{\text{FLOW}} + \epsilon_{\text{P}}$$

- These marginal costs can be expressed as Unit Rates in terms of the design capacities<sup>12</sup> of the total capacity reserved by the significant customers. For example, if the significant customers had reserved an overall BOD capacity of 2,000 kg/day between them, then the Unit BOD Rate would be  $\epsilon_{\text{BOD}}/2000$ .
- Hence, the marginal capital cost can be apportioned among each significant customer according to each one's Reserved Capacity, as expressed in a number of charging parameters.

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9 Biochemical Oxygen Demand

10 Suspended Solids

11 Phosphorus

12 While the plant would normally be designed for 3DWF, it is proposed that the average daily flow over a year (normally 1½DWF) be used to calculate the unit rate for flow. The value of 1½DWF is a typical limiting design parameter for industrial waste water treatment plants.

- 2.22 These different methods have been tested through the pilot studies (Sept/Nov 2001) to assess the results that they provide in different situations.

#### **MARGINAL CAPITAL COSTS OF THE COLLECTION SYSTEM**

- 2.23 The recovery of capital costs from the non-domestic sector is intended to be on the basis of marginal costs, once the authority has provided a collection system sufficient for the needs of the domestic customers. It should be proportional to the volume of waste water discharged by the customer to the Main Drainage Works and should be independent of geographical location, apart from any collection system provided exclusively for the customer.
- 2.24 In general, the provision of the main drainage works for the domestic sector will substantially provide for the drainage needs of the non-domestic sector also. The additional costs for the non-domestic sector will be derived from the increased pipe sizes in the network, but these will be limited and will include any increased installation costs.
- 2.25 It can be expected that the marginal capital costs on the collection system are not likely to be a significant fraction of the overall costs, in particular where the collection system is a combined system.
- 2.26 However, the customer will be expected to pay the full capital costs for any sewers that are constructed specifically for the purpose of providing a connection from his discharge point to the remainder of the main drainage works.

#### **AVERAGE OPERATING COST OF THE TREATMENT PLANT**

- 2.27 The computation of the average operating costs of the treatment plant should take account of the fact that the treatment plant incurs two basic types of operating costs, i.e. fixed costs and variable costs. Typically, 70% of the operating costs may be considered as being fixed costs and 30% variable costs. The variable costs are dependent on the quantity of effluent that is treated, whereas the fixed costs are not.
- 2.28 Therefore, if operating charges were related solely to the discharge quantities, the apportionment of fixed costs would not be fairly represented in the operating charges. We recommend that if a customer reserves a significant capacity at the plant, then he or she should not only pay the marginal capital costs of providing that capacity, but also the fixed operating costs associated with maintaining that capacity as well as the variable operating costs associated with treating the effluent.

2.29 In order to achieve the principles defined above, the authority should divide the operating costs into fixed and variable costs. The fixed costs would include: Contract Operation of Plant; Corporation Direct Labour / Management; Commercial Rates; Insurance; Telephone Charges; Laboratory; Specialist Studies; Miscellaneous Expenditure; Contract Maintenance. On the other hand, the Variable Costs would include: Mechanical & Electrical Non-Routine Maintenance; Chemicals; Sludge Disposal; Electricity; Natural Gas; Miscellaneous Consumables.

2.30 The variable operating costs may be set out in a table and then distributed across the charging parameters. For example, electricity costs may be spilt as follows<sup>13</sup>:

<b>V</b>	Volumetric & Primary	30%
<b>B</b>	Biological Treatment	55%
<b>S</b>	Bio-Solids Treatment	15%

This allows the total operating costs to be expressed in terms of each of the above parameters. It should be noted that the apportionment of these costs under the various charging parameters is a matter for professional judgement.

2.31 The Unit Variable Operating Rate for each parameter may be derived by dividing the above costs by the total quantity of the charging parameter at the plant, i.e., the actual flow, or the BOD, SS or P received. The variable operating costs for each customer would be derived by multiplying the quantities of each parameter in its discharged waste water by each of the unit (variable) operating rates.

2.32 The fixed operating costs would also be disaggregated between the charging parameters as has been done previously. However, in this case the unit rate would be derived in terms of the reserved capacity not the treated quantity. Therefore, this portion of the operating charges would be calculated by multiplying the Customer's reserved quantities of each parameter by each of the unit operating (fixed) rates.

2.33 In many cases, it is envisaged that these Model Documents will be introduced where the authority will have entered into DBO Contracts with private operators to operate and maintain the Treatment Plant. In those cases, the authority will receive regular (quarterly) invoices from the Operator that will include operating charges under several headings. However, these charges can be distributed among the above charging parameters in the same manner as that employed where there is no DBO Operator.

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<sup>13</sup> These charging parameters may be extended as necessary.

- 2.34 Where the non-domestic customer is providing significant pre-treatment, greater care must be taken in the application of charging parameters to ensure reasonably fair cost recovery while not unduly penalising the customer.

#### **AVERAGE OPERATING COST OF THE COLLECTION SYSTEM**

- 2.35 The method of computation of the operating charges for the collection system is fully described in Schedule 4 of the Model Agreement.
- 2.36 The operating costs of the Main Drainage Works should be those costs incurred either directly or indirectly by the authority in the operation of the Main Drainage Works. These costs should include all insurances, rates, power consumption, heating, lighting, maintenances or replacement of electrical and mechanical plant, maintenance of buildings, structures, sewers, rising mains, sites and ancillaries, consumable stores, all spares and services purchased. The operating costs should also include labour costs of other authority staff engaged part-time in the management and administration of the Main Drainage Works, plus the costs of specialist advisers as required, including legal costs.
- 2.37 Recorded volumes should be taken as the basis for the apportionment of operating costs of the Main Drainage Works. Operating costs should be apportioned in accordance with the Waste water volumes discharged by the customer as assessed by the recording devices at the customer's sampling point and the volumes recorded at the Treatment Works.
- 2.38 The Operating Charge should be computed on the basis of the total volume of Waste water discharged by the customer in the charging period as a proportion of the design capacity of the effluent pipe work system as taken from Annex 2, Form 7. The Operating Charge for the Main Drainage Works in the accounting period should be computed as follows:

$$Co \times (Vc / Vw)$$

where

- Vc** is the total volume of waste water discharged by the customer in the accounting period;
- Vw** is the total capacity of the effluent pipe work system.
- Co** is the total Operating Cost of the Main Drainage Works during the accounting period.

## **CAPITAL REPLACEMENT FUND**

- 2.39 The non-domestic customer will be required to make contributions to a Capital Replacement Fund (CRF), unless the authority chooses not to establish such a fund. The CRF will be required where the authority has entered into a DBO Contract and the contractor has prepared a 'schedule of replacement of major items of plant'. The CRF may be required to ensure that monies are available to meet the disbursements to the contractor. Local authorities should be encouraged to set up a CRF in traditional situations also.
- 2.40 The CRF is intended to provide a fund for the replacement of short-life items of capital equipment during the design life of the Waste Water Treatment Plant. It is not intended to provide a fund for the refurbishment or replacement of the WWTP at the end of the design life. Neither is it intended to cover any items that have been paid for under the capital cost of the Works.

### **3. MODEL WATER AGREEMENT**

3.1 The Model Form of Agreement for Water Services (Assigned Capacity) contains a number of schedules, each of which describes a distinct element of the charging mechanism. It is agreed that the customer should be charged for the following:

- Marginal Capital Costs of the Treatment Plant and Distribution System
- Average Operating Costs of the Treatment Plant and Distribution System

3.2 The method employed to calculate each of these cost items is described in the following sections.

#### **MARGINAL CAPITAL COSTS**

3.3 The calculation of the marginal capital cost for the provision of non-domestic capacity at the treatment plant will have to be a rigorous method that is transparent and objective. The marginal capital costs will be split between the significant and the General non-domestic customers according to the capacity assigned to each group at the plant.

3.4 The computation of the marginal cost may be calculated by any of the methods described in Chapter Two, though there is no equivalent of the O'Donoghue Formula, to the best of our knowledge. Therefore, the potential methods are:

3.4.1. ***Global / Customised Approach:*** To develop and apply a formula<sup>14</sup> that provides a relationship between the average and marginal costs of the provision of water capacity, excluding domestic-only cost items.

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<sup>14</sup> In the interim, it is proposed that the ESRI approach be used, where the marginal capital costs are assumed to be 75% of the average capital costs.

- 3.4.2. **Virtual Approach:** To undertake a preliminary design for a water treatment plant that would have a capacity sufficient only for the domestic demand, and apply the tender rates to that design. The marginal costs would be the difference in the tender price between the full scheme and the domestic-only scheme.
- 3.4.3. **Elemental Approach:** To disregard entirely the cost of those elements of the plant that would have been required if it were only to provide for the domestic demand, and apportion the cost of providing for the different demand streams among the remaining elements. This method is broadly similar to the virtual approach.
- 3.5 The marginal capital cost for the purposes of the agreement will be the balance remaining after the costs associated with the provision of a domestic supply have been paid from the Exchequer.
- 3.6 The apportionment of the gross marginal costs between the significant non-domestic customers should be in direct proportion to the volume of water treatment capacity that is assigned to each customer at the plant.

#### **AVERAGE OPERATIONAL COSTS**

- 3.7 The average operational costs should be levied from each of the non-domestic customers in direct proportion to the metered volume of water that is delivered to their premises each billing period. A unit charge should be determined that is based on the total metered output of the plant and the total operating charges. As there is only one charging parameter (flow), there is not the same requirement to proportion operating costs between parameters as is the case with waste water agreements.
- 3.8 The gross unit-operating rate may be derived by dividing the total operating charges by either the total metered output, or 80% of the design capacity (whichever is the greater). The latter value reflects a concern among non-domestic customers that a larger treatment plant might be constructed than would be required to meet current needs, and therefore, would incur higher operational costs.

- 3.9 The gross unit-operating rate should be further adjusted to take account of losses due to Unaccounted-For-Water (UFW). As it is widely recognised that there is a reasonable minimum level of UFW that must be expected in every network, it would be reasonable to expect the non-domestic customer to pay the costs of a fair proportion of these losses. It is analogous to the losses on the electricity transmission system.
- 3.10 Accordingly, it is proposed that the non-domestic customers should pay the costs of UFW of 20% (max) of the total metered output assigned to non-domestic demand, with the domestic sector to bear the cost of the remainder. The figure of 20% is a reduction target that has been set in the National Water Study. The authority cannot expect the non-domestic sector to bear the cost of phasing to get UFW down to 20%. However, where UFW is less than 20%, only the actual UFW costs should be recovered.
- 3.11 In many cases, it is envisaged that these model documents will be introduced where the authority will have entered into DBO contracts with private operators to operate and maintain the treatment plant. In these cases, the authority will receive regular (quarterly) invoices from the operator that will include operating charges.
- 3.12 A Capital Replacement Fund will normally be established for Water Treatment Plants and the contributions to the CRF will be determined by the authority and levied as part of the Operating Charges.

## **4. CHARTER OF SERVICES**

- 4.1 The General non-domestic customers will pay a Consolidated Charge that is assessed on the basis of all of the cost centres within the functional area of the Water Services authority. The charge will include both the water treatment and waste water treatment charges, insofar as they are applicable to the customer. The charge will be determined from the metered volumetric consumption of the customer and will normally assume that water-in is equivalent to water-out. There will not be a fixed-charge component of the charge.
- 4.2 The Consolidated Charge will be determined by the accumulation of all of the general (non-reserved & non-assigned) non-domestic costs (capital, operational and capital replacement fund(s)) across the functional area of the authority. These costs will include allowances for unaccounted-for water and debt recovery. A single Unit Rate for the entire functional area for the combined water and wastewater service is to be applied, calculated on the projected non-domestic water demand for the year. In each subsequent year an adjustment item should be added or deducted as appropriate, calculated using the difference between the actual non-domestic demand for the year and the projected non-domestic demand used when setting the Unit Rate for the year.
- 4.3 In circumstances where a customer only takes one or other service a reduction should apply.
- 4.4 Local authorities may borrow the general non-domestic capital cost component from either the Housing Finance Agency (HFA) or other financial institutions, over a repayment period of 20 years. The capital cost component of the consolidated charge should be recovered over the term of the loan.

## **5. INTER-AUTHORITY TRANSFERS**

- 5.1 Water pricing policy applies to the transfer of water and waste water services between the functional areas of local authorities.
- 5.2 It is intended that a supplying local authority would enter into an agreement with a receiving local authority for the provision of service.
- 5.3 Under the above agreements, the supplying local authority should compute the charges<sup>15</sup> for water services to the receiving local authority on the same basis as any other significant non-domestic customer. Preferential rates should not be agreed between local authorities.
- 5.4 The receiving local authority should add its own administration and distribution costs to the costs of received water when entering into charging agreements (and computing the consolidated charge for general non-domestic customers) with non-domestic customers in its own functional area.

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<sup>15</sup> It should be noted that where elements of infrastructure have been funded directly by the Department of the Environment and Local Government for the provision of services to the domestic sector such cost elements are not recoverable from another local authority.

## **6. GROUP WATER SCHEMES**

- 6.1 In principle water-pricing policy applies to Group Water Schemes and Group Sewage Schemes. It is envisaged that the authority would recover a consolidated true cost from the Group Water Schemes, having regard to local circumstances. It may take some time to fully apply the policy to Group Water Schemes. A separate working paper has been produced on Group Water Schemes.