

**Sultanate of Oman -  
Telecommunications Regulatory  
Authority**

**Accounting Separation,  
Regulatory Accounting &  
Reporting Requirements**

**Framework Document**

**December 2009**

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The Telecommunications Regulatory Authority (“TRA”) invited all members of the public, including private individuals, public organizations and commercial entities to participate in a Public Consultation Process on Accounting Separation, Regulatory Accounting and Reporting Requirements. Following the receipt and careful consideration of the various contributions/ comments from interested parties the TRA is hereby issuing this Framework Document.

The Framework Document sets out in conjunction with the relevant legal instruments the TRA’s formal decisions on Accounting Separation, Regulatory Accounting and Reporting Requirements and various associated matters, including which licensees, if any, would be subject to relevant obligations. Nothing contained herein shall limit or otherwise restrict the TRA’s ability to take any action at any time it deems appropriate pursuant to its power under the Telecommunications Law and related regulations.

## Abbreviations

<b>Term</b>	<b>Definition</b>
<b>ABC</b>	Activity Based Costing
<b>AS</b>	Accounting Separation.
<b>ATM</b>	Asynchronous Transfer Mode
<b>BRA</b>	Basic Rate Access
<b>CAPEX</b>	Capital Expenditure
<b>CCA</b>	Current Cost Accounting
<b>CJC</b>	Common and Joint Costs
<b>CPE</b>	Customer Premises Equipment
<b>CVR</b>	Cost-Volume Relationships
<b>DAM</b>	Detailed Attribution Methodology
<b>DV</b>	Deprival Value
<b>EC</b>	European Commission
<b>EPMU</b>	Equal-Proportional Mark-Up
<b>ERG</b>	European Regulators Group
<b>EV</b>	Economic Value
<b>EU</b>	European Union
<b>FA</b>	Fixed Assets
<b>FAC</b>	Fully Allocated Costs
<b>FC</b>	Fixed Costs
<b>FCM</b>	Financial Capital Maintenance
<b>FDC</b>	Fully Distributed Cost (also called Fully Allocated Cost)
<b>FTE</b>	Full Time Equivalent
<b>GBV</b>	Gross Book Value
<b>GRC</b>	Gross Replacement Cost
<b>GMSC</b>	Gateway Mobile Switching Centre
<b>HC</b>	Historic Cost
<b>HCA</b>	Historic Cost Accounting
<b>HCC</b>	Homogenous Cost Category
<b>HG</b>	Holding Gain
<b>HR</b>	Human Resources
<b>IP</b>	Internet Protocol
<b>IRG</b>	Independent Regulators Group
<b>ISDN</b>	Integrated Services Digital Network
<b>ISP</b>	Internet Service Provider

<b>LL</b>	Leased Line
<b>LLU</b>	Local Loop Unbundling
<b>LRAC</b>	Long Run Average Cost
<b>LRAIC</b>	Long Run Average Incremental Cost
<b>LRIC</b>	Long Run Incremental Cost
<b>LRMC</b>	Long Run Marginal Cost
<b>LRTC</b>	Long Run Total Costs
<b>LRVC</b>	Long Run Variable Costs
<b>MEA</b>	Modern Equivalent Asset
<b>MOU</b>	Minutes Of Usage
<b>MSC</b>	Mobile Switching Centre
<b>MSU</b>	Message Signal Unit
<b>NBV</b>	Net Booking Value
<b>NCs</b>	Network Components
<b>NPV</b>	Net Present Value
<b>NRA</b>	National Regulatory Authority
<b>NRC</b>	Net Replacement Cost
<b>NRV</b>	Net Realizable Value
<b>NTFS</b>	Non-Technical Functional Specification
<b>NTU</b>	Network Terminating Unit
<b>OCM</b>	Operating Capital Maintenance
<b>OPEX</b>	Cash Operating Expenditure
<b>P&amp;L</b>	Profit and Loss
<b>PRA</b>	Primary Rate Access
<b>PSTN</b>	Public Switched Telephone Network
<b>PV</b>	Present Value
<b>RIO</b>	Reference Interconnection Offer
<b>RoCE</b>	Return on Capital Employed
<b>RSU</b>	Remote Switching Unit
<b>SF</b>	Shareholders' Funds
<b>Suppl Depn</b>	Supplementary Depreciation
<b>T-D</b>	Top-Down
<b>TRA</b>	Telecommunications Regulatory Authority
<b>VC</b>	Variable Costs
<b>VLR</b>	Visitor Location Register
<b>VoIP</b>	Voice over Internet Protocol
<b>WACC</b>	Weighted Average Cost of Capital
<b>WC</b>	Working Capital
<b>WLR</b>	Wholesale Line Rental

## **1 Introduction**

Over recent years the telecommunications market in the Sultanate Oman has been expanding due to the privatization of the incumbent operator and the award of licenses to new players in the market. This has brought about competition as between the market players resulting in new products and services being made available to customers, price decreases, enhancement of entrepreneurial skills needed to increase innovative service deployment and a more efficient utilization of resources by the service operators. The success of competition in a country however depends to a great extent upon the regulatory and licensing framework in place. In general, setting up an independent regulatory framework and legislation towards a more competitive telecommunications market is a major step forward for delivering a broader range and higher quality services to consumers. Time tested regulatory principles such as transparency and open competition need to be applied for introducing new services, new technologies and to address the regulatory issues for further liberalization of the telecom sector.

As part of setting up this regulatory framework required for the development of competition, one needs to ensure that dominant operators in the Sultanate of Oman treat new entrants fairly and that the Telecommunications Regulatory Authority (hereafter “TRA”) obtains, in the right format and in the right level of detail, the information needed to carry out its duties in the right format and in the right detail. Taking into account its duties as set out in Article 8 of the Telecommunications Law and the conditions in the individual License Agreements (Part II – Conditions) of the service providers the TRA decided to set up and implement “Accounting Separation, Regulatory Accounting and Reporting Requirements” framework suited to the Sultanate’s environment. This process involved a rigorous and detailed study of the Sultanate’s telecommunications environment and a review of the current regulation to be able to adapt to the new situation. The future plans of the government as well as the plans of the TRA were also taken into consideration in this process. The proposed “**Accounting Separation, Regulatory Accounting & Reporting Requirements**” framework will seek to ensure, among other things, that the services provided by the different licensees to their downstream affiliate companies are provided on similar terms to other competing licensees. This framework will also enable the TRA to analyze and ascertain if any of the Licensees acts in an anti-competitive manner in certain cases. These Requirements as will be enforced by the appropriate Regulations will also aim at providing a framework for preparing Separated Regulatory Accounts to be submitted periodically to the TRA to meet its obligations under the Telecommunications Act including to monitor the compliance of the licensees with their license conditions.

As a result, the TRA is issuing this Framework Document on “Accounting Separation, Regulatory Accounting & Reporting Requirements” following the Public Consultation Process and after taking into careful consideration the comments/ contributions provided by interested parties. This Document should be read in conjunction with the regulations issued or to be issued by the TRA.

In its Consultation Document released in September 2008, the TRA considered a wide range of issues and sought comments on proposed regulatory measures. The TRA received contributions from Omantel/ Oman Mobile, Nawras, FRiENDi Mobile and Mazoon Mobile.

In formulating this Framework Document the TRA has also taken into consideration the sequencing of measures, the burden that the development of regulatory tools imposes on industry players and the constraints operators and the TRA face. To be effective regulatory measures/ obligations need to be carefully designed and implemented. Consultative processes are essential as they allow the TRA to gather the views of stakeholders. Regulation must adapt to changing market conditions in order to support the development of the telecoms sector in the

Sultanate of Oman. This Framework Document gives in detail the final TRA decisions on the various issues that were highlighted in the Public Consultation Document.

## **1.1 What is accounting separation and why it is used?**

Market distortion by a dominant firm may take various forms, including excessive charges for interconnect services, discrimination in pricing, unfair cross-subsidies, and predatory pricing. These practices are usually aimed at stifling competition and may even prevent market entry. Accounting Separation (AS) is a common tool used to detect and address these potential anti-competitive concerns. Under this approach, the activities of those operators subject to Accounting Separation Rules are split, for accounting purposes, into separate businesses or services. In other words accounting separation does not impose on operators a set of rules about how its business should be organized, but simply how accounting information is to be collected and reported for regulatory purposes. Accounting Separation does not affect the form or content of accounts that licensees have to produce to meet other obligations e.g. annual statutory company accounts. The introduction of AS for example allows for transfer charges between wholesale and retail parts of the same company to be explicitly identified, allowing the TRA to ensure that non-discrimination is enforced, and the profitability of particular markets or services can be monitored, allowing anti-competitive cross-subsidies to be identified. Accounting separation would also ensure a systematic division of costs between retail and wholesale thus ensuring that market players allocate costs in an appropriate manner. This is also connected with the Regulatory Accounting Obligations explained below.

## **1.2 Regulatory accounting obligation**

The purpose of imposing an obligation regarding the set up of a regulatory/ cost accounting system is to ensure that fair, pro-competitive and transparent criteria are followed by those operators it applies to (“Notified Operators”) in allocating their revenues and costs to services.

A cost accounting system is a set of rules that seeks to ensure the appropriate attribution and allocation of revenues, costs, assets, liabilities and capital employed to individual activities and services, in particular considering direct and indirect operating costs of services.

More precisely, a cost accounting system will comprise of requirements aimed at establishing a proper recordkeeping mechanism, keeping track of costs and identifying operational expenditures such as equipment maintenance. The major resulting benefit should be a transparent illustration of the relation between costs and prices, as the system should be able to break costs down in order to ensure that costs allocated to regulated services do not result in cross subsidies, excessive prices and, in general, that costs are efficiently incurred.

## **1.3 Legal basis**

The TRA in preparing this Framework Document has taken into consideration, inter alia, the following aspects of the Telecommunications Law, regulations and license obligations:

- a) Article (7) of the Telecommunications Law and in particular the aim to
  - i. Ensure the provision of telecommunications services all over the Sultanate with reasonable prices
  - ii. Safeguard the interests of beneficiaries and dealers with respect to the prices of the rates, of telecommunication services.



- iii. Promote entry into commercial activities in relation to telecommunications services and to facilitate entry into the markets thereof via providing suitable conditions enabling new licensees to compete in order to establish an effective competitive environment.
  - iv. Develop the economic competence in the performance of licensees engaged in the commercial activities related to telecommunications.
  - v. Prepare suitable conditions for competition among the licensees to ensure the provision of world standard telecommunications services at reasonable costs and prices, and to take necessary actions to enable the service providers to compete abroad.
- b) Article (8) of the Telecommunications Law and in particular the duty to carry out its functions with a view to:
- i. regulate the telecommunications sector in accordance with the approved general policy in such a way as to ensure optimal performance of the sector
  - ii. Take actions to implement the obligations arising from international treaties in the field of telecommunications to which the Sultanate is a party, and the resolutions issued by international and regional organizations in which the Sultanate is a member, all in coordination with the concerned bodies.
  - iii. Set the terms, conditions relevant to implementing the telecommunications public policy and in particular the prevention of all forms of dominance and monopoly in utilizing the frequency spectrum and service provision.
  - iv. Set the service rates in the absence of competition in accordance with the principles approved.
  - v. Set the technical, regulatory and financial terms and conditions organizing the interconnection services and resale between licensees.
  - vi. Monitor the licensees' compliance with the license conditions.
  - vii. Take the necessary measures to determine the acts or events which prevent competition in the telecommunications sector.
  - viii. Investigate the complaints filed by the beneficiaries or licensees or any other person, and take the necessary measures in that regard.
- c) Article (25 Repeated 1) of the Telecommunications Law and in particular the obligation of Dominant public telecommunication services licensee to treat the other public telecommunication licensees with the same level of treatment and with no discrimination as with its own branches and companies in which it has a principal percentage of capital.
- d) Article (27 Repeated) of the Telecommunications Law and in particular the ability of the TRA to oblige the dominant licensee to offer access to its network elements for other licensees of public telecommunication services in accordance with unbundling principles, and with the terms and conditions issued by the Authority at cost based prices with no discrimination and with transparency.
- e) Article (40) of the Telecommunications Law and in particular the obligations that:
- i. A licensee shall not perform any conduct, take an action or omit to take an action that could prevent or restrict competition in relation to any commercial activity connected to telecommunications
  - ii. The Authority shall issue the rules regulating the licensee's maintenance of records that show the financial transfer between its works and the works of its branches and take the necessary actions to handle the subsidy.

- f) The provisions in the Omantel Fixed Telephony License including but not limited to
  - i. Condition 17.2 (Principles for interconnection rates)
  - ii. Condition 25 (Prohibition of unfair cross-subsidies or subsidies)
  - iii. Condition 26 (Undue discrimination and anti-competitive practices)
  - iv. Condition 27 (Accounting Requirements)
  - v. Condition 28 (Requirement To Provide Information)
- g) The provisions in the Omantel Mobile Telephony License and the Omani Qatari Telecommunications Company S.A.O.C (Nawras) Mobile Telephony License including but not limited to
  - i. Condition 16.2 (Principles for interconnection rates)
  - ii. Condition 23 (Prohibition of unfair cross-subsidies or subsidies)
  - iii. Condition 24 (Undue discrimination and anti-competitive practices)
  - iv. Condition 25 (Accounting Requirements)
  - v. Condition 26 (Requirement To Provide Information)
- h) The provisions in the rules and conditions of class II license for the provision of Public Telecommunication services including but not limited to
  - i. Condition 11 (Prohibition of unfair cross-subsidies or subsidies)
  - ii. Condition 12 (Undue discrimination and anti-competitive practices)
  - iii. Condition 14 (Requirement To Provide Information)
- i) The provisions in the rules and conditions of class III license for the provision of Private Telecommunication services including but not limited to
  - i. Condition 7 (Rules on competition)
  - ii. Condition 9 (Requirement To Provide Information)
- j) The resulting legal instruments implementing the decisions of the Authority set out in this Framework document namely The Accounting Separation, Regulatory Accounting & Reporting Requirements Regulation and any decision that is issued there under.

## **2 Notified Operator and Regulatory Obligations**

### **2.1 Notified Operator**

The Authority has decided that, without prejudice to the obligation of all licensees to comply with the requirements of the Accounting Separation, Regulatory Accounting & Reporting Requirements Regulation, that any licensee Declared as Notified Operator by a Decision of the Authority shall also comply with specific obligations set out in the Regulation for such markets as may be specified in the Decision issued by the Authority declaring the licensee as Notified Operator.

Notified Operator shall be declared, by a decision of the Authority, to be any Licensee operating in any market or markets where there is no effective competition. Where there is only one licensee operating in a market, the Authority may deem the market to be operating in conditions where there is no effective competition and may rely upon it so as to declare the Licensee operating therein as Notified Operator without the need of any further evidence or analysis. In all other cases, the Authority may declare a licensee as a Notified Operator based on an analysis of the relevant market and following a decision by the Authority that there is no effective competition in the relevant market.

Decisions on declaring Licensees as Notified Operators shall be reviewed by the Authority from time to time, inter alia, in the light of changing market conditions. The Authority may decide, at its own discretion, to review any decision and obligations arising there under at any such time as it may consider appropriate or where a licensee provides the Authority with such evidence that leads the Authority to consider that an earlier review is appropriate.

Subject to the provisions concerning markets where there is only one Licensee operating, the markets for which the Authority may impose obligations to Notified Operators shall be determined by a decision of the Authority based on an analysis of the markets by the Authority and in line with the methodology set out in the “Framework Document”.

Through a careful review of the fixed and mobile telephony markets, and following a Decision by the Authority, Oman Telecommunications Company S.a.o.c (Omantel) has been declared as Notified Operator for specified markets in the fixed telephony sector taking into account the fact that currently Omantel is the sole provider of fixed telecommunication services in the Sultanate of Oman in the markets specified.

Both Oman Mobile and Nawras, i.e. the two (2) Class I Mobile Operators, will not be determined as “Notified Operators” at this stage; hence they will not be subject to the Accounting Separation (AS) obligation/ remedy until further decision from the TRA. However, they will both be required to provide LRIC models and results as per their individual Licenses and as per the specific TRA requirements.

The TRA will be monitoring the developments in the sector following its initial review and will act accordingly. This would ensure that the current obligations/ remedies on the “Notified Operator” identified above, remain justified. Market Reviews will be carried out regularly so that the TRA can respond promptly to changing market conditions. The TRA will revise regulatory obligations/ remedies accordingly so as to best ensure the effective competition and consumers’ interests.

#### **TRA’s Decisions**

**2.1 Omantel (Class I Licensee) is determined as Notified Operator in fixed telephony markets specified in the Decision of the Authority and shall comply with the obligations**

**applicable for Notified Operators in accordance with the Accounting Separation, Regulatory Accounting & Reporting Requirements Regulation**

**2.2 Regulatory Accounting obligations/ remedies shall be imposed to Oman Mobile and Nawras. Both shall be required to provide LRIC models and results as per their individual Licenses and as per the specific TRA requirements.**

**2.3 The TRA will be monitoring the developments in the sector and will act, as it considers appropriate, so as to respond promptly to changing market conditions. The TRA will revise regulatory obligations/ remedies accordingly so as to best meet the obligations pursuant to the Telecommunications Law including but not limited to the protection of effective competition and consumers' interests.**

## **2.2 Markets for Accounting Separation**

In view of the current situation and future evolution of the telecommunications market in the Sultanate of Oman the TRA will implement a “Markets Approach” that provides a framework which can evolve in-line with the market so as to ensure effective competition over the longer term. The “Markets” Approach requires the Notified licensee/ operator to adjust its costing systems to comply with the Approach, in order to be able to provide Separated Regulatory Accounts to the TRA.

The Relevant Markets were identified in accordance with:

- the telecoms market situation (service provisioning) in the Sultanate of Oman by the various licensees/ operators;
- capabilities of the three Class I licensees;
- the TRA requirements and
- International experiences.

The TRA has identified 14 Markets (6 Retail and 8 Wholesale) as explained further below:

### **2.2.1 Retail Markets**

The following Retail Markets (see Table 2.1 below) have been determined:

<b>No.</b>	<b>Market Name</b>	<b>Explanation</b>
1	Access to the public telephone network at a fixed location for residential & non-residential customers	Provision of connections to the fixed public telephone network for the purpose of making and/or receiving telephone calls and related services
2	Publicly available local and/or national telephone services provided at a fixed location for residential & non-residential customers	All outgoing telephone calls from a fixed location. Publicly available telephone services for residential and nonresidential customers are still commonly provided over traditional fixed telephone networks.
3	Publicly available international telephone services provided at a fixed location for residential & non-residential customers	

4	The full set of retail leased lines	A leased line is a permanently connected communications link between two premises dedicated to the customer's exclusive use. This market will include the full set retail leased lines (any distance, any capacity), both digital & analogue.
5	Dial Up Internet	Internet access via fixed telephone network to dial into an Internet service provider's (ISP) node to establish a modem-to-modem link.
6	Retail Broadband	This is the retail market that covers broadband access services. This market covers both residential and non-residential customers. It also covers rental and connection and it includes broadband services for all speeds.

**Table 2.1: Retail Markets**

### 2.2.2 Wholesale Markets

The following Wholesale Markets (see Table 2.2 below) have been determined:

No.	Market Name	Explanation
7	Call origination on the public telephone network provided at a fixed location	Wholesale call origination enables alternative operators to provide end users with retail fixed telephone services, including dial-up Internet services.
8	Call termination on individual public telephone network provided at a fixed location	The wholesale service offered by operator A to operator B that enables the subscribers of operator B to call subscribers of operator A.
9	Wholesale unbundled access (including shared access) to metallic loops and sub loops for the purpose of providing broadband and voice services [the "LLU Market"]	Wholesale access to the metallic local loops and sub-loops, i.e. to the "last mile" of the public fixed telecommunications network connecting the subscriber to the local exchange and to the main distribution frame, respectively. Once access is granted, new market entrants can provide both voice and data services to end users over local loop rented from the incumbent operator. This market includes full, shared and sub-loop access
10	Wholesale Line Rental (WLR)	WLR allows alternative suppliers to rent access lines on wholesale terms from Omantel, and resell the lines to customers, providing a single bill that covers both line rental and telephone calls
11	Wholesale broadband access [the "Bitstream Market"]	Enables new entrants to provide retail broadband access services to end users by using their own backbone network in combination with access to the more "local" parts of the incumbent's network. This market includes both Bitstream over ATM and IP.
12	Wholesale terminating segments of leased lines	This market includes the full set of wholesale leased lines (any distance, any capacity), both digital &

13	Wholesale trunk segments of leased lines	analogue
14	Wholesale international capacity (Bandwidth)	This market provides international capacity to other operators for the purposes of providing voice and data services.

**Table 2.2: Wholesale Markets**

**Note:**

For accounting separation purposes, all other products/ services (not included within the markets determined above) should be included in a separate market/ category “*Others*” in order to reconcile the Separated Regulatory Financial Statements with the Statutory Financial Statements.

## **2.3 Class I Licensee Remedies/ Obligations**

In accordance with the individual license agreements of the Licensees, the following remedies/ obligations have also been considered for the Notified Operator other than the Accounting Separation (AS) remedy/ obligation. These were divided into Wholesale and Retail remedies/ obligations:

### **Wholesale Remedies/ Obligations**

1. **Price Control & Cost Accounting** – Price control may be necessary when market analysis in a particular market reveals ineffective competition. The regulatory intervention may be relatively light, such as an obligation that prices are reasonable, or much heavier such as an obligation that prices are cost oriented to provide full justification for those prices where competition is not sufficiently strong to prevent excessive pricing.

This obligation may limit the ability of the Notified Operator to engage in price squeeze whereby the difference between their retail prices and the access/interconnection prices charged to competitors who provide similar retail services is not adequate to ensure sustainable competition.

When calculating costs the TRA shall use a method that is appropriate to the particular circumstances, taking account of the need to promote efficiency and sustainable competition and maximize consumer benefits. Moreover, the TRA must ensure that where a cost accounting system is mandated in order to support price controls a description of the cost accounting system is made publicly available, showing at least the main categories under which costs are grouped and the rules used for the allocation of costs.

2. **Transparency** – The transparency obligation may be used in relation to interconnection and/or access, requiring operators to make public specified information, such as accounting information, technical specifications, network characteristics, terms and conditions for supply and use, and prices.

The transparency obligation, making publicly available any critical technical and/or financial information enables the provision of access or interconnection obligations. Similarly there is a logical linking between the transparency requirements, accounting separation and non-discrimination.

To achieve transparency the TRA may require that operators publish a reference offer for services giving the terms and conditions available at a level of detail as required ensuring a non-discriminatory offer.

The transparency obligation represents an accompanying obligation with and to other obligations in order to make the overall remedy more effective. For instance, the requirement to behave in a non-discriminatory manner towards competitors requires that parties can observe and compare easily the factors over which discrimination could take place. Additionally, accounting separation as an obligation is a natural complement to transparency in pricing and costing matters.

3. **Non-discrimination** – Under the non-discrimination obligation a Notified Operator is required to provide access to third parties under the same terms and conditions with which it provides access to itself, its own subsidiaries or partners. In principle this obligation requires that third party undertakings seeking access be treated no less favorably than the operator's internal units.

Non-discrimination can be mandated as a remedy by itself but it is likely to be more effective if combined with other obligations. Transparency is a natural complement to this obligation as it facilitates the identification of any misconduct or discrimination at a detriment to third party access seekers.

Non-discrimination could be used to get a Notified Operator to justify self-supplying inputs at anti-competitive prices because of significant economies of scale and/or scope gained by the operator. Thus, differences in terms and conditions, even where transactions are not necessarily exactly the same, should be justified so that anti-competitive discrimination can be prohibited.

4. **Access to, and use of, specific network facilities** – This can be imposed on the Notified Operator to meet reasonable requests for access to, and use of, specific network elements and associated facilities, inter alia in situations where the national regulatory authority considers that denial of access or unreasonable terms and conditions having a similar effect would hinder the emergence of a sustainable competitive market at the retail level, or would not be in the end-user's interest.

A transparency obligation may be imposed in conjunction with access, perhaps in the form of a reference offer or some other mechanism which sets out availability, the technical and financial terms and conditions for such access. Non-discrimination is also likely to accompany such an obligation as often where access is required vertically integrated entities are capable of acting in ways so as to leverage market power from the upstream to the downstream firm's advantage. Imposition of a non-discrimination obligation would protect against such behavior. Provision of necessary information is also essential to ensure efficient monitoring of the non-discrimination requirement or whether additional obligations in terms of accounting separation are necessary to ensure effective compliance. Finally, cost control obligations may be imposed in order to establish the actual level of charges for access, based on the true cost of provision of the service.

#### **Retail Remedies/ Obligations**

1. Same as above, that is Accounting Separation, Price Control & Cost Accounting, Transparency, Non-discrimination, Access to and use of specific network facilities
2. **Cost Orientation for Retail Prices** – This obligation ensures that the Notified Operator does not charge excessive prices for specific services, nor does it attempt to restrict

market entry by charging unreasonably low prices or unfairly squeezing the margins of competitors or potential competitors to the detriment of competition

3. **Measures to counter the unreasonable bundling of products** – One of the major concerns of the TRA that may hinder effective competition in the retail access markets, is the ability of the Notified Operator to bundle their retail products by leveraging into related markets and distorting competition. On the other hand, such bundling of retail products may lead to economies of scale or scope for the operator and this in turn can lead to savings to the consumer.

In considering the above, the TRA deems that there is a need to counter the risk of anti-competitive behavior through prohibition of unreasonable bundling of products and services to be imposed on the Notified Operator. The imposition of this obligation/remedy on the Notified Operator means that the operator will be obliged not to bundle a number of services into a single tariff without also offering each of the constituent services under separate tariffs unless they would have obtained the TRA’s prior approval.

## 2.4 Class I Licensee Remedies/ Obligations - Overview

The remedies/ obligations imposed on the Class I Licensee/ Operator per market are the following (Table 2.3 & 2.4):

No.	Market Name	Notified Class I Operator	Remedies/ Obligations to be imposed	Accounting Methodology	Cost Base
1	Access to the public telephone network at a fixed location for residential & non-residential customers	Omantel	1. Accounting Separation 2. Price Control & Cost Accounting 3. Transparency 4. Non-Discrimination 5. Access to, and use of, specific network facilities 6. Cost Orientation 7. Measures to counter unreasonable bundling of products	FDC	HCA
2	Publicly available local and/or national telephone services provided at a fixed location for residential & non-residential customers	Omantel	Same as Market 1 above	FDC	HCA
3	Publicly available international telephone services provided at a fixed location for residential & non-residential customers	Omantel	Same as Market 1 above	FDC	HCA
4	The full set of retail leased lines	Omantel	Same as Market 1 above	FDC	HCA
5	Dial Up Internet	Omantel	Same as Market 1 above	FDC	HCA



6	Retail Broadband	Omantel	Same as Market 1 above	FDC	HCA
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**Table 2.3: Retail Markets, Notified Operator & Remedies/ Obligations**

No.	Market Name	Notified Class I Operator	Remedies/ Obligations to be imposed	Accounting Methodology	Cost Base
7	Call origination on the public telephone network provided at a fixed location Call origination on the public telephone network provided at a fixed location Call origination on the public telephone network provided at a fixed location	Omantel	1. Accounting Separation 2. Price Control & Cost Accounting 3. Transparency 4. Non-discrimination 5. Access to, and use of, specific network facilities	FDC	HCA
8	Call termination on individual public telephone network provided at a fixed location	Omantel	Same as Market 7 above	FDC	HCA
9	Wholesale unbundled access (including shared access) to metallic loops and sub loops for the purpose of providing broadband and voice services [the “LLU Market”]	Omantel	Same as Market 7 above	FDC	HCA
10	Wholesale Line Rental (WLR)	Omantel	Same as Market 7 above	FDC	HCA
11	Wholesale broadband access [the “Bitstream Market”]	Omantel	Same as Market 7 above	FDC	HCA
12	Wholesale terminating segments of leased lines	Omantel	Same as Market 7 above	FDC	HCA
13	Wholesale trunk segments of leased lines	Omantel	Same as Market 7 above	FDC	HCA
14	Wholesale international capacity (Bandwidth)	Omantel	Same as Market 7 above	FDC	HCA

**Table 2.4: Wholesale Markets, Notified Operator & Remedies/ Obligations**

It is the TRA’s decision that the Accounting Methodology and Cost Base will change to FDC/ CCA for the Retail Markets and LRIC for the Wholesale Markets defined and shown in Tables 2.3 & 2.4 above. The Notified Operator must make sure that its Top-Down FDC/ CCA and LRIC costing models are in place in accordance with the Timeframe Schedule provided in Section 6.4 of this Framework Document.

### **2.4.1 Identified Products/ Services & Geographic Extent per Market**

The following table shows the products/ services identified per market and in accordance with competition principles and based on analysis undertaken by the TRA

A relevant geographical market comprises the area in which the operator concerned is involved in the supply and demand of products and/or services, in relation to which the conditions of

competition are sufficiently homogeneous and which can be distinguished from neighboring areas because the conditions of competition are appreciably different to those areas. According to international practices, the definition of the geographical scope of the relevant market is generally determined with reference to the area covered by a network, and to the existence of legal and other regulatory instruments (see Table 2.5 below).

Market No.	Products/ Services per Market	Geographic Extent	Comments
<b>Retail Markets</b>			
1	Residential analogue (PSTN), cable access lines provided over fixed public electronic communications networks	Territory of the Sultanate of Oman	This Market involves both PSTN & ISDN Rental and Connection.
	Residential ISDN BRA (Basic Rate Access) access provided over fixed public electronic communications networks		
	Non-residential analogue (PSTN), cable access lines provided over fixed public electronic communications networks		
	Non-residential ISDN BRA access provided over fixed public electronic communications networks.		
	Non-residential ISDN PRA (Primary Rate Access) access provided over fixed public electronic communications networks		
2	Residential national telephone services provided at a fixed location	Territory of the Sultanate of Oman	
	Non-residential national telephone services provided at a fixed location		
3	Residential international telephone services provided at a fixed location	Territory of the Sultanate of Oman	
	Non-residential international telephone services provided at a fixed location		
4	Retail national leased lines (terminating & trunk segments), analogue & digital, of any capacity & distance	Territory of the Sultanate of Oman	This Market involves both Rental & Connection Retail Leased Line products.
	Retail international leased lines (terminating & trunk segments), analogue & digital, of any capacity & distance	From/ To the territory of the Sultanate of Oman	
5	Dial Up Internet	Territory of the Sultanate of Oman	

6	Residential and non-residential Retail Broadband of any speed	Territory of the Sultanate of Oman	This Market involves both Rental & Connection Broadband Products
<b>Wholesale Markets</b>			
7	Call origination on the public telephone network provided at a fixed location	Territory of the Sultanate of Oman	Includes Carrier Selection/ Pre Selection Services
8	Call termination on individual public telephone network provided at a fixed location	Territory of the Sultanate of Oman	Wholesale termination at points of interconnection
9	<p>Excludes services provided over alternative technologies;</p> <p>Excludes Bitstream services;</p> <p>Includes all self-supplied wholesale LLU (full, shared, sub-loop) products and services provided over the existing broadband copper networks; and</p> <p>Includes all wholesale LLU (full, shared, sub-loop) products and services provided to third party ISPs, via all existing broadband copper networks.</p>	Territory of the Sultanate of Oman	This Market involves both Rental & Connection Retail LLU products.
10	Wholesale Line Rental	Territory of the Sultanate of Oman	
11	<p>excludes simple resale products;</p> <p>includes all self-supplied wholesale broadband products provided over all existing broadband networks; and</p> <p>includes all wholesale broadband access products and services provided to third-party ISPs, via all existing broadband networks.</p>	From/ To the territory of the Sultanate of Oman	This Market involves both Rental & Connection Bitstream products.
12	Wholesale terminating segments of leased lines analogue & digital, of any capacity & distance	From/ To the territory of the Sultanate of Oman	This Market involves both Rental & Connection Wholesale Leased Line products.
13	Wholesale national trunk segments of leased lines & digital, of any capacity	From/ To the territory of the Sultanate of Oman	This Market involves both

	& distance		Rental & Connection Wholesale Leased Line products.
	Wholesale international trunk segments of leased lines & digital, of any capacity & distance		
14	Wholesale international capacity (Bandwidth)	From/ To the territory of the Sultanate of Oman	Rental & Connection of Wholesale International Capacity

**Table 2.5: Products included per relevant market as well as each product's geographic applicability**

#### **2.4.1.1 Class II & III Licensees (New Entrants) Remedies/ Obligations**

The expansion of Telecommunication services requires a boost through liberalization and competition so as to ensure that the benefit of advancement in technology reaches to the people of Oman by way of new services at a cheaper rate in a reliable environment. The recent Class II licenses provisioning aims at introducing more effective competition through new services with high quality at lower costs.

The TRA is satisfied that regulation with respect to new entrants (Class II & III) should be limited and proportionate during the current period until subsequent market reviews. As a result the TRA has decided on the following remedies/ obligations on the new entrants:

1. **Transparency** – New entrants are to make public their rates and any proposed changes to such rates in advance of the change taking place, as well as information regarding retails tariffs, network and technical specifications and accounting information
2. **Financial Information Provisioning** – New entrants to provide the TRA upon request with specified costs & revenues for their services, including internal prices. The TRA will request separated accounts only when it considers it necessary, in order to monitor the tariffs charged by the new entrants and or carry out its functions in accordance with the Telecommunications Law, regulations and the relevant licenses.

At any point where the TRA considers the above obligations/ remedies to be inadequate for a particular Class II & III licensee, it may impose the Accounting Separation obligation/ remedy (or any other obligations/ remedies).

#### **2.4.1.2 Monitoring Market Developments**

The TRA is satisfied that it would be sensible and very important to keep a reasonably close watch on market developments following this initial review. This would ensure that current and proposed obligations on the Notified Operator identified earlier on, would be justified throughout the duration of this market review. A new market review could be undertaken at any time in response to changing market conditions, for example new Class I Licensee entering the market.

## 2.5 Cost Accounting Methodologies

There are two key costing methodologies that can be deployed as the basis for setting charges for specific services:

- **Fully Distributed (Allocated) Cost (FDC or FAC)** – all costs, including costs caused by specific services and costs driven by groups of services, are attributed to different services according to a set of allocation rules. FDC (or FAC) can be undertaken on a historic cost or current cost basis;
- **Long-Run Incremental Cost (LRIC)** – incremental cost is an economic cost concept, defined as the increase in a firm's total costs as a result of an increase in output, or the costs avoided if output falls. If the increment of output under consideration is the whole of a particular service, then the term "total service incremental cost" is applied. The addition of "long-run" indicates that the time horizon is sufficiently long for all types of cost to be avoidable. LRIC includes all variable (i.e. volume-sensitive) costs and also the fixed costs specifically relevant to the increment of output under consideration. Fixed costs that are shared between, and common to, a number of services are not included (as they will not be avoided if an increment of output of a particular service is no longer provided). It is normal to estimate LRIC and shared and common costs assuming efficient operating practices.

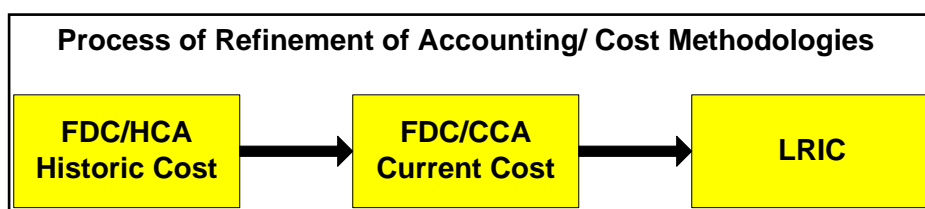
### 2.5.1 Choice of Cost Accounting Methodology

When choosing which Accounting/ Costing methodology to employ for Accounting Separation, it is important to note that the different methodologies do not involve separate and mutually exclusive development paths. On the contrary they represent different points on the same path. In order to implement Fully Distributed Costs (FDC) on a current cost basis, it is first necessary to have FDC on a historic cost basis and, in order to implement LRIC, it is necessary first to have FDC on a current cost basis.

This means that the least burdensome and quickest methodology to implement is FDC on a historic basis and the most burdensome and slowest to implement is LRIC. It also means that it is possible to try to assess the incremental benefit and incremental cost of each step in the chain. If the incremental cost exceeds the incremental benefit, progress down the chain should in principle cease. Thus, for example, although LRIC is the ideal basis for measuring costs and setting prices, the gains from moving from FAC on a current cost basis to LRIC may not necessarily exceed the costs. Thus, although LRIC can be considered to be the most appropriate costing methodology and that FDC with current costs is preferable to FDC with historic costs, other things, particularly implementation costs, are not in practice equal. Consequently an assessment has been made that takes account of the respective costs and benefits in the Sultanate of Oman.

According to this assessment, the Notified Operator shall be required to adopt the FDC (historic cost) methodology as the basis of preparing Separated Regulatory Accounts for the financial year ending 31.12.09. The TRA is satisfied that this should be the first priority, with a subsequent move to FDC (current cost) for financial years ending 31.12.10 and onwards. The LRIC methodology should also be adopted for financial years ending 31.12.10 and onwards.

Therefore this process should not be seen as mutually exclusive, but rather as part of a linear progression. In order to implement FDC (current cost), it is first necessary to have FDC (historic cost) and in order to implement LRIC, it is necessary first to have FDC (current cost). This is shown in Figure 2.1 below:



*Figure 2.1: Refinement of Accounting/ Cost Methodologies*

**TRA's Decisions:**

**2.4** The TRA is satisfied that the “Market” Approach is appropriate for Accounting Separation (AS)

**2.5** The TRA has determined six (6) Retail markets and eight (8) Wholesale markets

**2.6** The TRA is satisfied that the Notified Operator determined as required to prepare Separated Regulatory Accounts must do so for the financial year ending 31.12.2009 using a Fully Distributed Cost methodology under the Historic Cost Accounting base. The cost accounting system should also generate results (product unit costs) under the same methodology/ cost base.

**2.7** The TRA determines that for the financial year-ends of 31.12.2010 and onwards Separated Regulatory Accounts shall be prepared under the FDC/ CCA methodology/ cost base.

**2.8** For financial year-ends 31.12.2010 and onwards, the cost accounting system of the Notified Operator should also generate LRIC results for wholesale services on offer.

**2.9** The Notified Operator determined as required to prepare Separated Regulatory Accounts shall adjust its current Top-Down costing systems (or implement new Top-down costing system/s) to comply with the TRA requirements for Accounting Separation

**2.10** The TRA has determined the following Wholesale remedies/ obligations:

- Accounting Separation (AS)
- Price control & Cost Accounting
- Transparency
- Non-discrimination
- Access to, and use of, specific network facilities

**2.11** The TRA has determined the following Retail remedies/ obligations (same as the Wholesale and additionally):

- Cost Orientation for Retail Prices
- Measures to counter the unreasonable bundling of products

**2.12** The TRA has determined:

- Omantel as a Notified Operator in the Fixed Telephony Market and hence all Relevant Markets. No other operator has been determined as a Notified Operator at this stage.

**2.13 The TRA determines the geographic extent of the markets to be the territory of the Sultanate of Oman**

**2.14 The TRA shall implement limited obligations to Class II & III licensees, namely:**

- Transparency
- Financial Information Provisioning

## **3 General & Regulatory Accounting Principles, Quality of Data**

### **3.1 General Financial Reporting Principles**

The following General Financial Reporting Principles shall be applied by operators when preparing financial reporting information for submission to the TRA.

#### **1. *Relevance***

Information is relevant if it has the ability to influence the economic decisions of users of the regulatory accounts and is provided in time to influence those decisions. If there is a conflict between the relevance and the reliability of the information then the approach chosen needs to be the one that maximizes the relevance of the information. Where there is a conflict, the Notified Operator should provide some explanation into the degree of reliability of the information concerned.

#### **2. *Reliability***

Information is reliable if:

- it can be depended upon by users of the regulatory accounts to represent fairly what it either purports to represent or could reasonably be expected to represent and therefore reflects the substance of the transactions and other events that have taken place
- it is free from deliberate or systematic bias and material error and is complete.

#### **3. *Comparability***

Information needs to be comparable so that users of the regulatory accounts can discern and evaluate similarities or differences over time and across different regulatory business entities or economic markets.

#### **4. *Understandability***

Information provided needs to be understandable although information should not be excluded simply because it would not be understood by some users of the regulatory accounts. Information is understandable if its significance can be perceived by users of the regulatory accounts that have a reasonable knowledge of business and economic activities, regulatory framework and accounting and a willingness to study with reasonable diligence the information provided.

#### **5. *Materiality***

Information is material to the financial statements if its misstatement or omission might reasonably be expected to influence the regulatory decisions of the Regulator or the economic decisions of other interested parties.

### **3.2 Regulatory Accounting Conventions & Principles**

The following Regulatory Accounting Conventions & Principles shall be applied by the operators when preparing accounts for separate individual business activities. These principles establish the key doctrines to be applied in the preparation of regulatory accounting



information. Where there is a conflict between the conventions, they shall be applied in the order in which they appear below:

### **1. Priority and Proportionality**

Within the Regulatory Accounting Principles, insofar as there is conflict between the requirements of any or all of these Principles, the Principles are to be applied in the same order of priority in which they appear in this document, while at the same time ensuring that a balance is maintained between the Principles that is proportional and appropriate. The TRA will provide guidance on a case by case basis in response to any specific queries that the licensee may have on the application of the Principles.

### **2. Cost Causality**

Revenue (including transfer charges), costs (including transfer charges), assets and liabilities shall be attributed to cost components, services or business units in accordance with the activities which cause the revenues to be earned or costs to be incurred or the assets to be acquired or liabilities to be incurred.

Where it is not possible to attribute revenue, cost, assets and liabilities in accordance with the preceding paragraph, the attribution shall be such as to present fairly the revenue, costs, assets and liabilities accounted for in the Separated Accounts for each business or activity. In the absence of any justification to the contrary, the TRA would expect this attribution to be equi-proportionate to those costs which can be attributed on the basis of cost causation.

### **3. Transparency**

The methods and basis used for allocation of revenue, cost, assets and liabilities shall be transparent. Cost and revenues which are allocated shall be separately identified from those that are apportioned.

### **4. Objectivity**

The basis chosen for attribution shall be objective. The attribution shall not intend to benefit the Notified Operator or any other operator, product, service, component, business unit or disaggregated activity.

### **5. Consistency**

The same basis of allocation and apportionment shall be used from year to year, unless there are necessary changes. Where there are material changes to the Regulatory Accounting Principles, attribution methods or accounting policies that have a material effect on the information reported in the Separated Accounts of the Businesses, then the previous year's Separated Accounts shall be restated accordingly.

### **6. Materiality**

The use of a specific allocation basis may not be necessary if the effect of allocation is not material to the outcome, either individually or collectively with other cost allocations using the same allocation base. However, it may not be possible to measure the effect without adopting an alternative basis and, in cases of doubt, the most appropriate activity-related cost allocation basis should be used.

### **3.2.1 Accounting Policies**

These policies are those that follow the form used for the preparation of standard statutory accounts and will include, for example, details of fixed asset depreciation periods and the treatment of research and development costs. Where the regulatory accounts are prepared on a current cost basis then the basis on which assets are valued will be included as accounting policies.

### **3.2.2 General**

- Details of significant changes that materially affect the Separated Accounts along with prior year restatements should be provided
- Separated Accounts shall be prepared annually and contain comparative information for prior year. Comparatives may not be prepared for the first year of submission.
- The Separated Accounts shall disclose any differences between costs allocated to different activities by the operator, and the costs that the TRA allows for the purpose of determining charges
- The Separated Accounts shall be subject to an independent audit.

## **3.3 Quality of Regulatory Accounting Data**

For the Separated Regulatory Accounts to be suitable for purpose they serve, the data contained in all of the documentation must not only be transparent, but should also be relevant, comparable with previous reporting periods and reliable. It is also essential that a suitable audit trail of information is maintained to ensure the integrity of the data over a period of time. While this is clearly necessary to enable the audit of the Separated Regulatory Accounts to be carried out, it is also essential because the regulator may need to obtain more detailed financial information over a time series than that included in the Regulatory Accounts.

### **Relevance**

Information is relevant if it has the ability to influence the economic decisions of users and is provided in time to influence those decisions. Relevant information has predictive value (if it helps users to evaluate or assess present and future events) or confirmatory value (if it helps users to confirm or correct their past evaluations and assessments) or both. In order for the Regulatory Accounts to be relevant, they must, inter alia, be presented in a timely fashion and be transparent and comply with the principles in Section 3.1 & 3.2 above.

### **Comparability over Periods**

Information in an Operator's regulatory financial statements gains greatly in usefulness if it can be compared with similar information for other reporting periods in order to identify trends and differences. This aspect is particularly valuable to the TRA where comparable information is used to assess the impact of competition or establish cost trends for price control purposes.

Comparability is usually achieved through a combination of consistency and disclosure of accounting policies. In a regulatory environment this would include regulatory accounting treatments such as cost attribution methodologies. Full transparency of these policies and other methodologies used to prepare regulatory financial statements is therefore important.

In line with the principle of consistency of treatment expressed in the General and Regulatory Principles Sections, material changes should lead to a restatement of previous years' results on a comparable basis.

### **Reliability**

The TRA and other stakeholders (including the different operators) must be able to rely on the information in the Separated Regulatory Accounts. There are a number of criteria that can be applied to test if information is reliable such as:

- can it be depended upon by users to represent faithfully what it purports to represent;
- is it free from deliberate or systematic bias;
- is it free from material error;
- is it complete (subject to materiality tests); and
- it has a degree of caution (i.e. prudence) been applied in exercising judgment and making the necessary estimates.

It is the responsibility of the Notified Operator to ensure that the information underpinning and contained in the Regulatory Accounts is reliable.

### **Data Retention**

The TRA may require financial information over a time series in order to carry out its statutory functions. Therefore, without prejudice to other obligations that licensees may have in terms of keeping financial information, for present purposes financial information as well as supporting documentation should be kept for a period of no less than 5 years, making it possible to trace significant evolutions of costs, revenues and outputs and evaluate the effects on costs of applying possible different criteria and methods over that period of time. This will also be important in relation to the audit of the Separated Regulatory Accounts.

#### **TRA's Decisions:**

##### **3.1 The TRA has decided that the following Regulatory Accounting Conventions & Principles shall be adopted:**

- Priority and Proportionality
- Cost Causality
- Transparency
- Objectivity
- Consistency
- Materiality

##### **3.2 The TRA is satisfied that to ensure the good quality of the Regulatory Accounting Data, this should have the following characteristics:**

- Transparent
- Relevant
- Comparable over periods
- Reliable

##### **3.3 Data must be retained for a period of 5 years.**

## **4 Cost Allocation Process**

This section sets out guidance on the cost allocation process and the conventions and principles that should be followed in order to allocate capital and operating costs, capital employed and revenues for the purposes of preparing separate accounts. These principles are also relevant to the determination of interconnection and lease line charges.

### **4.1 Principles of Cost Allocation**

The TRA is satisfied that an approach based on Activity Based Costing (“ABC”) should be used to allocate costs, capital employed and revenue. Costs and revenues should be allocated to services or products on the basis of those activities that cause those costs or revenues to arise.

Following the principle of causation requires an operator to implement appropriate and detailed cost allocation methodologies in its cost accounting system. In practice, this would require an operator to:

- a) review each item of cost, capital employed and revenue,
- b) establish the driver that caused each item to arise, and
- c) use the driver to allocate each item,
- d) pool costs that cannot be related on a causation basis to activities and allocating on a predetermined basis. These types of costs are considered further in the following paragraphs on un-attributable costs.

The following Regulatory Accounting Principles should be adopted by operators when preparing the Separated Regulatory Accounts:

1. Priority and Proportionality
2. Cost Causality
3. Transparency
4. Objectivity
5. Consistency
6. Materiality

### **4.2 Cost Categories**

Following the principle of cost causation, each item of cost and revenue should be allocated to the products and services provided by an operator. In the case of revenue most, if not all, revenues can be allocated directly to their related products or services. However, this is not the case for costs due to the relatively high proportion of the costs that are shared between different products and services. Each cost item may be considered to fall into one of the following categories:

- a) Direct and directly attributable costs**

Direct costs are those costs that can be directly and unambiguously related to a service or product and which are recorded against the relevant product or service in the operator's accounting system.

Directly attributable costs are also directly and unambiguously related to a service or product but they are not recorded in the financial accounts against the product or service to which they relate.

The following may be examples of direct or directly attributable costs:

- Wages and salaries of Directory Enquiries staff which can be allocated directly to Directory Enquiries services (if applicable); and
- Product-specific software development costs which can be directly allocated to the product in question.

#### **b) Indirectly attributable costs**

Indirectly attributable costs are those costs that can be related to a service or product on a non-arbitrary basis based on the relationship of the costs to direct and directly attributable costs. Such costs shall be allocated to the relevant service or product using an appropriate cost driver (e.g. usage of shared facilities).

For example, depreciation relating to power equipment may initially be allocated to the power equipment to which it relates. It may then be allocated to the network equipment that is supported by that power equipment (possibly on the basis of usage).

In order to derive the apportionment bases sampling techniques may be used, as long as these are based on appropriate statistical techniques, which result in an immaterial margin of error

#### **c) Un-attributable costs**

Un-attributable costs are those costs for which no direct or indirect method of apportionment can be identified. It is therefore not possible to allocate these costs to products and services on a non-arbitrary basis. These costs are likely to be of the character of 'corporate overheads'.

A significant level of telecommunications operators' costs are joint and common in nature, however the rigorous application of cost causation methods may be expected to reduce substantially the proportion of these costs that are truly unattributable.

### **4.3 Relevant Costs for Regulatory Decisions**

Regulatory decision making is based on a combination of financial analysis and non-financial information. Financial analysis involves the review of relevant costs, which can be defined as costs arising as a direct consequence of the current decision to provide a specific product/service.

Some costs, while appropriate to be included in the financial accounts, may not be allowed for regulatory decision making purposes.

Standard accounting practice differentiates between exceptional items and extraordinary items.

*Exceptional items* are material items which derive from events or transactions that fall within the ordinary activities of the reporting entity and which individually or, if of a similar type, in

aggregate, need to be disclosed by virtue of their size or incidence if the financial statements are to give a true and fair view.

**Extraordinary items** are material items possessing a high degree of abnormality which arise from events or transactions that fall outside the ordinary activities of the reporting entity and which are not expected to recur. They do not include exceptional items nor do they include prior period items merely because they relate to a prior period.

All exceptional and extraordinary costs will need to be disclosed separately in the presentation of separated accounts with a note detailing the circumstances and impact of the item(s). The TRA will review these and decide on a case by case basis whether they will be allowed for regulatory decision making purposes.

#### **4.4 Operating Cost Allocation**

The cost allocation process relates, in principle, to both operating and capital costs. Table 1 in Appendix A provides a summary of possible allocation and attribution methods for operating costs under the following headings:

- Depreciation of network elements;
- Provision, installation and maintenance costs;
- Network planning and development costs;
- Network management costs;
- Marketing and sales costs;
- Billing and collection costs;
- Operator services costs;
- Directory services costs;
- Payments to other operators; and
- Support costs.

These headings are purely illustrative and are not intended to reflect the way in which each operator is expected to record costs. They are intended to provide high-level guidance only. The Notified Operator will need to develop cost allocation procedures specific to the way in which they currently capture and record costs, and to refine these over time, as appropriate.

#### **4.5 Allocation of Capital Employed**

This section addresses the application of the principles described previously to calculating the allocation of capital employed and its calculation. There must be consistency between the measure of capital employed on which the return is based and the measure of capital employed reported in the separate accounts. This consistency will enable comparison of the actual percentage returns earned by operators from their activities such as interconnection with the cost of capital allowed by the TRA when reviewing charges for these activities.

Table 2 in Appendix A of this Framework Document provides a summary of possible allocation methods for different items of capital employed. The application of these and, as appropriate, other methods will determine the capital values of different regulated activities. The table is not intended to be an exhaustive list of items that might be classified as capital employed nor of the

methods for allocating them to different activities. The table proposes one approach to the treatment of working capital in the calculation of capital employed. There are however, other approaches which may be equally valid. In practice, there are two principles that ought to be applied when considering the treatment of individual items of working capital for the purposes of separate accounting:

- There should be consistency between the treatment of assets and their associated costs and revenues; and
- Inclusion or exclusion of individual items ought, in principle, to have a corresponding impact on the WACC. The decision to include or exclude items and the corresponding adjustment to the WACC offset each other in terms of their overall effect on the absolute return required by the licensee.

#### **4.5.1 The Cost of Capital and Capital Employed**

Charges for wholesale and retail services should be cost-oriented, whilst allowing for a reasonable return on investment. The determinants of the level of this return are the cost of capital and a capital value.

The calculation methodology and setting of a cost of capital is described in the following sections. Consistency must exist between the measure of capital employed on which the cost of capital is based and the measure of capital employed reported in the Separated Regulatory Accounts.

##### **4.5.1.1 Cost of Capital**

The cost of capital should reflect the opportunity cost of funds invested in network components and other related assets. It conventionally reflects the following:

- The (weighted) average cost of debt for the different forms of debt held by each operator;
- The cost of equity as measured by the returns that shareholders require in order to invest in the network given the associated risks; and
- The values of debt and equity.

This information can then be used to determine the weighted average cost of capital (WACC) as explained in the following section.

##### **4.5.1.2 Weighted Average Cost of Capital (WACC)**

Each licensee's charges for wholesale and retail services provided should be cost-oriented, whilst allowing for a reasonable return on investment. The determinants of the level of this return are the cost of capital and a capital value. The calculation methodology and setting of a cost of capital is described in the following sections. Consistency must exist between the measure of capital employed on which the cost of capital is based and the measure of capital employed reported in the Separated Regulatory Accounts. Such consistency enables comparison of the actual percentage returns earned by each licensee from its regulated activities such as interconnection with the cost of capital allowed by the TRA when reviewing charges for these activities. The focus of this section is the need for consistency and its implications for the allocation of items of capital employed.

### **The significance of cost of capital**

- Cost of capital is simply one of the many costs that are incurred by any business, yet it is less immediately visible and tangible than costs such as wages and operating expenses, but nevertheless exists
- In normal circumstances, a business must seek to make a return on the capital that is actively employed by the business that is equal to the recurring cost of that capital. This ensures that investors in the business can be properly compensated for the risk that they take for supplying capital to the business
- As the cost of capital must recognize the expectations of investors, its calculation or measurement must consider factors that are external to the business itself. This can lead to some complexity. The competitive environment of the Omani telecommunication market needs to be examined. Information from other markets can also be drawn (benchmarking) so as to assess the relevant values of the different parameters used in the estimation of a particular licensee's cost of capital
- It is often the case that a large business actually comprises several individual business streams that have differing risk profiles and thus different costs of capital. Hence it is recommended that a universal cost of capital (integrated) is derived as well as separate estimates of the costs of capital for the fixed line telephony and mobile services

### **The principle governing the calculation of the cost of capital**

- Financial analysts and most industry professionals consider the Weighted Average Cost of Capital (WACC) as the most appropriate measure of the returns that investors require in order to invest in a business
- The cost of capital that an operator faces represents the equilibrium return that investors expect from investing in a firm with a specific set of risks. The risks that an investor faces, in addition to market risks, are also influenced by the ratio of debt versus equity that reflects the capital structure of the business
- Debt, by virtue of the fact that it has a higher priority on claims in the event that a firm goes into bankruptcy, in addition to normally having fixed interest payments, implies a lower risk for lenders than for holders of equity, who face higher levels of uncertainty and lower priority in the event of bankruptcy
- Accordingly, a business lowers its WACC by having a prudent proportion of its capital as debt. As the term suggests, it is necessary to determine both the cost of debt and the cost of equity; the WACC varies with the level of debt within the capital structure of the company
- In the future, a licensee may, in response to the changed circumstances within the Omani market, or for other reasons, undertake activities or take actions that give rise to a significant change in its capital structure, or in other ways alter the present perception of risk by investors in specific licensee. Such actions and activities would influence the cost of capital and hence cost of capital should be re-evaluated



A licensee's cost of capital should reflect the opportunity cost of funds invested in network components and other related assets. It conventionally reflects the following:

- The (weighted) average cost of debt for the different forms of debt held by each operator;
- The cost of equity as measured by the returns that shareholders require in order to invest in the network given the associated risks; and
- The values of debt and equity.

This information can then be used to determine the weighted average cost of capital (WACC) using the following formula:

$$WACC = re \times \frac{E}{(D + E)} + rd \times \frac{D}{(D + E)} \times (1 - T)$$

where 're' is the cost of equity, 'rd' is the cost of debt, 'E' is the total market value of equity, 'D' is the total market value of interest-bearing debt and 'T' is the corporate tax rate. This calculation gives the post-tax WACC which needs to be converted to the pre-tax rate (i.e. WACC post-tax divided by (1-T)).

#### **4.5.2 Capital Employed – Attribution Rules**

A similar approach is followed as in the case of operating costs.

Identify driver of each capital element e.g. operating cost, revenue, non-financial (i.e. FTE, sq.m)

- Land and Buildings should be allocated to products/ services and network components on the basis of space occupied (i.e. floor space) to support each in turn
- Trade Debtors should be allocated directly to products / services based on billing system information or an adequate proxy (i.e. revenue)
- Trade Creditors should be allocated directly to products/ services if possible through analysis. Alternatively OPEX could be used
- Stocks should be allocated directly to products / services if possible using inventory data. Alternatively a proxy could be used i.e. capital employed
- Cash (adequate balance for operational needs) should be allocated directly to products/ services where possible, otherwise allocate based on the operational requirements of each. A proxy for this could be total payroll cost

A summary of possible allocation and attribution methods for capital employed can be found in Appendix A of this Framework Document (see Appendix I of this Report).

A number of **Reconciling Items** that are excluded from Separated Regulatory Accounts (excluded for CAPEX purposes) are the following:

- Investments (fixed asset or financial)
- Excess Cash
- Long Term Liabilities (not operationally related)

- Corporate Tax
- Exceptional items
- Pension Deficits

The Notified Operator shall submit to the TRA revised WACC rates on an annual basis based on a study performed by the Notified Operator and based on the methodology/ approach outlined above.

## **4.6 Revenue Allocation**

### **4.6.1 Revenue from Telephony Activities**

Revenue comprises the invoiced value of services provided and equipment sales. The revenue generally arises from calls, line rentals, connection charges, equipment sales and other activities.

Generally the revenues from the provision of telephony products and services can be directly allocated to the products and services to which they relate based on accounting records and billing system information. In those instances where direct allocation based on the above is not possible, revenues should be attributed on the basis of causation.

Revenue is calculated for each of the products taking into account Interconnection and Transfer Charge revenues where applicable. Rental and connection charges for both retail and wholesale products can be separately identified in the accounting records and the revenue can therefore be directly allocated to the relevant market.

### **4.6.2 Other Revenue**

Operators may also earn income from non-telephony services. These revenues should be allocated to the activities to which they relate in accordance with the principle of causation.

It is important that notwithstanding the actual approach used, the treatment of non-telephony revenues and their associated costs is consistent. Failure to do so would lead to the profits of one market being understated and the profits of another overstated.

### **4.6.3 Income from Fixed Asset Investments**

Income from Fixed Asset Investments should be allocated in the same way as the investments to which it relates.

### **4.6.4 Income from Short-Term Investments**

The same principles apply to income received from short-term investments. The income should be allocated to the business to which the associated investment is allocated.

## **4.7 Transfer charges**

The objective of separation of business units for the purposes of regulatory accounting is to provide the TRA with information that allows it to evaluate whether an operator is involved

into cross-subsidization. The fundamental principle of separating the operators' accounts and producing separate financial statements is that they must disclose how the provision of services between internal business units and the same services performed externally are treated in terms of costs and revenues and compared to each other. This principle allows for identifying whether charging high wholesale prices externally is aimed at subsidizing low (predatory) pricing in the retail area. The prices charged internally are called transfer charges.

The accounting separation obligation is always accompanied by the non-discrimination obligation. This results in the requirement that the transfer charges have to be set at level close to the prices charged for the same services externally.

The three main benefits from the disclosure of transfer charges are that it helps to:

- enforce non-discrimination
- monitor the profitability of particular businesses or services; and
- identify cross subsidies.

The transfer charging system to be employed by the Notified Operator shall follow the Regulatory Accounting Concepts and conform to the following principles:

1. Transfer charges (revenues and costs) shall be attributed to cost components, services and main business areas or disaggregated businesses in accordance with the activities, which cause the revenues to be earned, or costs to be incurred;
2. The attribution shall be objective and not intended to benefit any business or disaggregated business;
3. There shall be consistency of treatment of transfer charges from year to year;
4. The transfer charging methods used should be transparent. There should be a clear rationale for the transfer charges used and each charge should be supportable;
5. The transfer charges for internal usage should be determined as the product of usage and unit charges;
6. The charge for internal usage should be equivalent to the charge that would be levied if the product or service were sold externally rather than internally. For accounting separation purposes, it should be assumed that the retail business pays the same interconnection charge for the same service as set out in the RIO; In cases where wholesale services are not currently on offer (i.e. no wholesale tariffs exist) the transfer charges for the for the network part of retail services should be calculated on the same basis and methodology, and using the same network element costs, as the wholesale services.
7. The separated accounts shall disclose the transfer charges between businesses/ markets and disaggregated businesses/ markets.

The transfer charges may be either set by some principal decision (e.g. the TRA may require to set the transfer charges equal to external prices) or calculated on the basis of incurred costs. For instance British Telecom prices Network Charges by Network Components as follows:

- Network Components used in Standard Services;
- Network Components used in non Standard Services - prices are calculated (outside this module) by taking the Fully Allocated Costs of Network Components (per the output from

the Fully Allocated Costing module), with the price calculated as cost plus a return on capital employed (including network own-use).

The Regulatory Statements record transfer charges as:

- revenue accruing in one distinct separated business/ market
- operating cost recognized in another separated business/ market

For example, the Fixed Network Business sells a range of network and wholesale services to meet the differing needs of other operators and the Retail Business respectively. Similarly, wholesale markets sell wholesale services to retail markets. The price of each network service is based on the Fully Allocated Cost of the Network Elements or parts thereof and wholesale services are charged at the relevant wholesale price as would be charged to Other Licensed Operators.

As far as Transfer Charges are concerned, the TRA requires the Notified Operator to be explicit in their treatment so that the application of the principle of non-discrimination by the users of the Separated Regulatory Accounts is evident.

The TRA requires the Notified Operator to document clearly how each of the transfer charges were generated between the various Business Lines or Markets within the Accounting Documents.

Additionally, the TRA requires the Notified Operator to disclose a matrix (to be shown as a note to the Separated Accounts) summarizing the total transfer charges between the different Businesses/ Markets.

The total value of any transactions between the various Markets of the operator that take place should be obvious. The components of the transfer price for a service are the operating cost plus the allowed cost of capital. The amounts to be disclosed are the total transfer charges between businesses. The format adopted both in many countries is as follows:

<b>Transfer Charge Statement</b>						
For the year ended 31 December 20XX						
	Market 1	Market 2	Market 3	Market 4	Market ...	Total
<b>Market 1</b>						
<b>Market 2</b>						
<b>Market 3</b>						
<b>Market 4</b>						
<b>Market ....</b>						
<b>Market ....</b>						
<b>Market ....</b>						
<b>Total Transfer Charge</b>						

**TRA's Decisions:**

**4.1 The TRA is satisfied that the following cost allocation principles should be applied:**

- Priority and Proportionality
- Cost Causality
- Transparency
- Objectivity
- Consistency
- Materiality

These shall be consistent with the principles adopted when preparing regulatory statements

**4.2 The TRA determines that the cost items should fall into one of the following categories:**

- Direct and directly attributable costs
- Indirectly attributable costs
- Unattributable costs

**4.3 The TRA determines the adoption of the allocation/ attribution methods as depicted in Appendix A of this Framework Document for the following classes of operating costs:**

- Depreciation of network elements;
- Provision, installation and maintenance costs;
- Network planning and development costs;
- Network management costs;
- Marketing and sales costs;
- Billing and collection costs;
- Operator services costs;
- Directory services costs;
- Payments to other operators; and
- Support costs

**4.4 Allocation of Capital Employed should be consistent between the measure of capital employed on which the return is based and the measure of capital employed reported in the separate accounts. In practice shall be two principles to be applied when considering the treatment of individual items of working capital for the purpose of separate accounting:**

- Consistency between the treatment of assets and their associated costs and revenues
- Inclusion or exclusion of individual items of Capital Employed ought in principle to have a corresponding impact on the WACC

**4.5 The Notified Operator shall submit to the TRA the WACC study that includes the relevant rates and associated assumptions and parameters adopted on an annual basis in accordance with the methodology/ approach outlined Section 4.5 above.**

**4.6 The TRA is satisfied that revenue should be allocated according to its type.**

- Telephone services (directly allocated to products and services)
- Non- telephony services (allocated to activities in accordance with the causation principle)
- Income from fixed asset Investment (allocated to the investment it relates to)
- Income from Short term Investments (allocated to the business the investment relates to)

**4.7 The TRA satisfied that the Notified Operator should adopt the Transfer Charges Principles set out in Section 4.7 of this Framework Document**

## 5 Cost Accounting Methodology & Cost Basis

There are two main cost accounting methodology options which can be mandated, FAC (or FDC) and LRIC. In addition FAC (or FDC) can be undertaken on a Historic Cost Accounting (HCA) or Current Cost Accounting (CCA) basis. Hence the three choices available are as follows:

- FAC (or FDC)/ HCA
- FAC (or FDC)/ CCA
- LRIC/ CCA

These should not be seen as mutually exclusive but rather as part of a linear progression. In order to implement FAC/ CCA, it is first necessary to have FAC/ HCA and, in order to implement LRIC, it is necessary first to have FAC/ CCA.

### 5.1 FAC (or FDC)/ HCA

As discussed in Section 2 of this Framework Document, adopting an FAC/ HCA methodology means that all the costs of the operator are allocated and apportioned to the various products or services provided. The main advantages of this approach are:

- **Computation:** it is relatively easy to compute the costs once the correct cost drivers and accounting principles have been adopted;
- **Reconciliation:** it is possible to reconcile the figures back to statutory accounts which are prepared on the same HCA basis;
- **Completeness:** FAC accounts ensure that all costs have been allocated so that consistency can be maintained when regulatory intervention is focused on one part of the business as opposed to another.

In the telecoms industry it is common practice that companies prepare their annual accounts using historical cost basis (HCA). However, FDC/ HCA suffers some major flaws, particularly if used as a basis for setting interconnect or certain other prices:

- HCA, based on past actual expenditure, may reflect potential inefficiencies that can develop over the years;
- Evolution of the costs of assets is not taken into account. Purchase prices can significantly increase or decrease over time and affect the value of assets. Decreases in equipment costs have characterized Telecoms in recent years;
- Historical accounts cannot incorporate the impact of continuously evolving technologies. Hence HCA cannot ensure that costs are those of an operator employing modern technologies.

### 5.2 FAC (or FDC)/ CCA

For the above-mentioned reasons FAC/ CCA is often the preferred costing methodology.

The process of shifting from an HCA to CCA involves the following:

- **Revaluation of Assets:** it is necessary to make detailed estimates of the current value of all fixed assets on a replacement cost or modern equivalent asset (MEA) basis. The difficulty of this task is directly related to the age and complexity of the network. The older and more complex the network the harder the task. Generally the newer the network the better and more up to date are the records of that equipment.

To arrive at current cost asset valuations it is necessary to revalue capital equipment so that the gross book value of equipment is replaced by the gross replacement cost, i.e. what it would cost to purchase and install the equipment today. This involves identifying the MEA and then attaching a price to it. The written down value of the equipment (net replacement cost) can then be derived using normal depreciation rules. Thus, for example, if a particular piece of equipment is five years old and has a useful life of 10 years, then, under straight-line depreciation, its net replacement cost will be half its gross replacement cost;

- **Depreciation Adjustments:** existing asset lives are applied to the current cost asset values. The accounting entries that are generated are adjustments in depreciation (supplementary depreciation and backlog depreciation) as well as any holding gains and losses generated by asset price changes that occur during the accounting period

There are two different approaches to these adjustments that differ in their definition of “capital maintenance”, i.e. the way in which the capital of the company is viewed when determining profit. These approaches are Operating Capital Maintenance (OCM) and Financial Capital Maintenance (FCM). OCM considers the operating capability of the company while FCM considers that the financial capital of the company is maintained in current price terms.

## **5.2.1 Revaluation of Assets**

A key element of the current cost methodology is the valuation of assets. It is necessary to make detailed estimates of the current value of all fixed assets on a replacement cost or MEA basis. The difficulty of this task is directly related to the age and complexity of the network. The older and more complex the network, the harder the task. Generally the newer the network the better and more up to date are the records of that equipment.

### **5.2.1.1 Methods of asset valuation**

**Gross replacement cost (GRC)** is near the value of a brand new network providing the same level of functionality and capacity as the existing network using assumptions for modern equivalent assets or alternative valuation methodologies. If the assets had been purchased in the same period as the regulatory accounts and are valued therefore at the start of their useful economic life, the GRC is equivalent to the net replacement cost and historic cost value.

In case the assets subject to valuation have been purchased at various times and are at various stages in their useful economic lives, the **net replacement cost (NRC)** approach is an appropriate method to use and, by implication, the current cost depreciation charge. The net replacement cost measures the cost of replacing the existing asset with another asset, which has similar performance characteristics and is of a similar age. (In case of rapid technological change, the existing asset may no longer be replaceable. Therefore it might be necessary to calculate the value of an asset with the same capacity and functionality – the MEA, as discussed in Section 5.2.2.1)

The TRA is satisfied that the criteria for choosing the appropriate current cost asset valuation methodology are based on the following definitions:



- The **net realizable value (NRV)** is the amount, which would be obtained by selling the asset (less sales costs).
- The **economic value (EV)** measures the net present value (NPV) of future cash flows that the asset will generate whilst in use in the business.
- The **recoverable amount (RA)** is the higher of NRV and EV.
- The **deprival value** is considered to be the current cost of an asset as it is the amount of loss suffered by an undertaking if an asset were lost or destroyed. The deprival value is the lower of the NRC and the RA.

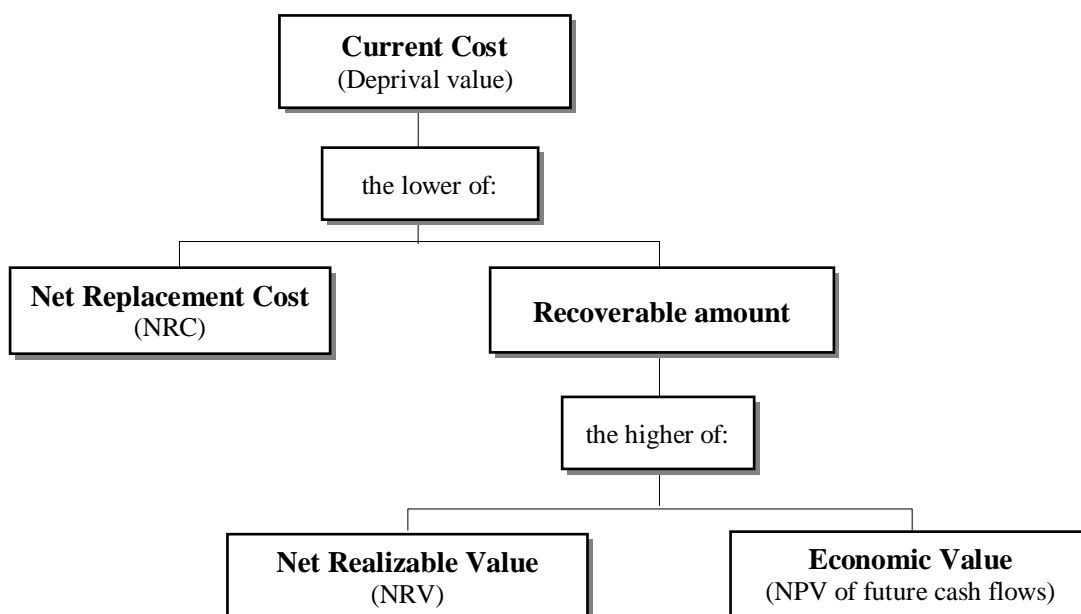
The RA gives the best economic opportunity to the business:

- If  $EV > NRV$ , the asset is worth more to the undertaking in its current use than a potential sale proceeds, hence the undertaking will keep the asset in its current use.
- If  $NRV > EV$ , the undertaking will sell the asset, because the potential income from the sale exceeds the economic value that the asset would be expected to generate while remaining in use.

As stated above, deprival value is the lower of NRC and RA. This can be seen by considering that:

- If the  $NRC < RA$ , this means that if the undertaking disposed of an asset, it would not lose all the returns (the recoverable amount), but it would simply replace the asset. Therefore, in this case the deprival value (current cost) equals the replacement cost. This is normally the case since businesses only buy assets if the returns are expected to exceed the cost.
- If the  $NRC > RA$ , it means that the asset has irreversibly lost value (become impaired). In this case, if an asset is disposed of the undertaking will not seek to replace it. Therefore, the deprival value to the undertaking equals the lost returns the asset would have provided.

The method of deriving the current cost of an asset, determined by its deprival value (DV), is presented in Figure 5.1 below:



**Figure 5.1: The method of deriving the current cost of an asset**

If an asset is vital to a business to provide its service, it is not appropriate to consider its NRV as the asset should not be sold. In addition, EVs can be difficult to calculate in practice. As a result, in practice, the revaluation of an asset is usually limited to calculation of NRC.

**TRA's Decisions:**

**5.1 The TRA is satisfied that NRC shall be adopted for the revaluation of assets. In cases where the NRC is significantly higher than the NBV (i.e. greater than 150%) then the RA can be considered. The TRA is also satisfied that EV and NRV methods can be used in order to determine the current value of an operator's real estate (property owned, buildings owned and long term leases).**

**5.2.1.2 Calculation of Gross Replacement Cost (GRC)**

This section presents the different valuation methodologies that can be used when assets are revalued by replacement cost for the purposes of current cost accounting. The selection of valuation methodology will depend on the nature of the asset that is being valued. Any chosen set of valuation methods will need to be reviewed from time to time to ensure that they are still appropriate and produce accurate valuations considering changes in technology and levels of investment.

The first step in establishing the actual replacement value of the network is determining the cost of replacing existing assets with new ones that have the same functionality. Once the replacement values are established, certain adjustments are then made to approximate economic value. The adjustments reflect the considerations that existing assets have a shorter remaining economic life than newly purchased assets; and that the existing assets may have undergone physical deterioration and therefore have higher maintenance costs than newly purchased ones.

International practice shows that the methodology adopted by undertakings and accepted by regulatory authorities for determining asset values incorporates a mix of practices which includes the use of purchase prices, commercial valuation, appropriate indices, the calculation of replacement values, and in a very limited number of instances of using historic prices.

The principal valuation methods that can be used are described below.

***Historical cost***

Historical cost can be used as a proxy for the current cost of an asset where it is unlikely that this would give a materially different result. This is typically the case in the valuation of assets of a negligible unit and aggregate value or short-life assets. Hence, if there is no remarkable difference between the assets' acquisition and replacement costs, no revaluation method has to be applied. The historical cost is also used for additions made during the year, as again there is likely to be no noticeable difference to using the current cost at the valuation date.

Under the HCA methodology, the NRC of an asset is given by its NBV – which is its gross book value (GBV) less accumulated depreciation – adjustments of the asset values are not needed.

### ***Indexation***

Indexation is appropriate for assets where there has been little technological change, and the capitalized costs would have to be incurred again if the asset were to be replaced. Under the indexation method, a group of assets is revaluated by applying yearly price change indices that are specific for each group of assets. The indices to be used should, where possible, be asset-specific, and based on real prices paid by operators. Where a suitable specific index is not available a more general index may be used as a proxy.

Indexation is usually used by the revaluation, when:

- there has been no technological change regarding the asset or the change has not been material/ significant,
- the operator's databases and the fixed asset register deliver sufficient and accurate information about the asset subject to valuation, or
- the asset group is homogenous in respect of price changes.

#### **TRA's Decisions:**

**5.2 The TRA is satisfied that the following asset groups should be revaluated using indexation:**

- vehicles
- microwave radios
- towers/ masts
- support (power) and inventory systems and,
- fixtures, fittings and office equipment

### ***Absolute valuation***

Absolute valuation involves assigning current purchase price to each single asset, using physical quantities of assets and their current unit prices. Applying this method typically the following needs to be considered:

- The operator must have a reliable database containing detailed information on the quantities of fixed assets, beyond that all data, which is normally available in the technical inventory.
- Reliable information on up-to-date prices has to be available.

In practice, absolute valuation is a must in revaluation of telecommunication equipment, and a MEA is used as the basis for the valuation. In particular, when:

- the asset group is not homogenous in respect of price changes,
- there has been significant technological change regarding the asset or the asset group, or
- the operator's fixed asset's register can not serve accurate data about the asset or asset group subject to valuation.

#### **TRA's Decisions:**

**5.3 The TRA is satisfied that the following assets groups should be revaluated using the absolute valuation method:**

- Ducts and cables
- Switches
- Transmission equipment

**5.4 In summary the TRA is satisfied that the appropriate methodology used to derive replacement cost should be selected based on the following rules:**

- If the asset has low value or short life - historical cost should be used (no need to revalue);
- If the technology exists - absolute valuation or indexation should be used, depending of the type and characteristics of the equipment;
- If the technology exists, but is due to be replaced within the planning horizon - absolute valuation with MEA as a basis for valuation should be used; and
- If the technology is outdated or obsolete - absolute valuation with MEA as a basis for valuation should be used.
- In the case of newly built/ acquired assets, the Historic Cost that remains almost equivalent to the Current Cost should be used, hence there is no need for revaluation.

### 5.2.1.3 *Modern Equivalent Asset (MEA)*

The determination of current cost must take account of technological changes. As a result of changes in technology an asset may substantially differ in any or all of the following respects:

- the initial purchase cost;
- the level of operating costs, e.g. lower maintenance costs;
- the service provided (capacity and/or functionality); and/or
- economic life.

Where existing assets cannot be replaced in the same form (i.e. no direct replacement for the asset is available), the replacement cost is derived from the GRC of “the modern equivalent asset”. The same goes for assets due to be replaced within a given time horizon.

Since new technologies are usually superior to old ones in terms of functionality and efficiency, MEA values are required to reflect assets of equivalent capacity and functionality. Therefore, adjustments (abatements) need to be made to reflect the cost of an asset with similar characteristics.

It is envisaged that for the financial year ending 31.12.10 the core network should be modeled using Next Generation Network (NGN) technology, whereby the existing circuit switches and transmission are replaced by packet data technology, used for both voice and data services. Even in the case that the operator continues to use older circuit-switching technology, the principles of CCA suggest that the latest technology should be adopted as the Modern Equivalent Asset for revaluation purposes. The situation regarding next-generation access is less clear, and in any case the preliminary treatment of both the core and access network should be discussed with the TRA at the time of modeling, in case different conditions prevail at the time.

### *Adjustments related to MEA*

Where the MEA differs from the existing asset in terms of operating costs, asset life or service provided, this needs to be allowed for during the asset revaluation by means of specific adjustments. These adjustments include:

a) Operating expenditure adjustments

The operating cost of new equipment may be lower than that of the existing equipment. In this case, the cost of the MEA should be reduced by the present value of the additional operating costs associated with the existing equipment over the remainder of its life.

b) Functionality adjustments

Similarly, new equipment may have increased functionality. If so, the cost of the MEA should be reduced.

c) Surplus capacity adjustments

In case of surplus capacity, i.e. capacity that is not currently required and is not expected to be required within the network planning horizon, valuations should be adjusted downwards. For example, the asset for which the operator has surplus capacity under the above definition can be specialized accommodation such as exchange buildings. This reflects the fact that the space requirement of modern switching equipment is much lower than that of analogue equipment. A way to deal with this is to use modern building and site costs but assume a space requirement consistent with what is necessary for modern equipment.

#### **TRA's Decisions:**

**5.5 The TRA is satisfied that the cost accounting system of the Notified Operator must specify what MEA technologies have been used for the revaluation of assets under CCA approach. The choice of the MEA should be clearly explained and documented. Furthermore, where the MEA and the asset differ in functionality and/or efficiency, appropriate adjustments to the purchase price and operating costs should be made and disclosed. The MEA adjustment shall be required where the difference is materially significant and feasible with the provision of clear specification and documentation for the choice of the MEA.**

## **5.2.2 Annual capital charges**

There are effectively three methods which can be used to calculate annual capital charges, which essentially differ in the way they treat and calculate depreciation:

- Economic cost approach;
- Annuities approach; and
- Accounting cost approach.

### **5.2.2.1 Economic cost**

The economic cost approach is based on economic depreciation, which measures the change in the economic value of an asset and takes into account technological change and obsolescence (asset life). The asset's economic value means the price, at which it is indifferent from the point of view of the undertaking's full service potential whether it retains a given asset or replaces it

with a new MEA. The economic value is determined by the Present Value of revenues over costs relative to the MEA.

The decision to invest in a capital asset is made on the basis of calculating its present value (PV). Therefore, an undertaking will not purchase a network component unless the PV of future revenue streams is greater than or equals to its GBV, meaning that its NPV is greater than or equals to zero. The economic depreciation is therefore calculated as the difference between the estimated NPV of future cash flows at the beginning of a given period and the estimated NPV of future cash flows at the end of this period.

The depreciation profile will depend on such factors as: the expected annual operating costs, the purchase costs of assets and the revenue generated by those assets. The length of the depreciation profile (the economic life of the asset) will depend on the surplus of revenues over operating expenditure. After this time period operating expenditure are greater than revenues and therefore the operation of the asset is no longer economically justified.

If the asset's operating costs are expected to increase over time, it is necessary to set the depreciation charge at a higher level during the early years of the asset's life, as the total annualization charge will be greater at the beginning of this cycle. The same goes for assets characterized by a rapid price fall over time. A direct opposite situation will occur if there is a rise in revenue in the early years of the asset's lifetime.

In this approach the annual capital charge is the sum of economic depreciation and cost of capital (which is set at WACC multiplied by the average economic value of the asset).

### 5.2.2.2 *Annuities*

According to the annuities approach two kinds of charges are calculated: the depreciation charge and the capital charge. After discounting, a charge is set, which recovers the cost of the asset and the financing costs in equal sums. The total capital charge will be based on the GRC of the particular asset and will be annualized based on the formula:

$$\text{Annual capital charge} = \text{GRC} \times \text{WACC} / (1 - (1 / (1 + \text{WACC})^t))$$

where t is the asset life.

The annuity will be a flat profile, initially consisting mainly of capital (i.e. interest) charges, later on mainly driven by depreciation (i.e. principal) charges.

If the price of an asset is expected to change over time, it is better to use a **tilted annuity**. According to this approach an annuity charge is calculated, that changes over time at the same rate at which the price of the asset is expected to change. This means that the annual capital charge will decline, in case prices are expected to fall over time.

$$\text{Annual capital charge} = \text{GRC} \times (\text{WACC} - p) / (1 - [(1+p) / (1+\text{WACC})]^t)$$

Where p = rate of price change or "tilt".

The depreciation charge in the annuities approach depends primarily on the asset's economic life and the replacement rate. This form of depreciation is useful in situations where an asset's price is expected to change over a certain period of time (tilted annuities approach). In this case the term tilt relates to the expected rate of price change. Changes in the annuity charge over time are set at the same rate, at which the price of the asset is expected to change.

According to IRG (Independent Regulators Group) the annuities approach is recommended in the case of bottom-up models.<sup>1</sup>

### 5.2.2.3 Accounting cost

Accounting depreciation reflects that the use of long-life assets can be considered as the consumption of the service potential of the assets. This is determined by accounting and/or tax allowance rules under which operators prepare their financial statements. These can vary depending on the allowable depreciation rule. In practice, however, usually one of the following methods is used:

- **Straight line depreciation** means that depreciation is an equal amount each year, which is calculated by simply dividing the purchase cost of the asset, or its GBV, by its expected useful life.
- In the case of **declining balance depreciation**, depreciation charges are a constant proportion of the NBV each year. This generates that bigger amounts are written off in the initial years. The NBV is given by GBV less accumulated depreciation.
- The **sum of digits** method produces a front-loaded depreciation schedule, just like declining balance depreciation. However it differs in the way of calculation: a decreasing fraction of the “sum of digits” is taken in each year to determine the amount, which should be written-off. For example, for an asset life of 5 years, the sum of digits is 15 (5+4+3+2+1). In the first year, the depreciation charge will be 5/15 of the asset’s GBV. In the second year, depreciation falls to 4/15 of GBV, and so on.

Accounting cost is considered the most appropriate approach, as the top-down approach itself is based on the current costs of the operator as recorded in its accounting records and network databases.

In this approach the annual capital charge is the sum of accounting depreciation and the cost of capital (which is set at WACC multiplied by the NRC of the asset).

To calculate accounting depreciation two principal methods are used:

- the NBV/GBV methodology, and
- the rolling forward methodology.

#### ***NBV/GBV methodology***

The simplest approach to calculating the net asset valuation is to multiply the gross asset valuation by the historic cost ratio of NBV to GBV:

$$NRC = NBV/GBV * GRC$$

This should be done asset category by asset category. However, the approach will not provide accurate results when asset prices are changing. Where asset prices are rising, the methodology places too much weight on recent observations. This is because the asset price increases will result in a higher GBV per unit of output for more recent observations whereas the gross asset valuation per unit of output should be the same for all observations. The impact of this bias will lead to overestimation of net asset valuations, and therefore of capital costs. The converse holds when asset prices are falling. There are other factors that might in practice affect the bias. For example, the investment pattern is unlikely to be even.

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<sup>1</sup> IRG Public Consultation Document – Principles of Implementation and Best Practice regarding the use of current cost accounting methodologies as applied to electronic communications activities, 2006

The actual investment pattern will affect the NBV to GBV ratio, which may result in biases, either positive or negative, if using this ratio to calculate net asset values.

### ***Rolling forward methodology***

The rolling forward methodology calculates the net asset value as the gross asset value less current cost accumulated depreciation.

The rolling forward approach produces the correct net asset values if two assumptions hold. First, it requires that current cost depreciation plus holding gains and losses are equal to economic depreciation in each and every year. Secondly, the starting net replacement cost must be correct. This may be difficult to do in practice, since it requires details on the installation dates of each of the assets included in the GRC. Such information may not be available, particularly not for asset categories that include a large number of items or where individual items have been modified at various stages during the asset's lifetime. In such circumstances, an initial net asset valuation could be calculated using the NBV/GBV methodology. Clearly, the longer the period for which the application of the NBV/GBV is used, the greater is the potential error in the calculation of net replacement cost.

Although the rolling-forward methodology is the theoretically correct methodology, it is associated with a number of practical difficulties. The Notified Operator may therefore choose between either of the two methodologies.

As the NBV/GBV methodology will lead to higher (lower) annualized costs than the rolling forward methodology where asset prices are rising (falling), the TRA believes that the two methodologies must be used in a consistent manner. If different methodologies are used for different assets, this will need to be documented and justified in the documentation.

### **TRA's Decisions:**

**5.6 The TRA is satisfied that the cost accounting system of the Notified Operator should use an accounting based approach to capital charges. More specifically the depreciation policy adopted for generating the Statutory Financial Statements should be consistent with the policy adopted within the cost accounting system.**

## **5.2.3 Capital Maintenance Concepts**

Considering the fact that undertakings function under circumstances where asset prices at the beginning of a financial period may differ from those at the end of that period (due to e.g. inflation or technological progress), it is necessary to reflect an impact of those differences in Current Cost Accounting statements. This is done by applying the adjustments described in this section.

Two alternative approaches can be used in CCA, which differ in how they treat capital that is required to be maintained before a profit is recognized. Capital maintenance is of greatest importance for measuring the profit available for distribution in the Profit and Loss account (P&L), but it also affects the division between capital and retained profits in the balance sheet.

Capital can be examined from two different points of view:

- in operational terms (i.e. as the company's capacity to produce goods and services) or
- in financial terms (i.e. as the value of shareholders' equity interest).

According to the two points of view, there are two concepts of capital maintenance: Operating Capital Maintenance and Financial Capital Maintenance, respectively:



- **Operating Capital Maintenance (OCM)** focuses on maintaining the output capability of the company's assets. Capital maintenance under this approach requires the company to have as much operating capability – or productive capacity – at the end of the period as it had at the beginning of it. Under OCM, profit is therefore only realized after provision has been made for replacing the output capability of a company's assets. In general, this requires the alteration of the values of the company's assets with specific inflation indices.
- **Financial Capital Maintenance (FCM)** is concerned with the maintenance of the company's financial capital and with its ability to continue financing its functions. Capital is assumed to be maintained if shareholders' funds at the end of the period are maintained in real terms at the same level as at the beginning of the period. Under this concept, profit is only realized after that a sufficient amount of provision has been made to ensure that the purchasing power of opening financial capital is maintained.

The choice between OCM and FCM is a vital determinant of the exact specification of the revenue requirement (cost accounting formula, further explained in Section 5.2.3.1)

If OCM is applied in determining charges, the revenue requirement would be calculated as the sum of operating costs, historical cost depreciation, supplementary depreciation and a return on net assets. On the other hand, using FCM means, that the revenue requirement would be the sum of operating costs, a return on net assets less holding gains/losses plus the adjustment to shareholders' funds, historical cost depreciation, and supplementary depreciation. Consequently the required revenue is different depending on which of the capital maintenance concepts is used.

The preferred approach by the EC is the FCM<sup>2</sup>. The main reasons why FCM is considered to be the more appropriate method are the following:

- Under FCM the returns to the providers of capital would equal the required return (as measured by the cost of capital) irrespectively of whether replacement costs were rising or falling relative to general prices. However, under OCM, profit measures do not include holding gains or losses.
- The EC recommends FCM based on the fact that “the use of the OCM concept may systematically incorporate insufficient or excess returns into the level of allowed revenue (depending, respectively, on whether asset-specific inflation was expected to be lower than or higher than general inflation). This is not a desirable feature of any regulatory regime”
- In the European Union the majority of countries applied the CCM-FCM approach.

**TRA's Decision:**

**5.7 The TRA is satisfied that FCM is the appropriate capital maintenance concept.**

### 5.2.3.1 *The top-down cost accounting formula*

The T-D LRIC cost accounting formula gives the cost base that must be recovered in year t:

$$\text{Cost Base}_t = \text{Opex}_t + \text{Depreciation}_t + \text{WACC} \cdot (\text{NBV}_{t-1} + \text{WC}_{t-1})$$

Where:

Opex = cash operating expenditure,

Depreciation = current depreciation in the period, not accumulated depreciation,

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<sup>2</sup> Commission Recommendation 98/322/EC of 8 April 1998, Part 2 - Accounting separation and cost accounting

WACC = Weighted Average Cost of Capital,

NBV<sub>t-1</sub> = Net Book Value in the year preceding the year t

WC<sub>t-1</sub> = Working Capital in the year preceding the year t

### **5.2.3.2 Implications of the FCM concept on the cost accounting formula**

The application of the FCM method means that the above equation must be adjusted to:

$$\text{Cost Base}_t = \text{Opex}_t + \text{HC Depn}_t + \text{Suppl Depn}_t + \text{WACC} \cdot (\text{NRC}_{t-1} + \text{WC}_{t-1}) - \text{HG}_t + \text{Adj to SF}_t$$

Where:

HC Depn = Historical Cost Depreciation

Suppl Depn = Supplementary Depreciation

NRC<sub>t-1</sub> = Net Replacement Cost in the year preceding the year t

HG = Holding gains/losses

Adj to SF = Adjustments to Shareholders' Funds

This equation represents the total cost base that must be recovered each year either from transfer charges or interconnection charges.

Operating expenditure and Working capital are discussed later in Section 5.3.4

#### **Supplementary depreciation**

The current year depreciation charge is calculated on the basis of the revised current cost asset valuations. This ensures that the current cost of fixed assets consumed during the year is charged against revenue. For each asset, or group of assets, the current cost depreciation charge – assuming that straight-line depreciation is used - can be derived by dividing the difference between the current GRC and residual value of the asset by the asset life.

Supplementary depreciation is the difference between the historical cost depreciation charge (based on the original purchase cost of the asset) and the 'revised' current cost depreciation charge (based on the current replacement cost of the asset). It may be positive or negative depending on whether the values of assets are rising or falling.

These relationships can be summarised as follows:

$$\text{HC depreciation} \times [\text{GRC} / (\text{Acquisition cost})] - \text{HC depreciation}$$

Given that HC depreciation is derived as acquisition cost divided by asset life, this formula can be reduced to:

$$(\text{GRC} - \text{Acquisition cost}) / \text{Asset life}$$

which is equivalent to supplementary depreciation.

Since accounting depreciation can be calculated using one of three methods (straight line, reducing balance or sum of digits), attention has to be paid to make the correct adjustments depending on which method has been used.

### ***Backlog depreciation***

Depreciation charges are based each year on the current gross book value of the assets. The value of these assets increases/decreases/ over time, so does the associated depreciation charge. Consequently, in any particular year, the current cost depreciation charge for the year exceeds/is less than/ the amounts charged as depreciation in previous years (which were based on lower/higher/ gross values of the assets). There is therefore a need to correct past depreciation charges to reflect the prevailing gross book values of the assets. These corrections are known as backlog depreciation.

The GRC should be adjusted with the backlog depreciation to get the appropriate NRC.

### ***Holding gains/ losses***

Holding gains and losses result from changes in the price of the assets. The holding gain/loss is equal to the increase/decrease in the GBV of the asset is calculated as follows:

$$\text{Gross holding gain} = \text{GRC}_{\text{closing}} - \text{GRC}_{\text{opening}} - \text{Additions} + \text{Disposals (at current cost)}^3$$

$$\text{Net holding gain} = \text{Gross holding gain} - \text{Backlog depreciation}$$

The net holding gain can also be calculated as follows:

$$[\text{GRC}_{\text{closing}} - \text{GRC}_{\text{opening}} - \text{Additions} + \text{Disposals (at current cost)}] * \text{NBV/GBV}$$

In deciding on the appropriate capital maintenance concept, the Regulator will want to consider, in the context of its regulatory objectives:

- a) the treatment of holding/gains losses for reporting purposes and
- b) the appropriate methodological approach in the application of holding gains/losses to its decisions.

### ***Adjustments to shareholders' funds***

The effect of general inflation on shareholders' funds is taken into account through an adjustment to shareholders' funds. This adjustment is derived by multiplying the opening value of shareholders' funds by the change in the index of general price inflation for the period. This is debited to the P&L and credited to a financial capital maintenance reserve.

#### **TRA's Decision:**

**5.8 The TRA is satisfied that the cost base of the cost accounting system should not need to make an inflation adjustment for shareholder's funds as long as a nominal WACC is used.**

## **5.2.4 Practical issues of asset valuation**

### ***5.2.4.1 Materiality level for revaluation***

As mentioned above, current cost valuation of assets involves the use of specific resources to perform the preliminary activities like the identification of physical quantities, determination of price indices, and so on. In some cases, in order to simplify this process, a maximum asset

<sup>3</sup> The GBV of disposals is multiplied by the ratio  $\text{GRC}_{\text{opening}} / \text{GBV}_{\text{opening}}$  for the asset concerned.

value level can be identified related to historic values registered in the corporate accounting system, below which the relevant account can be defined as immaterial. Consequently the account's components can be maintained at their historic value. This maximum value level is known as materiality level.

The exclusion of certain assets from the CCA process helps to ensure the accuracy of current cost valuation. In aggregate terms, it is considered that the CCA process is suitably accurate when assets excluded from CCA and maintained at historic cost, on account of their recent acquisition or short useful life or limited amount, have overall gross book value within the limits of the materiality level. If the operator defines such a level, then it should be clearly documented and justified.

#### **5.2.4.2 Assets in the course of construction**

Capitalized interest arising from assets in the course of construction should be included in the GRC of the assets. Such capitalization should only occur for those activities that are necessary for the asset to be ready for service. However, depreciation should not be charged until the asset comes into use. Hence, the only annualized charge that is allowed is the cost of capital of the asset.

##### **TRA's Decision:**

**5.9 The TRA is satisfied that no depreciation should be charged to assets in the course of construction, though, they may be included at Gross Value into the calculation of the cost of capital. CAPEX booked under Capital Work in Progress (CWIP) including standard capitalizations allowed under the accounting principles/ standard, should be applied into the calculation of the Cost of Capital.**

#### **5.2.4.3 Leased equipment**

Assets can be held under finance leases or operating leases.

##### ***Finance leases***

Finance leases involve the payment by a lessee to a lessor of the full cost of the asset together with a return on the finance provided by the lessor. Finance leases therefore transfer the majority of the risks and rewards of holding the asset to the lessee. Assets held under finance leases are capitalized in the balance sheet and depreciated, with a capital charge taken through the P&L account.

##### ***Operating leases***

Operating leases involve the lessee paying a rental for the hire of an asset which is substantially less than its useful economic life. The risks and rewards therefore remain with the lessor. Such assets will have a rental payment put through the P&L account, but the value of the asset should not be part of the asset base.

##### **TRA's Decisions:**

**5.10 The TRA is satisfied that the assets held under finance leases should be included under the asset base and the depreciation charge should be allowed. However, the finance charge should not be allowed under operating expenditure, since this cost will be**

recovered through the capital charge on the asset base. Any alternative treatment should be given sufficient explanation, detailing the impact on the cost base.

**5.11 Furthermore, the rental payments for assets held under operating leases are allowable under operating expenditure. The value of these assets should not be included in the asset base.**

#### 5.2.4.4 *Fully depreciated assets*

An operator may have many assets which have been fully depreciated in the statutory accounts but are still being used by the business to generate revenue and to provide interconnection capability to new entrants. In other words, the economic/operational life of the asset has exceeded the designated accounting life of the asset. The issue is therefore one of dealing with the differences between an accounting approach to depreciation and an economic approach to depreciation.

However, since assets must be revalued under CCA, there is a need for consistency between the basis that is used for estimating the initial value of assets and the basis that is used for calculating the other components of allowed revenue (i.e. operating expenditure and depreciation). Using an accounting approach, the asset has been fully depreciated and hence, to be consistent, further depreciation cannot be charged.

Fully depreciated assets have a positive GBV and GRC, but a zero NBV and consequently a zero NRC (assuming the ratio of NBV divided by GBV is applied to the GRC to arrive at the NRC). Under an accounting approach to depreciation, fully depreciated assets would therefore not be included in the Asset Base.

#### **TRA's Decision:**

**5.12 The TRA is satisfied that fully depreciated assets should not be revalued under Current Cost Accounting revaluations since their value has already been recovered through past depreciation. Any alternative proposed approach should be documented with justification for taking this alternative approach.**

### 5.3 LRIC

LRIC is often considered the ideal methodology to adopt. From an economic perspective it delivers the best approximation of what an efficient operator's costs should be. This is because it is incremental rather than fully allocated costs which is the correct starting point for setting prices. This in effect means that interconnect charges derived using LRIC provide the correct economic signals to the market.

However, in deciding whether to implement LRIC it is important to assess that the implementation of LRIC has typically been preceded by the adoption of first FAC/ HCA and then FAC/ CCA methodology. This is because the derivation of cost volume relationships is dependent on the underlying cost base of an operator being allocated and apportioned across the products and services using that cost base. Therefore, the process of moving to LRIC should be viewed as incremental to the establishment of robust FAC reporting.

### **5.3.1.1 Long run**

The long run is defined as a length of time in which all inputs are variable in scale. In the long run there are no fixed inputs. The undertaking has to make two types of production decisions. First, it has to decide about the volume of the production's output. After that, it decides about what capacity should be installed. Since there are no fixed inputs, there are no fixed costs in the long run: all costs are considered being variable. Therefore Long Run Total Costs (LRTC) equal Long Run Variable Costs (LRVC). In particular we can consider:

- Long Run Average Incremental Cost (LRAIC);
- Long Run Marginal Cost (LRMC); and
- Long Run Average Cost (LRAC).

**Long Run Average Incremental Cost (LRAIC)** is defined as the increase in LRTC due to an increase in the output by some increment divided by that increment. When the increment in question is the entire volume of output, the LRAIC equals LRTC divided by the volume of output. .

**Long Run Marginal Cost (LRMC)** is the increase in LRTC resulting from expanding output by just one unit. The LRAIC equals LRMC, in case the output increases by an increment of only one unit.

**Long Run Average Cost (LRAC)** of the entire volume of production can be calculated as LRTC divided by the volume of output produced. Hence, there are no fixed costs in the long run, LRAC equals LRAIC, in case the considered increment is the entire volume of production.

Cost models should adapt all input factors to the forecasted demand for services. Indeed, some practicalities like minimum size of input and quality of service have to be respected. As a result of them operators may face some so called fixed costs at very low levels of output (subscribers or traffic). According to definition these could not be called fixed, but they, unlike variable costs, also do not change with the volume of output. For example, in a fixed line network, a national network of switches and transmission must be provided in order to carry one minute of traffic from any line to any other line. The cost of this network is incurred regardless of subscriber numbers or traffic volumes and hence represents a so called (long run) fixed cost.

### **5.3.1.2 Forward-looking**

Even though HCA is generally accepted for financial reporting purposes, it may provide unsatisfactory and subjective for regulatory decision making. Therefore, a forward looking approach (current cost accounting) is usually followed in order to overcome the limitations of historical cost accounting. Forward-looking costs are defined as the costs of an efficient operator building its network today using the most modern technology bought at current prices. These costs are the appropriate cost base for LRIC cost modeling.

Costing measures should be forward-looking to reflect the true economic costs of producing an increment of output. In practice, however, there is likely to be considerable debate about the precise definition of forward-looking. Networks evolve over time with the result that the network of even an efficient Notified Operator may look very different from the network design that would be used if starting from scratch (often referred to as a scorched earth assumption).

"Looking forward" implies that the expected development in prices, first of all asset prices, and expected development in demand will need to be taken into account. Forward-looking costs are

the costs of a company optimizing its production by taking into account the forecasted demand for its services.

Finally, it should be noted that the models should consider the optimized network as if it were already in place. No costs associated with moving from the existing network to the optimized network should be included.

## 5.3.2 Modeling approach

### 5.3.2.1 The top-down model

Top-down (T-D) approaches are based on the undertaking's actual costs that derive from its accounting records and other databases (General Ledger, Fixed Asset Register, Trade Debtors Ledger, network inventory and management systems etc.) as well as its actual network topology and architecture. Therefore these costs reflect the actual cost of providing and maintaining existing capacity.

In case of T-D modeling bottom-up (B-U) engineering models are also used in order to model the efficient network, to understand quality of service and routing factors, and for the construction of CVRs.

An overview of the typical process of T-D modeling is illustrated in the Figure 5.2 below:

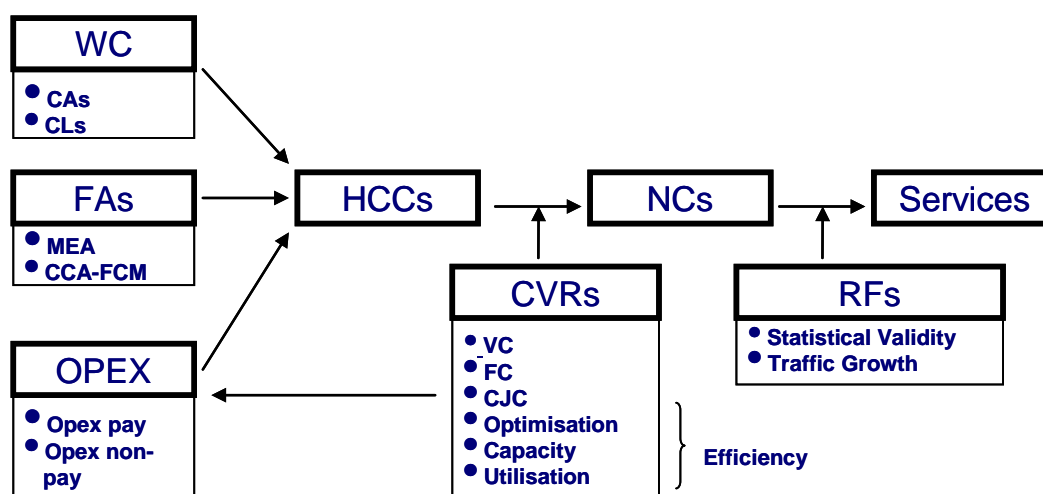


Figure 5.2: Steps of cost allocation in T-D model

Where:

WC = Working Capital

FAs = Fixed Assets

OPEX = Operating Expenditure

CCA-FCM = Adjustments regarding capital maintenance

VC (Variable Costs), FC (Fixed Costs) and CJC (Common and Joint Costs) are discussed later.

NCs = Network Components

RFs = Route Factors

CJC = Common and Joint Cost

As illustrated in the figure above, the first step is to group costs that have similar characteristics into individual cost categories, also called homogenous cost categories (HCCs). The level of homogeneity is determined by the need to identify individual cost drivers and to account for changes in costs over time.

Once the HCCs have been identified, the next step is to determine network components (NCs). Costs are allocated to NCs by using Cost-Volume Relationships (CVRs), and the result is a cost per NC. In particular, CVRs:

- trace how individual costs vary with underlying cost drivers; and
- identify all variable, fixed, common and joint costs.

In simple terms, a CVR is a curve, which describes the relationship between the volume of a cost driver and its related costs.

The last step is attributing services to different NCs. The costs of NCs are allocated to services on behalf of routing factors, and a NC cost per unit is calculated.

**TRA's Decisions:**

**5.13 The TRA is satisfied that the LRIC models developed by the Notified Operator should adopt a Top-Down approach to ensure that costs can be reconciled back to an operator's actual set of accounts.**

**5.14 When developing LRIC models, the Notified Operator should follow the process illustrated in Figure 5.2.**

**5.15 In particular, the Notified Operator should define the various network elements (NEs) in accordance with the network structure in place. The TRA provides by way of an indication examples of typical NEs in Appendix C to support the costing of interconnection charges in both fixed and mobile telephony.**

### 5.3.2.2 *Data requirements*

T-D models use the following types of data:

- **Financial data** – operating costs, depreciation, net book values, etc.;
- **Network operational data** – route factors, cost-volume relationships, etc.; and
- **Network traffic data** – Busy Hour Traffic, etc.

The requirements for this data are dealt with in respective sections of this Framework Document. However, it is critical that this data is derived from a specified period:

**Financial data** should be based on the latest available set of fully audited financial accounts such that it can be reconciled back to these accounts.

**Network operational data** should be derived from network statistics covering the same period as the latest available audited financial accounts. These data need to be revised if there is an increase in capacity or a change in the required headroom, both based on forecasted network traffic.

**Network traffic data** should be based on traffic of the same period as the latest available audited financial accounts and these data should be forecasted for two full years. Accordingly



CVRs need to be constructed to be constructed in a way that the required capacity for the end of the period is taken into consideration.

**TRA's Decision:**

**5.16 The TRA is satisfied that the models must be based on the latest available set of fully audited financial accounts. The base year for financial, operational and traffic data should be the same, with projections forward two full years to ensure the network has been adjusted to take account of increased capacity requirements.**

### **5.3.3 Homogenous cost categories**

#### **5.3.3.1 *The level of granularity***

To calculate LRIC, costs need to be grouped into a more manageable set of HCCs. Telecommunications networks are characterized by hundreds of pieces of distinct equipment. Hence it is desirable to group similar network equipment costs into HCCs. The level of homogeneity (or granularity) is determined by the need that for each HCC the following should be identified:

- cost drivers;
- price trends of the particular equipment; and
- Cost-Volume Relationships (CVRs).

Cost drivers are a common requirement for both Fully Allocated Cost (FAC) models and LRIC models. Price trends and CVRs are required for LRIC models only. As a result, considerably more cost categories are usually required for LRIC models than for FAC models.

#### ***Cost-drivers***

Costs determined by different cost drivers should be grouped into separate HCCs. To understand the determination of cost drivers, take the example of telephone exchanges. The driver of line cards is the number of access lines, which is driven by the number of subscribers. The driver of the switching stage, however, is the traffic volume of the exchange. As a result, collecting line cards and switching stage into the same cost category would not allow identifying a cost driver for this category.

#### ***Price trends of particular equipment***

For a fixed line example, consider access equipment. The ADSL access network consists of the following broad plant groups:

- Ducting;
- Cables;
- DSLAMs; and
- Customer Premises Equipments (CPE).

However, over time the price trend of these groups has moved in different directions. The main cost component of building a duct network is the civil engineering costs used to dig and fill in trenches. Due to general wage inflation, civil engineering costs have increased steadily over the

years. On the other hand, costs of DSLAMs and CPEs have generally been falling. It would be very difficult to revalue these assets on a current replacement cost basis, if they all would be in the same cost category.

### ***Cost volume relationships (CVRs)***

The cost volume relationship is the function that describes how costs vary with cost driver volume. The homogeneous cost category should be described by only one CVR. The CVR should be the same for all the equipment grouped in the same HCC because the CVR is used to calculate the incremental cost.

Cost-Volume Relationships are considered in detail later.

#### **TRA's Decisions:**

##### **5.17 The TRA is satisfied that:**

- Cost categories should be identified, and every cost category in the model must be a HCC. HCCs are characterized by their cost drivers, price trends, and CVRs. Though, one CVR can also be assigned to more HCCs;
- Fixed assets or operating expenditure with different cost drivers cannot be grouped into the same HCC;
- Fixed assets or operating expenditure having different price trends cannot be grouped into the same HCC; and
- Fixed assets or operating expenditure with different underlying CVRs cannot be grouped into the same HCC.
- The Notified Operator should be able to reasonably determine its own set of HCCs on best effort basis broadly complying with the best practices.

### **5.3.4 Definition of cost types**

HCCs should be clearly categorized into the following broad cost types:

- Fixed Assets;
- Depreciation;
- Operating Expenditure; and
- Working Capital.

These may be defined as follows.

#### ***Costs of fixed assets***

Costs of fixed assets are all the cash outlays on long-life assets, which are in use for more than one year. The value of fixed assets can be derived from the operator's Balance Sheet. Ducting, cables, switches, exchange buildings and motor vehicles are examples of this cost type.

The costs of fixed assets are the cost of capital and the holding gains/losses incurring from changes in asset prices.

### ***Depreciation***

Depreciation is a non-cash expense, which reflects the fact the value of the asset declines over time. Therefore it should be written-off over the useful lifetime of the asset - and not just in the year of acquisition - to represent the consumption of the asset over time. Depreciation is a line item in an operator's P&L account.

### ***Operating expenditure (OPEX)***

Operating expenditure refers to cash outlays incurring in each accounting period. Operating expenditure appears as a line item in an operator's P&L account. Within operating expenditure pay and non-pay items can be distinguished. Examples of pay items are salaries paid to employees. Non-pay items are operating expenditure that does not fall into this category, like electricity costs.

### ***Working capital***

Working capital is defined as current assets less current liabilities. Both are line items in an operator's Balance Sheet.

**Current Assets** should include stock, debtors and cash. Debtors should include debtors from sales and prepayments such as rent and rates. Cash should consist of cash at bank and in hand, and short-term investments.

**Current Liabilities** are short-term creditors. The creditors that should be included in the model are those arising from operating activities and capital expenditure. For example, these will include payments to suppliers, salaries, and rent and rates.

The model should clearly separate creditors and debtors arising in the network division from those arising in the retail division.

As a summary of the above working capital includes:

- Fixed asset investments (pure financial investments, investments in unrelated activities, other investments)
- Short term investments (including cash at bank and in hand)
- Stocks
- Trade debtors/receivables
- Other debtors/receivables
- Trade creditors
- Long term provisions
- Short term loans
- Liabilities for taxation and dividends

### **TRA's Decisions:**

#### **5.18 The TRA is satisfied that:**

- Cost types should be defined and the HCCs should be categorized according to the following cost types: fixed assets, depreciation, operating expenditure and working capital.

- Working capital should be calculated as current assets less current liabilities. The level of working capital should be a yearly average that can be calculated as the average of the level of working capital at the start of the year and the working capital at the year end.

### 5.3.5 Network topology

To calculate incremental cost it is first necessary to design the underlying network, specifically the topology of the network. There are two network topology options:

- Greenfield/Scorched Earth Network Topology; or
- Scorched Node Network Topology.

#### 5.3.5.1 *Green-field network topology*

This option means that the topology of the network can be created as it is required to provide the number of lines and traffic demanded by doing it at least cost. Applying a Greenfield option network topologies may differ from a Notified Operator's actual network depending on the number of underlying lines and traffic,

Typically, as incumbent operators have developed their network over many decades, in essence it locks them in so that they evolve and change configuration slowly and in a predictable way. As an example, it would be possible to replace many hundreds of circuit switches with fewer switches – and the cost of building such a network from scratch would be much lower. However, it is almost impossible to redesign a huge network with millions of subscribers from scratch.

This network topology is mainly used in bottom-up modeling.

#### 5.3.5.2 *“Scorched node” network topology*

Applying the scorched node network topology, changing the location of existing network nodes is not allowed. Network exchange sites are a product of the evolution of the network. The topology of a digital network may be vastly different from that of a mainly analogue one, but once exchanges are built it is difficult to decommission them. In the basement of exchange buildings is a cable chamber in which cables enter the building. Relocating an exchange would mean recabling streets which is very expensive.

##### *Geographical and logical scorched node*

Under a geographical scorched node network the geographic location of the nodes of an operator's existing network are not allowed to change. By this we mean that exchange and transmission nodes remain in their existing geographic location. The geographic topology of the network is not allowed to change. However, existing equipment can be replaced with equipment of smaller capacities.

Under a logical scorched node network the logical location of equipment of an operator's existing network are not allowed to change. This means that exchange and transmission equipment remain in their existing geographic location. Each piece of equipment in an operator's network will have a unique (logical) identification, and the logical topology of the network is not allowed to change. Each piece of existing equipment must remain in its present location. Though, existing equipment can be replaced with equipment of smaller capacities.

**TRA's Decision:**

**5.19 The TRA is satisfied that the geographic scorched node approach should be applied as the underlying network topology of the LRIC model.**

### 5.3.6 Equipment optimization

Equipment Optimization can include both efficiency and equipment optimization (optimal capacity and utilization). In other words, the process of equipment optimization should only be adopted if it also lowers costs.

**TRA's Decision:**

**5.20 The TRA is satisfied that when constructing the LRIC models the principle of equipment optimization has to be applied resulting in lower costs.**

#### 5.3.6.1 Efficiency

According to the ERG's common position<sup>4</sup> identifying different types of costs and attributing them to services or network components should be based on the principle of efficiency.

In a telecoms market where a monopolistic situation exists, it is important to assume that the cost to provide regulated services should be modeled based on the operations of an efficient operator. The underlying assumption is that a monopoly is not efficient in itself, and that the competition should not have to pay for inefficiencies.

Therefore, the consideration of efficiency is a key aspect of the application of the LRIC methodology, and must be carefully considered in the calculation of interconnection charges.

Where regulators have concerns about the efficiency of an operator, it is possible to commission a study to analyze in some detail the required level of cost reductions to make an operator more efficient.

International comparison of the incumbent operator to other operators in other countries is a key component of inefficiency identification. However, there must be careful selection of appropriate benchmarks for such an analysis of efficiency.

#### *Redundant space*

Most exchange buildings were built/ acquired for old analogue switching equipment, which was electro-mechanical in nature and occupied a considerable amount of floor space. According to technological change the analogue equipment has subsequently been replaced with digital switches, which occupy a much smaller floor space. Some floor space became therefore redundant. However, operators face a similar problem, when replacing digital switching equipment with new digital switches.

New entrants, faced with today's switching technology, would build smaller exchange buildings. If operators were allowed to recover the cost of (now) redundant floor space, this could distort the build-buy decision and lead to inefficient entry.

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<sup>4</sup> ERG Common Position C (2005) 3480

**TRA's Decision:**

**5.21 The TRA is satisfied that any floor space which is found to be surplus due to the introduction of modern technologies and exists in an exchange building containing operational switching equipment, should be valued at a NRV of zero, except where it can be shown that it is economically rational to maintain such vacant space.**

### **5.3.6.2 Capacity and Utilization**

The cable and duct network is an area where any operator typically has significant spare capacity. But it should be noted that it would not be economically reasonable to provide cable and ducting just for the traffic levels expected for the next few years. It would be much more costly to increase capacity by adding cables every few years than to provide sufficient capacity for a longer time frame (say 15-20 years). For this reason current levels of spare capacity are usually treated as efficient.

Similarly, in the switching and transmission equipment used, it is necessary to have a certain degree of spare capacity, and the utilization of this equipment will always be less than 100%. Again, the TRA would need to review the current levels of network utilization and decide whether these are appropriate.

Therefore the TRA is satisfied that the Notified Operator should provide justification for the utilization levels achieved, and allowance should be made for many factors including:

- impact of customer churn (especially where competition is developing);
- need to provide for growth;
- need to upgrade equipment as technology develops;
- need to offer suitable levels of service;
- distribution of customer density that must be served.

### **5.3.7 HCCs and equipment optimization**

It is important to note that costs that are entered into the model should have been subjected to adjustments (efficiency and capacity adjustments) for equipment optimization. This optimization must not just apply to fixed assets but must flow through to operating expenditure. To ensure this optimization effect flows through to all assets and operating expenditure affected by the optimized asset it is helpful to consider costs in further sub-categories:

- Primary Plant;
- Secondary Plant;
- Operating Expenditure; and
- Overheads.

### **5.3.8 Cost volume relationships (CVRs)**

#### **5.3.8.1 Definitions**

CVRs are the basis of calculating incremental costs, because CVRs:

- specify all variable costs;
- specify all fixed costs;
- specify all common and joint costs; and
- show how individual costs vary with underlying cost drivers.

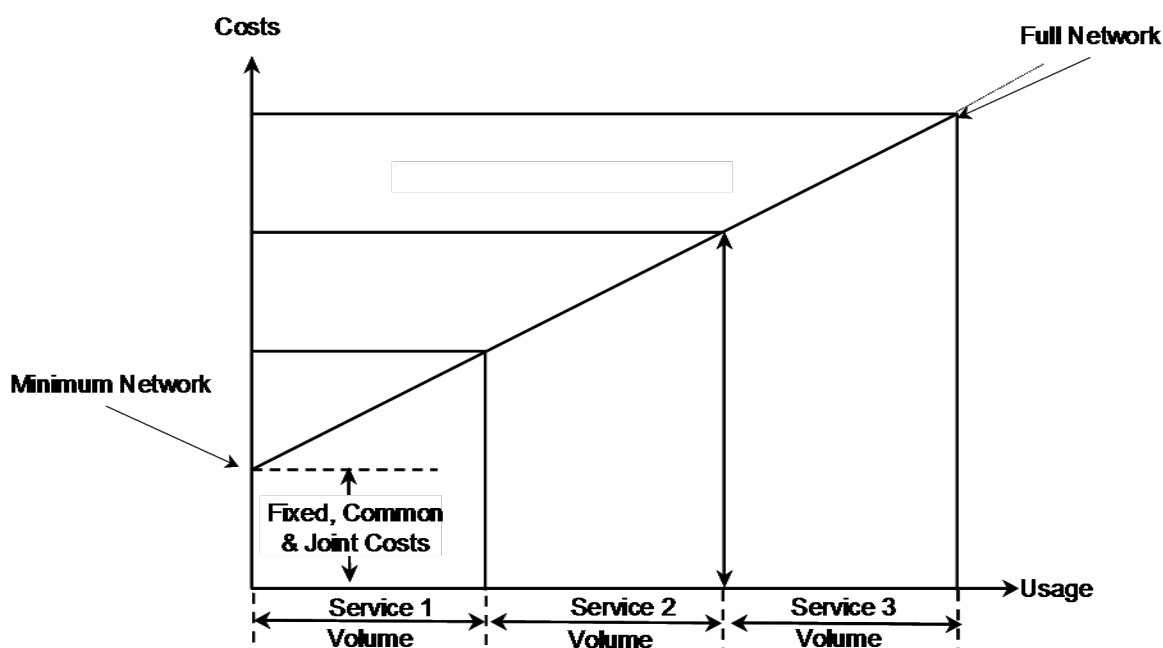
In particular, CVRs reveal the relationship of costs and the underlying cost driver volumes. In turn, cost driver volume is driven either by the demand for lines or the demand for calls. For example, the driver for the cost item “transmission nodes” is the number of transmission circuits. The more transmission circuits required between transmission nodes the greater is the associated cost. What drives the number of circuits between nodes is the amount of traffic. By varying the amount of traffic, carried over the network it is possible to trace the impact on the number of transmission circuits and thus the cost of transmission nodes.

**Variable Costs (VC)** are costs that vary with the cost driver. For each HCC, variable costs are allocated to an NC based on the volume of that cost driver allocated to that particular component

**Component Specific Fixed Costs (CSFC)** are fixed costs, which can be directly attributed to a particular component.

Finally, a **Common and Joint Cost (CJC)** is also a fixed cost, but it is common to two or more components. Telephone switches have CJs in the form of racks. These switch card housing equipments cannot be allocated to components in a meaningfully causative way. There are several reasons for identifying very specific network components, one of them is trying to reduce the proportion of costs that are common and joint. Common and Joint Costs are discussed in detail in later.

A simple CVR is illustrated in the Figure 5.3 below. The cost driver of the illustrated cost category is square metres. The costs can be attributed to 3 different services (Service 1, 2 and 3). Cost driver volumes are obtained by floor space occupancy surveys, which are periodically undertaken by operators.



**Figure 5.3: A simple CVR**

A **minimum network** for fixed line operators is defined as one in which it is possible to make or receive a call from any telephone currently connected to the network in question. In this simple example it is useful to consider it as one in which it is possible to make or receive a call from any telephone currently connected to the network in question. This requires at least one line card to be located in each concentrator and each concentrator to be connected to a local exchange. As a result there is a minimum requirement for exchange buildings.

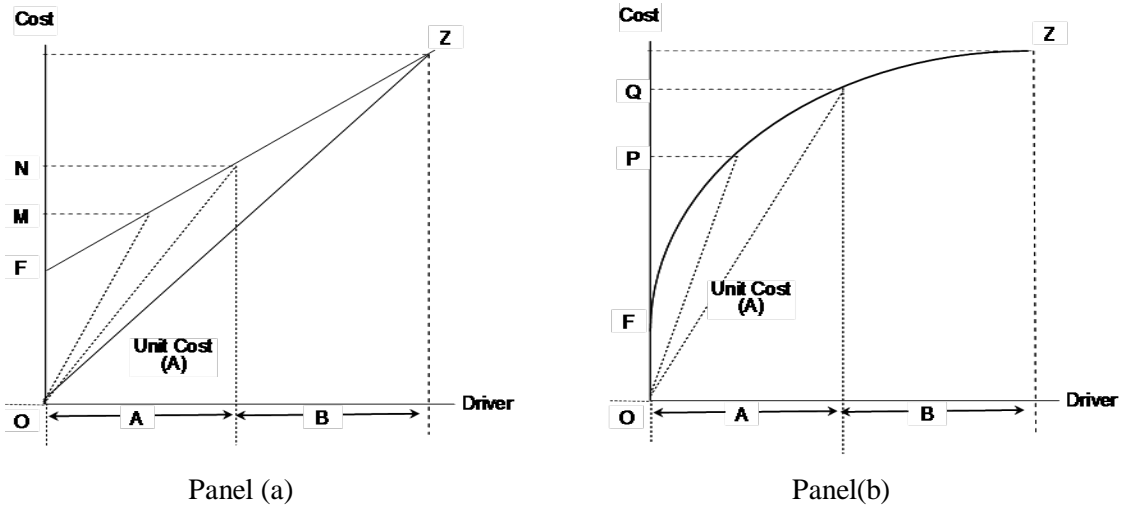
The **full network**, however, is a network designed to carry existing traffic levels. It requires more local exchanges and as a result more exchange buildings are needed.

**TRA's Decision:**

**5.22 The TRA is satisfied that a minimum network for fixed line operators is defined as one in which it is possible to make or receive a call from any telephone currently connected to the network in question.**

**5.3.8.2 Economies of scale and the CVRs**

The two graphs below (Figure 5.4) illustrate the impact of economies of scale on CVRs. Panel (a) shows how the inclusion of Fixed, Common and Joint Costs affect unit costs. As the line FZ reveals, it leads to unit costs falling as volumes increase. Without fixed costs, unit costs remain constant throughout (as shown by line OZ).



**Figure 5.4: The impact of the inclusion of fixed, joint and common costs on the CVRs**

Panel (b) shows the impact of purchasing power as volumes increase. Purchasing power is the ability of larger operators with larger gross investment plans to negotiate better prices from suppliers. This leads to a non-linear/convex cost-volume relationship with unit costs falling at a faster rate as volume increases. Since purchasing power is usually present in telecommunications plant purchasing, all CVRs are expected to exhibit a non-linear relationship. If the CVR is a straight line, it should be fully justified with details of why no economies of scale/scope/purchasing power exist.

**TRA's Decision:**



**5.23 The TRA is satisfied that the CVRs should be convex relationships capturing the effects of purchasing power and/or economies of scale/scope. If CVRs represent a straight line relationship, it should be documented sufficiently why purchasing power and/or economies of scale/scope have no effect on the shape of CVR.**

### 5.3.8.3 *The construction of CVRs*

For the construction of CVRs one or more of the following methodologies are used:

- engineering models (also called simulation models);
- statistical surveys; and
- interviews (on-site research).

#### *Engineering models*

Engineering models are used to construct CVRs for plant such as exchanges and transmission switches. They are bottom-up simulation models, which use engineering relationships and algorithms to model how costs will vary as volumes change.

#### *Statistical surveys*

Statistical surveys are mostly used to calculate the length of duct networks and average number of bores per kilometre of duct (to generate bore kilometres in the network). These surveys require the examination of network records and statistics and will generate the number of bore kilometres required under a minimum network and a full capacity network.

#### *Interviews, on-site research*

Interviews/field research are primarily used to gather information on operating costs such as maintenance costs. For example, field research will focus on discussing with engineers on the costs associated with service volumes for specific switching equipments.

#### **TRA's Decision:**

**5.24 The TRA is satisfied that the CVRs should be constructed using one or more of the following:**

- engineering models,
- statistical surveys and
- interviews.

**Furthermore, the TRA is satisfied that all models and research documentation related to construction of CVRs should be submitted to the TRA. The detail of the data submitted to the TRA should be kept within the relevant specifications according to the statistical parameters fed into the costing model.**

### 5.3.8.4 *Dependent and independent HCCs*

There are two types of HCCs:

- Independent; and
- Dependent.

#### ***Independent cost categories***

Cost drivers of independent cost categories are directly linked to the demand for lines or the demand for calls. In the case of independent cost categories, volumes can be gathered directly from the undertaking's management systems.

#### ***Dependent cost categories***

Cost drivers of dependent cost categories are linked indirectly to the demand for lines or calls. An example is exchange maintenance costs. The cost driver for exchange maintenance costs is the amount of working hours associated with maintenance, which is a function of the number of lines and the amount of traffic. If it was classified as an independent HCC, then specific volumes would have been derived for the network components.

In case of dependent cost categories, volumes have to be calculated based on the LRIC of the cost category they depend on. Considering the example of office buildings. Office building costs depend on square metres of the buildings, which depend on personnel numbers. Personnel numbers are related to pay costs (or rather, pay costs are related to personnel numbers). Hence it is possible to construct a cost-volume relationship in which pay is the cost driver for office building costs.

The natural sequencing order in calculating LRIC is that first the LRICs of all independent cost categories have to be calculated. Then using these independent LRICs the volumes and LRICs of dependent cost categories can be calculated.

#### **TRA's Decision:**

**5.25 The TRA is satisfied that it should be clearly identified whether HCCs are independent or dependent. If they are dependent, CVRs upon which they depend on should be documented. Furthermore, equipment optimization must flow through all areas of the network (from HCC to HCC and from CVR to CVR), where the optimization of one area impacts another.**

### **5.3.9 Data of network operation and traffic data**

#### **5.3.9.1 Traffic data**

Traffic data should be given for the base year, and for the next two years, to ensure capacity is correctly forecasted.

#### **TRA's Decision:**

**5.26 The TRA is satisfied that the traffic data should be consistent with the base year of the audited financial statements, with forecasts provided two years forward to ensure CVRs anticipate the correct capacity.**

### 5.3.9.2 Routing factors

After the annual cost of each network component has been calculated, which has to be recovered through interconnection charges, the next step is to convert the cost of NCs into a per minute charge (or per unit charge). No service or business unit (wholesale or retail) uses a whole network component on its own, and therefore the cost of each component has to be divided by the volume of traffic of the NCs using it to get the cost on a per minute basis.

With the help of routing factors, which is a simple matrix showing average use of each NC by each service. The cost of a particular service can be calculated by summing the relevant costs of a service from every NC, considering the minutes, how long the service has used those NCs.

The figure below gives a simple illustrative example of how to calculate the LRIC of a service.

Panel A shows a matrix of routing factors. This matrix captures how often services use the different NCs and also the volumes of traffic on these services (minutes).

Using Panel A the total demand is calculated for each NC, by simply multiplying the routing factors by the traffic of services, and summing it for each NC. Panel B illustrates how the incremental cost per minute is calculated using total component demand – the incremental cost per component is divided by total component demand.

Finally, the last of the panels (Panel C) reflects how we get the incremental cost of service per minute. Taking the routing factors from Panel A and multiplying them by the incremental cost per minute for each NC, and sum up for each network service (Figure 5.5).

**Panel A**

Services	Traffic (million minutes)	Routing Factors		
		NC1	NC2	NC3
<b>S1</b>	<b>5000</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>S2</b>	<b>8000</b>	<b>1,5</b>	<b>1</b>	<b>1,5</b>
<b>S3</b>	<b>4000</b>	<b>2,5</b>	<b>2</b>	<b>2</b>

**Panel B**

Services	Traffic (million minutes)	Incremental cost per NC minute		
		NC1	NC2	NC3
<b>S1</b>	<b>5000</b>	<b>5000</b>	<b>10000</b>	<b>15000</b>
<b>S2</b>	<b>8000</b>	<b>12000</b>	<b>8000</b>	<b>12000</b>
<b>S3</b>	<b>4000</b>	<b>10000</b>	<b>8000</b>	<b>8000</b>
<b>Total NC demand</b>		<b>27000</b>	<b>26000</b>	<b>35000</b>
<b>Incremental cost</b>		<b>30000</b>	<b>50000</b>	<b>100000</b>
<b>Incremental cost per minute</b>		<b>1,11</b>	<b>1,92</b>	<b>2,86</b>

**Panel C**

Services	NC1	NC2	NC3
S1	1,11	3,85	8,57
S2	1,67	1,92	4,29
S3	2,78	3,85	5,71

*Figure 5.5: Routing factor matrix and incremental cost per unit*

The traffic volumes that are used in the above calculation are total traffic volumes including interconnection traffic. If a standard set of interconnection charges is to be set for a given period of time, then the traffic volumes must be the forecasted traffic volumes over the period. Similarly, the cost of each NC must be the forecasted cost over that period.

**TRA's Decision:**

**5.27 The TRA is satisfied that base year routing factors should be used with base year volumes. In cases where interconnection rates are set for a specific time period the routing factors and associated volumes should reflect this. The model documentation should provide supporting information of the statistical validity of traffic volumes. Routing factors should be consistent with the relevant traffic volumes provided.**

### 5.3.10 Fixed, joint and common costs

#### 5.3.10.1 Definitions

Two types of **fixed costs** can be distinguished: Component Specific Fixed Costs (CSFCs) and Common and Joint Costs (CJs):

- CSFCs are fixed costs that can be directly attributed to a particular NC.
- CJs are fixed costs that are common (or span) to two or more NCs.

**Common costs** are those costs that can not be directly allocated to NCs. They are common to two or more activities. They can therefore only be removed by stopping all of the activities to which the costs are common.

**Joint costs** are costs, which occur where an input produces two or more separable outputs in fixed proportions irrespective of volume.

#### 5.3.10.2 The joint and common costs of fixed line network operators

Operators usually produce more than one service and due to this costs might be common to two or more services.

Cost can be defined from different perspective. If we define LRIC from a retail/wholesale service perspective, then there will be lots of common or joint costs. However, if we calculate LRIC from a NC perspective, then the amount of costs that are common or joint will be greatly reduced. In the latter case costs will be only considered common or joint if they span two or more NCs. This is likely to be the case for support plant such as power supply equipments and air conditioning.

**TRA's Decision:**

**5.28 The TRA is satisfied that the percentage of common cost must be documented for each HCC including an explanation about what these costs are common to.**

### 5.3.11 Mark-up

When LRIC is calculated it does not cover all costs. Indeed, setting interconnection charges equal to LRIC will lead to sustained losses since no contribution to common costs is captured. Therefore in order to cover common costs a mark-up has to be added to LRIC. A first best

economic solution is for prices to be equal to long run marginal cost. Since this is not possible, a second best solution is Ramsey pricing.

Usually, the increased output gives not rise to proportionally the same increase in common costs. Even if the volume of output of services grows, the common cost may arise, but it is not possible to find dependence of the increase of common costs upon the increase of the volume of output. In this case there is no direct allocation of common costs to certain services, they must be divided between several services. There are a number of methods to allocate common costs. The most important methods are the following:

### ***Ramsey pricing***

In this method the allocation of common costs to different services depends on the impact of tariff changes of the product on the undertaking's profitability. Ramsey Pricing essentially allows for differentiated mark-ups to be applied according to services with various elasticities of demand. If a service has a high elasticity of demand, the mark-up should be lower since the level of demand is more sensitive to price. The services with low demand elasticity are more resistant to the increase of price and that's why the majority of common costs are allocated to these services. Therefore, in order not to lose the client only a small part of common costs is allocated to the services with high demand elasticity.

Ramsey pricing, however, has a number of weaknesses when implemented in practice. First of all, price elasticities are very difficult to estimate and verify. This is of special concern since an operator operating in both competitive and regulated markets will have a strong incentive to attribute a disproportionate amount of the common costs to the regulated products. Price elasticities would also be likely to vary over time, with price, and be dependent on the level of competition in various segments of the market. Also multiple price elasticities could occur depending on the intended use of the product. The method therefore faces a number of operational difficulties.

Secondly, it may seem unfair that consumers should bear a larger burden of the costs just because they are so dependent on provision of the services or have so few alternatives that their demand is not very sensitive to the price.

Finally, it is not always clear how to estimate demand elasticities for access and interconnection services, since these services are sold to other operators reselling and re-packaging the services to end-users with very different demand elasticities.

### ***Equal Proportional mark-up (EPMU)***

Another way of recovering common costs is to apply the EPMU method. In this method the common costs are allocated to the separated services or products in proportion to the incremental costs already allocated to these services or products. This means that for each service the percentage of incremental costs is calculated, which is directly connected with this service and then the same percentage of common costs is allocated to this service. Therefore, there is no distortion introduced to the incremental costs.

This kind of method of allocation does not reflect the real service contribution in common costs, however it is easy to implement and does not create any distortion in the proportion of the incremental costs of different network elements. This method is quite easy to apply and is very often used.

For example, if in a model with two increments – access, and interconnection - the LRIC of access is EUR 6 million, and of interconnection EUR 4 million, with common costs of EUR 2 million, then the mark-up would be set at 20% ( $=2 / (6+4)$ ) and common costs would be split between access and interconnection accordingly, i.e. EUR 1,2 million for access and EUR 0,8 million for interconnection.

**TRA's Decision:**

**5.29 The TRA is satisfied that the mark-up mechanism used should be EPMU.**

## 5.4 Other Issues

### 5.4.1 Cost accounting depending on daytime/weekday

The level and structure of interconnection charges should be related to the costs of providing interconnection. Interconnection charges that are not firmly based on cost can distort the build-buy decision of competing operators and may lead to excessive duplication of infrastructure and facilities or inefficient entry.

However, there are two reasons why interconnection charges should not only be based on cost, but also reflect the structure of retail tariffs.

- If interconnection charges were based only on cost, a potential difficulty arising because of the fact that retail tariffs may not reflect underlying costs. In this case opportunities for competitive entry would be determined by distortions in retail tariffs rather than competing operators being more cost efficient. Wholesale interconnection charges that ignore such distortions can lead to inefficient entry and bypass because they create opportunities for 'cherry picking'<sup>5</sup>.
- Any T-D costing system will calculate an average 24 hours a day, 365 days a year cost. Though, many operators' retail tariffs vary by time of day and day of week. These retail time-of-day gradients are a form of capacity charging in order to ration busy hour traffic to equal busy hour capacity. Setting interconnection charges based on a 24 hour a day, 365 day a year average cost could lead to busy hour traffic exceeding busy hour capacity, dramatically decreasing the grade of service on the network.

In order to reflect the structure of retail tariffs, incremental cost based fees should be defined in a manner, that the weighted average of the fees equals the calculated fee, while their quotient equals the weighted average retail tariff gradient.

### 5.4.2 Model requirements

T-D models are often extensive, complex and not transparent enough. However, the complexity (plus the lack of transparency) is often unwarranted. When building the T-D model, a separate aim should be to make the model as transparent as possible. In many cases it may for example

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<sup>5</sup> Cherry-picking is a business term used for selecting only the best, choosing the most lucrative, advantageous, or profitable among various options. In the telecommunication industry this means that the undertaking focuses on customers, who can be served profitably – taking into account the cost to serve or/and the profit made on those customer segment.

be possible to build the model using standard-software such a MS Excel, Visual Basic or Access.

The model should have the flexibility to examine the impact of a change in:

- Equipment prices;
- Utilization Rates;
- Cost of capital;
- Volumes;
- Annualization methodologies;
- The inclusion/exclusion of fully depreciated assets;
- Asset lives; and
- Price trends.

### **5.4.3 Documentation of the model**

Operators must provide adequate and detailed documentation to support their model submission. In particular, the documentation of the model should allow a third party to gain a complete understanding of the model's assumptions, methodology and calculations.

LRIC models submitted by the Notified Operator must be supported by the following documentation:

(a) Comprehensive Model documentation consisting of the following:

(1) User Manual containing:

- Methodological overview (including input/output flowchart of the model);
- Opening the model;
- Dataset selection;
- Editing data;
- Model run options; and
- Model output.

(2) Detailed explanations for each engineering sub-model including planning rules used (i.e. busy hour traffic per urban residential subscriber, equipment utilization, etc.).

(3) A Non-Technical Functional Specification (NTFS). The NTFS must contain a complete logical description of the Business Layer including numerical examples.

(4) A detailed description and results of the test of the model.

(5) If the model was developed by an independent third party, then a written third party consent allowing the TRA and the TRA's third party advisors access to the Model.

(b) Auditor's letter verifying the source of the Historical Cost Accounts that form the basis for the first MEA revaluation are an operator's latest set of audited financial accounts;

- (c) Auditor's letter agreeing to the two sets of MEA revaluations;
- (d) Auditor's letter agreeing to the two sets of CCA-FCM accounts; and
- (e) Letter(s) of consent from any third party advisors to the Notified Operator permitting access by the TRA and its third party advisors to any reports or models prepared by the third party in support of the Operator's model submission.

***The documentation of HCCs***

HCCs should be clearly documented, describing the following parameters in case of each HCC:

- the name of the HCC;
- the cost type of the HCC;
- dependent or independent; and
- the CVR(s) which drives the HCC.

***The documentation of CVRs***

CVRs should be clearly documented, describing the following parameters in case of each CVR:

- the cost driver;
- the shape of the CVR;
- the amount of fixed, common and joint costs;
- the method used to derive the CVR; and
- independency or dependency.

#### **5.4.4 Audit of the LRIC model**

In accordance with the TRA's view the following elements<sup>6</sup> of the LRIC model must be covered by the audit:

- the scope of costs included in the model;
- the scope of costs allocated to individual regulated products;
- reconciliation between the cost model and statutory accounts;
- correctness of figures including: operational data: volumes, technological parameters;
- methodologies used regarding amortization, cost capitalization, allocation and evaluation of the assets;
- transfer charges in separated accounts;
- reconciliation between the cost model and the separated accounts;
- CVRs and
- accounting system information.

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<sup>6</sup> Also referred to by the ERG Common Position C (2005) 3480



**TRA's Decisions:**

**5.30 The TRA is satisfied that when building the T-D model a separate aim should be to make the model as transparent as possible.**

**5.31 The TRA is satisfied that operators should provide adequate and detail documentation to support their model submission in such a way that can be thoroughly understood by a third party in accordance with Section 5.4.3.**

**5.32 The TRA is satisfied that it should have full access to the Notified Operator's cost model at the Notified Operator's premises. Furthermore, the Notified Operator should provide any kind of data related to the model if requested to do so by the TRA. The TRA will put in place such measures so as to protect the security of competitively/commercially sensitive information.**

**5.33 The TRA is satisfied that it should have access to and be able to review all parts of the cost model. Finally, the TRA is satisfied that the cost model should be audited within the framework of regulatory statements audit.**

**5.34 The TRA is satisfied that the audit of the LRIC model should cover the areas described in Section 5.4.4. of this document.**

## **6 Regulatory Separated Accounts – Format and Associated Timeframes**

### **6.1 Detailed Accounting Separation Methodology**

Prior to submission of the Separated Regulatory Accounts for the first period a one-off document, detailing the Accounting Separation Methodology to be adopted, should be issued by the Notified Operator and provided to the TRA for approval prior to the submission of the licensee's Separated Accounts. This is to ensure that the methodology to be adopted for preparation of the separated accounts is in-line and meets the requirements of the Telecommunications Law and regulations that any be in force at the time. The Accounting Separation Methodology Document shall include, but not limited to, the following:

- Regulatory Accounting Policies to be followed
- Level of separation – Markets upon which separate accounts shall be provided
- Attribution Methodologies for Costs, Revenues, Capital Employed
- Transfer Charging calculation methodology and format of reporting
- Current Cost Accounting and general Accounting Policies
- Current Cost Accounting valuation methodologies and model definition
- Overall Costing Model definition & structure

The methodology document shall be updated on an annual basis in accordance with modifications/ amendments approved by the TRA.

### **6.2 Documents**

The Notified Operator for which an Accounting Separation obligation has been imposed for all of the defined Markets is obliged to prepare and submit Separated Regulatory Accounts to the TRA, following an audit by independent external auditor. The Notified Operator must submit to the TRA the following documents:

1. Audited Separated Regulatory Accounts
2. Accounting Documents
3. Detailed Attribution Methodology (DAM)

#### **6.2.1 Audited Separated Regulatory Accounts**

The Separated Regulatory Accounts shall be prepared in accordance with the Accounting Documents. These must include the following:

1. Basis of preparation
2. Audit Opinion by independent auditor
3. Profit & Loss (Income) Statement per Market

4. Balance Sheet Information per Market
5. Return on Capital Employed per Market
6. A summarized table of all Transfer Charges between the different Markets
7. Statement of Network Costs
8. Reconciliation between the aggregate turnover, operating and other costs, profit before taxation and mean capital employed of all the Relevant Markets and the turnover, operating and other costs, profit before taxation and reserves of the Operator as disclosed in the Statutory Financial Statements prepared under current regulations of the Sultanate, that shows possible differences and adjustments among them.

Suggested formats for the Separated Regulatory Accounts are included in Appendix B of the Framework Document.

### **6.2.2 Accounting Documents**

The Separated Regulatory Accounts shall be prepared in accordance with the Accounting Documents, which set out the framework under which the statements are to be prepared in accordance with the Accounting Separation Methodology Document approved by the TRA. The Accounting Documents shall be made up of the following:

1. **Regulatory Accounting Principles** – which means the principles applied or used by the Operator in the preparation of the Separated Regulatory Accounts, for example that all costs should be fully allocated.
2. **Attribution Methods** – which means the practices used by the Operator to attribute revenue (including appropriate Transfer Charges), costs (including appropriate Transfer Charges), assets and liabilities to activities
3. **Transfer Charges** – which means the methodology employed by the Operator which enables an activity to use a service or good from another activity and to account for it as though it had purchased that service or good from an unrelated party (including accounting for it at an appropriate amount).
4. **WACC methodology** – that includes details of the key assumptions and parameters adopted in the generation of the WACC rates.
5. **Accounting Policies** – which means the manner in which the Accounting Standards and the accounting policies whenever not superseded by the Regulatory Accounting Principles, are applied by the Operator in each of the Separated Regulatory Accounts. This document details the accounting policies adopted in preparing the underlying financial information.

Going forward (i.e. for years ending 31.12.2010 and onwards), the accounting documents shall also include:

6. **Revaluation Methods** – this includes details of the methodologies (absolute valuation, indexation, historic) adopted to revalue key asset classes into current costing in accordance with guidance provided in the current Framework document.

### **6.2.3 Detailed Attribution Methodology (DAM)**

The Detailed Attribution Methodology (DAM) document describes in more detail the methods of attributing costs, revenues, assets and liabilities. More specifically the DAM includes details on driver description and purpose, sources and destinations, the procedure for the driver preparation and the data sources.

Providing there is no conflict with any of the Accounting Documents or Regulatory Financial Reporting Conditions or Regulatory Decisions, the DAM is used to prepare the Separated Regulatory Accounts, including the Profit and Loss Account, Statement of Mean Capital Employed and the Statements of Costs, together with relevant notes.

## **6.3 Independent Verification/ Appointment of Auditors**

The Notified Operator should arrange for the procurement of an independent audit opinion on a “fairly presents in accordance with the accounting document” basis. The audit opinion and accompanying report has potentially high value in enhancing the quality, objectivity and credibility of the information presented. Users’ confidence of the financial statements is significantly enhanced by the presence of an independent audit. All audit work carried out on the Separated Regulatory Accounts, shall be at the expense of the Notified Operator. The TRA has decided that only for the first year of submission of the Separated Regulatory Accounts, a “properly prepared in accordance with the accounting document” audit opinion could be provided.

From the TRA perspective it is important that the audit is performed to high standards and the resulting opinion is also at a level appropriate to the information presented. It is also for the TRA to establish whatever relationship is appropriate with the auditor. The following points must be noted:

1. The Notified Operator shall appoint suitably qualified auditors to carry out the audit of the Separated Accounts and notify the TRA of the appointment. The TRA may invite the auditors to discuss procedures to be applied by them in performing the audit or to discuss the auditors’ findings following performance of the audit. The TRA may require the operators to instruct their auditors to perform additional or alternative work to substantiate the statements and assertions contained in the Separated Accounts and to further report on this additional work;
2. All audit work carried out on the Separated Accounts, whether by auditors selected and appointed by the operators or by the auditors selected and appointed by the TRA shall be at the expense of the operator;
3. The auditor shall plan and carry out such work as will enable them to report whether or not any matter has come to their attention, from the work carried out by them which causes them to believe that the Accounts do not in all material respects:
  - a) Present fairly or properly in accordance with the accounting methodologies that are to be attached to the Accounts, the results, mean capital employed and costs incurred by each of the businesses and activities disclosed in the Accounts;
  - b) Comply with any relevant regulation, decision or determination issued by the Authority; or

- c) Contain the information specified by these guidelines, decisions or determinations as required to be published in the Accounts;
4. The auditor shall address their report to the operator's corporate entity and this report will be attached to, but will not form part of, the Separated Accounts submitted to the Authority by the operators from time to time;
5. Where any matters have come to the auditor's attention, these matters shall be clearly described in their report together with, where reasonably possible, the potential monetary impact on the results, mean capital employed or costs incurred by each of the businesses and activities disclosed in the Accounts, or a statement that the estimation of the potential monetary impact is not reasonably possible to establish;
6. The auditor's report shall clearly set out the respective responsibilities of the auditor and the operator and the basis on which the audit has been carried out and the opinion arrived at;
7. In accordance with international practice, the TRA may also appoint its own auditor to carry out such further reviews, examinations and audits for its behalf as it deems necessary should the operator or its auditors fail to provide the information required and hence the degree of assurance required by the TRA or should the TRA be of the opinion that the nature, timing or extent of the audit carried out would still be inappropriate.

## **6.4 Timeframe for publications of Separated Regulatory Accounts**

In accordance with what was mentioned before, the Notified Operator for which the Accounting Separation (AS) remedy/ obligation are imposed, are obliged to prepare Separated Regulatory Accounts which need to be audited, approved by the TRA and subsequently published.

In order for Accounting Separation to be effective, the information provided should be timely. Unnecessary delays in the provision of the regulatory accounts would defeat the purpose of producing such accounting information.

After reviewing submitted comments on issues raised on this Framework Document, the TRA will issue the Accounting Separation, Regulatory Accounting and Information Reporting Framework Documents and associated regulations.

The TRA understands that sometimes the Notified Operator will have to change its systems, processes, methodologies in order to comply with the above-mentioned Markets. In such cases, the TRA requires that the Operator inform the TRA in advance of these changes in order to obtain approval from the TRA and avoid potential misunderstandings. Furthermore, the TRA appreciates that especially the first year of implementation and generation of Accounting Separation results will be resource demanding and welcomes any necessary discussions with the Notified Operator's in order to ensure that the TRA's requirements are reasonably met. However, the TRA may undertake further investigations as it deems necessary.

The Notified Operator will have three (3) months from the day of the publication of the TRA Regulation on Accounting Separation and Regulatory Accounting to submit the Accounting Separation Methodology document to the TRA for approval.

The Notified Operator will have one (1) year from the day of the publication of the TRA Regulation, to submit their audited Separated Regulatory Accounts, based on their Top-Down

FDC/ HCA costing model, for the year ending 31.12.2009 along with all the relevant documentation as was described before.

For the calendar years ending 31.12.2010 and onwards the Notified Operator shall submit their audited Separated Regulatory Accounts along with all relevant documentation based on their Top-Down FDC/ HCA as well as on their Top-Down FDC/ CCA costing models. Furthermore, the Notified Operator shall also submit to the TRA results from their Top-Down LRIC model.

For calendar years ending 31.12.2010 and onwards, the Notified Operator’s audited Separated Regulatory Accounts shall be submitted along with any other documentation as defined above to the TRA, within six (6) months after the year end i.e. by no later than the 30<sup>th</sup> day of June of each year.

Table 6.1 below provides key submission dates:

<i>Submission date</i>	<i>Separated Regulatory Accounts and relevant documentation based on costing system</i>	<i>For the Calander Year Ending 31st of Dec</i>	<i>Comments</i>
3 months after Regulation issuance	Accounting separation methodology document		
One year after decesion	Top- Down FDC/HCA	2009	Top-Down FDC/HCA costing model ready
Six months after calendar year end	Top-Down FDC/HCA, FDC/CCA & LRIC Results	2010	Top-Down FDC/CCA costing model and LRIC model ready
Six months after calendar year end	Top-Down FDC/HCA, FDC/CCA & LRIC Results	2011	Top-Down FDC/CCA costing model and LRIC model ready
.....	.....	.....	

***Table 6.1: Timeframe for publication of Separated Regulatory Accounts & Costing Systems Implementation***

## **6.5 Transparency/ Publication of Regulatory Financial Accounts**

Regulatory accounting information has a potentially wide range of interested parties including competitors (both actual and potential), investors (actual and potential), consumers as well as the TRA. These interested parties have legitimate interests in the financial statements and a clear understanding of the basis on which they have been prepared.

The TRA may request detailed financial information at any time from all the operators as may be reasonably required. This information may be published, if the TRA considers it would contribute to an open and competitive market, subject to the consideration of its commercial confidentiality. Issues of commercial confidentiality are especially significant for private limited and unlisted public limited companies, as they have no statutory duty to publish their accounts. In principle, it is best practice to publish, in full, the regulatory financial statements, supporting notes and detailed methodology and process documentation. However, full disclosure may be constrained by national legislation and the need to take account of commercial confidentiality.

The publication of financial information at a sufficiently detailed level would increase the confidence of operators that there is no undue discrimination between the internal and external provision of services by the Notified Operator, and would make transparent the relationship between interconnection charges and costs. However, some information is of confidential nature, the publication of which may harm the business viability of the operators. The determination of an appropriate balance between contribution to an open and competitive market, and the commercial confidentiality of the information shall be made by the TRA after consultation with the stakeholders.

The TRA appreciates that certain information provided under the AS and RA obligations/remedies may be commercially sensitive in nature. As a result, the TRA's decision is not to make publicly available the Separated Regulatory Accounts and relevant information for the first year (i.e. y/e 2009). This initial decision will be reviewed in consultation with the Operators once the first version of the Separated Regulatory Accounts is produced. The TRA reserves the right to review its position in light of prevailing circumstances.

## **6.6 Separated Regulatory Accounts Format**

The proposed Separated Regulatory Accounts format can be found in Appendix B of this Framework Document.

### **TRA's Decisions:**

**6.1 The TRA is satisfied that the Notified Operator should submit an Accounting Separation Methodology Document to include amongst others the following:**

- Regulatory Accounting Policies to be followed
- Level of separation – Markets upon which separate accounts shall be provided
- Attribution Methodologies for Costs, Revenues, Capital Employed
- Transfer Charging calculation methodology and format of reporting
- Current Cost Accounting and general Accounting Policies
- Current Cost Accounting valuation methodologies and model definition
- Overall Costing Model definition & structure

**6.2 The TRA is satisfied that the Notified Operator should submit the following documents on an annual basis:**

- Audited Separated Regulatory Accounts
- Accounting Documents
- Detailed Attribution Methodology (DAM)

**6.3 The TRA is satisfied that the Accounting Documents should include amongst others the following:**

- Regulatory Accounting Principles
- Attribution Methods
- Transfer Charges
- Accounting Policies

**6.4 Separated Accounts shall be prepared in accordance with the Accounting Documents**

**6.5 The TRA is satisfied that the Separated Regulatory Accounts must be subject to an audit by an independent external auditor appointed by the Notified Operator following approval by the TRA.**

**6.6 Only for the first year of submission of the Separated Regulatory Accounts to the TRA, a “properly prepared in accordance with the accounting document” audit opinion could be provided. A “fairly presents in accordance with the accounting document” audit opinion shall be provided for subsequent years.**

**6.7 All audit work carried out on the Separated Regulatory Accounts, shall be at the expense of the Notified Operator.**

**6.8 The TRA is satisfied that Notified Operators will have six (3) months from the day of the publication of the TRA Regulation to submit the Accounting Separation Methodology document for approval by the TRA**

**6.9 The TRA is satisfied that the Notified Operator will have one year from the day of the publication of the TRA’s Regulation, to submit their audited Separated Regulatory Accounts, based on their Top-Down FDC/ HCA costing model, for the year ending 31.12.2009 along with all the relevant documentation as was described before.**

**6.10 The TRA is satisfied that for calendar years ending 31.12.2010 and onwards the Notified Operator will be obliged to submit audited Separated Regulatory Accounts along with all relevant documentation based on their Top-Down FDC/ HCA as well as on their Top-Down FDC/ CCA costing models. Furthermore, the Notified Operator shall also have to submit to the TRA results from their Top-Down LRIC model.**

**6.11 The TRA is satisfied that for calendar years ending 31.12.2010 and onwards, the Notified Operator’s audited Separated Regulatory Accounts shall be submitted along with any other documentation as defined above to the TRA no later than six (6) months after the year end i.e. by 30<sup>th</sup> June of each year.**



**6.12 The TRA's decision is not to make publicly available the Separated Regulatory Accounts and relevant information for the first year (i.e. y/e 2009). This initial decision will be reviewed in consultation with the Operators once the first version of the Separated Regulatory Accounts is produced. The TRA reserves the right to review its position in light of prevailing circumstances.**

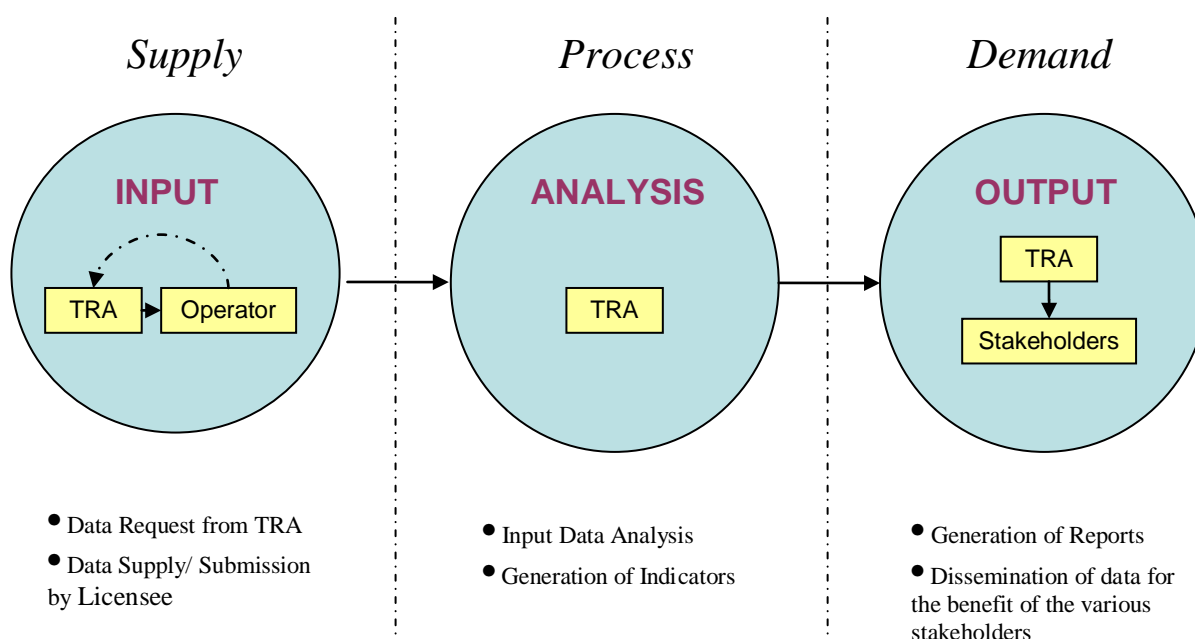
## 7 Statistical Data Reporting Requirements

The collection, analysis and dissemination of accurate and timely market information significantly enhance the design and implementation of effective and proportional market regulation.

Market information is often a central input into the TRA's decision and allows the monitoring of market developments. The publication of market information is also useful for all stakeholders to track developments in the Telecoms Sector. For the effective regulation and support of the market, regulators need to be able to possess information that will enable them to draw accurate and efficient conclusions on how the market behaves.

The TRA, in making a request for information according to the Licenses, always makes sure that no undue burden is imposed on the Licensees in procuring and furnishing such information, unless the TRA considers such information is essential to enable it to exercise its duties and functions under the Telecommunications Regulatory Act.

It is the intention of the TRA to review and improve the whole Reporting Requirement process making it more efficient and more effective. The Reporting Requirements process involves the following steps (see Figure 7.1 below):



*Figure 7.1: The Reporting Requirements Process – Steps*

The different Licensees are involved in the first step of the process. They supply the Data to the TRA based on pre-prepared Forms. Currently, the Licensees are submitting to the TRA Monthly, Quarterly and Annual Forms. The TRA publishes a Market Statistics Report on a Quarterly basis.

The TRA suggests the following improvements to the whole process:

1. **Frequency of TRA Market Statistics Report publication** – The Report will be published on a quarterly basis (every three months) and will be more extended compared to the current one;

2. **New Format of Data Collection Forms** – New formats for data collection have been generated for Class I, II and III licensees. Further description of the fields required is provided below.
3. **Frequency of Data Collection Forms** – The revised Data Collection Forms will be submitted to the TRA on a monthly, quarterly and annual basis for all Class I, II and III licensees. The monthly forms will include basic informational requests whereas the quarterly forms will be more extensive. The annual forms will include informational requests that include major network upgrades and investment decisions. The TRA will be analyzing and processing the data collected in order to generate the quarterly statistical reports.
4. .

### **7.1 Data included in new Class I, II and III Forms (Fixed & Mobile)**

The following Indicator Categories will be included in the new Forms:

<b>New Data Collections Forms for Class I Licensees - Fixed</b>	
<b>New Forms Type</b>	<b>Indicator Categories</b>
<b>Monthly</b>	Connectivity
	Text-Data Network
<b>Quarterly</b>	Connectivity/ Network
	Text/ Data Network
	Quality of Service (QoS)
	Tariff/ Prices
	Traffic
	Other
	Fixed Revenue
<b>Annual</b>	Connectivity/ Network
	Staff
	Annual Investments - Fixed
	All Quarterly Indicators

<b>New Data Collections Forms for Class I Licensees - Mobile</b>	
<b>New Forms Type</b>	<b>Indicator Categories</b>
<b>Monthly</b>	Mobile Cellular Subscribers
	network coverage
<b>Quarterly</b>	Mobile Cellular Subscribers

	Network Coverage
	Tariffs
	Traffic
	Quality of Service (QoS)
	Billing
	Network Quality as Provided for the Cell Sites Covered by Each MSC
	Network Infrastructure by MSC
	Carried Traffic & VLR Attached Subscribers during Busy Hour in each MSC
	Mobile Revenue
<b>Annual</b>	Connectivity/ Network
	Staff
	Annual Investments - Mobile
	All Quarterly Indicators

**TRA's Decisions:**

**7.1** The TRA is satisfied to collect statistical and other data from the various operators on a monthly, quarterly and annual basis in accordance with the list of data specified above.

**7.2** The TRA will amend the frequency of the publication of the TRA Market Statistics Report to a quarterly basis (every three months).

**7.3** The TRA is satisfied that statistical data supplied in accordance with the requirements set out above is treated as non confidential and publish these in a form that it considers appropriate unless clearly argued to the contrary by the relevant operators and agreed by the TRA.

## Appendix A - Cost Attribution Guidelines

Category of Operating Cost	Description	Method of Allocation
Depreciation	Depreciation	The allocation of depreciation should follow the allocation of the fixed assets to which it relates.
Provision and installation of equipment	Payroll costs	Direct to network components/other plant where possible; otherwise allocate based on the time spent carrying out installation work.
	Installation, contract and maintenance costs	Direct to network components/other plant on the basis of the plant installed or maintained where possible.
Maintenance and repair costs	Payroll costs	Direct to network components/other plant where possible; otherwise allocate based on the time spent carrying out maintenance and repair work.
	Other costs	Direct to network components/other plant where possible.
Network planning and developments costs	Payroll and external costs	Direct to network components/other plant where possible.
Network management costs	Payroll costs	Allocate to network components/other plant on the basis of the time spent by staff to manage each type of plant.
	Other costs	Allocate to network components/other plant on the basis of the plant managed, where possible.
Marketing and sales costs	Payroll	Direct to products and services where possible; otherwise allocate between products based on labor time.
	Cost of sales of equipment	Allocate to customer equipment services within "Other activities".
	Publicity Promotions Market research Distributors fees Other costs	Direct to products and services where possible. Otherwise, for those costs where multiple services are being marketed or promoted, cost should be attributed to the related services on a reasonable basis.
Billing and collection costs	Payroll costs	Direct to products and services where possible; otherwise allocate between products based on labor time.
	Other billing costs (incl. Bad debts)	Direct to products and services where possible; otherwise allocate between products based on usage (e.g. number of bills produced).

Operator services costs	Payroll costs	Direct to services where possible. The costs of staff that carry out tasks for several operator services should be allocated to the related operator services based on time spent on different tasks.
Directory services costs	Payroll and other costs	Direct to products and services.
Payments to other operators	Out-payments for outgoing international traffic	Direct to products and services.
	Payments for interconnection agreements	Direct to products and services.
Support costs	Human resources function costs	HR function costs should be allocated to the staff that are overseen by the HR function and allocated using the same basis as the payroll costs of HR staff
	Finance and other head office support functions	If related specifically to a product, service or business allocate accordingly.
	Building costs and rent	Costs should be allocated in the same way as land and buildings (see Section A2.4).
	General computing/IT costs	Allocate to the applications run by the operator on the basis of the use of the computers to support each application. Costs allocated to applications can then be attributed to those products and services that they support.

***Table A1: Operating Cost Allocation guidelines***

Category of assets and liabilities	Description	Method of Allocation
Tangible assets		
Primary Plant-		

Switching equipment	Local switching equipment	Direct to access or network components where possible. Otherwise allocate to Local Access-Network services and to network components on the basis of the relevant cost of the equipment dedicated to provide customer lines and of the parts dedicated to switch traffic, respectively. Local switch network components can be allocated to products and services based on seconds of use.
	Tandem switching equipment	Direct to network components where possible, otherwise allocate based on seconds of use.
	International switching equipment	Direct to network components where possible, otherwise allocate based on seconds of use.
	Switching equipment for special services networks	Direct to core network components where appropriate/required by regulation or to the specific services provided by other networks – e.g. data transmission switching equipment should be allocated directly to data transmission services.
	Other switching equipment	Direct to network services where possible, otherwise allocate to other switching network components on the basis of the use of the equipment
Transmission equipment	Traffic-sensitive transmission equipment	Direct to network components where possible, otherwise allocate based on the usage of circuits.
	Cable and wire	Direct to access or network components where possible, otherwise allocate to components based on the amount of cable used to provide different services.
	Local loop equipment	Direct to products where possible (e.g. separately identifiable ISDN access equipment), otherwise allocate between access services based on line usage.
	Radio and satellite equipment	Direct to network components where possible, otherwise allocate based on the usage of channels.
	Transmission equipment for special services networks	Direct to the specific non-PSTN/non-ISDN services provided by the network – e.g. data transmission equipment directly allocated to data transmission services.
	International/submarine cable	Direct to network components where possible, otherwise allocate based on usage.
Other primary network assets	Special network plant	Plant and equipment that is used solely to provide one specific service should be allocated directly to the relevant services. Examples may include: <ul style="list-style-type: none"> <li>• Intelligent networks equipment;</li> <li>• Data transmission equipment;</li> <li>• Multimedia equipment.</li> </ul>
	Customer premises equipment	Direct to products and services.
	Public payphones and related equipment	Direct to service.

Support Plant	Ducting	Ducting can be allocated to the cable and wire that it supports and allocated to products in the same way as cable and wire.
	Power equipment	Allocate to primary plant groups on the basis of the use of power equipment to support each plant– e.g. kilowatts per hour. Assets should then be allocated to products in the same way as the relevant primary plant groups.
	management systems	Allocate to primary plant of the different networks provided on the basis of the use of the systems to support each plant – e.g. time spent to control local exchanges, tandem exchanges and international exchanges. Costs should be attributed to products and services in the same way as the related primary plant group.
fixed assets	Land and buildings	Allocate to products, services and network components on the basis of the space occupied (i.e. floor space) to support each product, service or network component.
	General computers	Allocate to the applications run by the operator on the basis of the use of the computers to support each application. Costs allocated to applications can then be attributed to those products and services that they support.
	Motor vehicles	Allocate to the products and network components based on usage.
	Furniture and office equipment	Allocate to the products and network components based on usage.
Intangible fixed assets	Intangible fixed assets	Direct to products where possible. Any residual or unattributable assets will need to be allocated on an arbitrary basis, to be agreed with the TRA.
Working capital	Fixed asset investments:	
	Pure financial investments	Direct to “Other activities”.
	Investments in unrelated activities	Direct to “Other activities”.
	Other investments	Direct to the services to which the investments are related, otherwise allocate based on usage.
	Short-term investments (including cash at bank and in hand)	Direct to businesses where possible, otherwise allocate based on the operational requirements of each business.
	Stocks	Stocks should be allocated directly to products and services.
	Trade debtors/receivables	Trade debtors may be allocated to products and services based on billing system information where possible. Unattributable balances will need to be allocated on an arbitrary basis, to be agreed with the TRA.



	Other debtors/receivables	Other debtors/receivables should be apportioned to products and services if possible. Unattributable balances will need to be allocated on an arbitrary basis, to be agreed with the TRA.
	Trade creditors	Trade creditors should be allocated directly to products and services if possible. Unattributable trade creditors will need to be allocated on an arbitrary basis, to be agreed with the TRA.
	Long term provisions	Direct to the activities that give rise to the provisions in question.
	Liabilities for taxation and dividends	No allocation required. Instead average liabilities should be taken into account when considering the operational cash requirements of each business (see “Short-term investments”)

***Table A2: Capital Employed Cost Allocation guidelines***

## **Appendix B – Suggested Formats of Separated Regulatory Accounts**

### ***1. Profit and Loss (Income) Statement for Retail & Wholesale Markets***

#### **Retail Market X**

<b>Profit and Loss Statement</b>	Current Year OR'000	Prior Year OR'000
<b>Turnover</b>		
Turnover specific to Market	0	0
Other Turnover	0	0
<b>Total Turnover (1)</b>	0	0
<b>Operating Costs (2)</b>		
Operating costs specific to Market x	0	0
Operating costs - Market y	0	0
<b>Total Operating Cost (2)</b>	0	0
<b>Return (3)=(1)-(2)</b>	0	0

**Wholesale Market Y**

<b>Profit and Loss Statement</b>	Current Year OR'000	Prior Year OR'000
<b>Turnover</b>		
Turnover specific to Market	0	0
Other Turnover - Market x	0	0
<b>Total Turnover (1)</b>	0	0
<b>Operating Costs (2)</b>		
Operating costs specific to Market	0	0
Operating costs - Market x	0	0
<b>Total Operating Cost (2)</b>	0	0
<b>Return (3)=(1)-(2)</b>	0	0

## **2. Balance Sheet & RoCE Statements (Retail & Wholesale Markets)**

<b>Balance Sheet as at Dec 31 2xxx</b>	Current Year OR'000	Prior Year OR'000
<b>Fixed Assets</b>		
Tangible Fixed Assets	0	0
Intangible Fixed Assets	0	0
Investments	0	0
<b>Total Fixed Assets (1)</b>	<b>0</b>	<b>0</b>
<b>Current Assets</b>		
Stock	0	0
Debtors	0	0
Cash at bank and in hand	0	0
Other	0	0
<b>Total Current Assets (2)</b>	<b>0</b>	<b>0</b>
<b>Creditors (3)</b>	<b>0</b>	<b>0</b>
<b>Provisions for Liabilities and Charges (4)</b>	<b>0</b>	<b>0</b>
<b>Mean Capital Employed (5)= (1)+(2)-(3)-(4)</b>	<b>0</b>	<b>0</b>

<b>Return on Capital Employed</b>	Current Year OR'000	Prior Year OR'000
<b>Operating Profit/(Loss) (6)</b>	<b>0</b>	<b>0</b>
<b>Mean Capital Employed (5)</b>	<b>0</b>	<b>0</b>
<b>Return on Mean Capital Employed (%) (7)=(6)/(5)</b>	<b>0</b>	<b>0</b>

### 3. Reconciliation – Profit & Loss (Income) Statement

<b>For the year ended 31 December 20XX</b>			
	<b>Turnover</b>	<b>Operating &amp; Finance Cost</b>	<b>Profit before Tax</b>
	OR'000	OR'000	OR'000
As per Financial Statements	0	0	0
<b><u>Adjustments:</u></b>			
Interest on Loans	0	0	0
Impairment loss	0	0	0
Exchange difference - gain	0	0	0
Penalties (if any)	0	0	0
Other Income	0	0	0
CCA Adjustments	0	0	0
<b>As per Accounting Separation Reports</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Markets/ Business segments</b>			
	<b>Turnover</b>	<b>Operating &amp; Finance Cost</b>	<b>Profit before Tax</b>
	OR'000	OR'000	OR'000
Market 1	0	0	0
Market 2	0	0	0
Market 3	0	0	0
Market 4	0	0	0
Market 5	0	0	0
Market 6	0	0	0
Market 7	0	0	0
Market 8	0	0	0
Market 9	0	0	0
Etc	0	0	0
Other	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

#### **4. Reconciliation – Capital Employed**

<b>As at 31 December 20XX</b>	<b>20XX OR'000</b>
Reserves as per Financial Statements	0
<b>Adjustments:</b>	
Investments	0
Cash and Cash at Bank held for non daily operations	0
Government Bonds	0
Inter-group Balances with subsidiary companies	0
Income tax recoverable	0
Penalty	0
Deferred tax liability	0
Other Non Relevant assets	0
Closing Capital Employed as at 31 December 20XX	0
Opening Capital Employed as at 1 January 20XX	0
Mean Capital Employed for the year ended 31 December 20XX	0
<b>Mean Capital Employed of the Markets/ Business segments</b>	<b>20XX OR'000</b>
Market 1	0
Market 2	0
Market 3	0
Market 4	0
Market 5	0
Market 6	0
Market 7	0
Market 8	0
Market 9	0
Etc	0
Other	0
<b>Total</b>	<b>0</b>

## 5. Summary Statement of Network Costs

<b>Summary Statement of Network Costs</b> For the year ended 31 December 2008	<b>Notes</b>	<b>Operating Costs OR</b>	<b>Capital Employed OR</b>	<b>Rate of return %</b>	<b>Capital costs OR</b>	<b>Total costs OR</b>	<b>Total call minutes</b>	<b>Average cost per unit OR</b>
<b>Access Network</b>								
Local Access Network - Exchange Line Installation								
Local Access Network - Duct								
Local Access Network - Wires & Poles								
Concentrator (Access)								
Broadband Access - Customers							N/A	N/A
Broadband Access - Service Providers								
Local Access Network - Equipment - ISDN2								
Local Access Network - Equipment								
Local Access Network - Cable								
<hr/>								
<b>Total Access</b>								
<hr/>								
<i>Traffic sensitive</i>								
Concentrator (Switch element)								
Fixed Network Switch								
<i>Transmission</i>								
Local Transmission Link								
Local Transmission Length								
National Transmission								
International Transmission								
Outpayments								
Leased Lines								
Internet Backbone								
Other Costs								
<hr/>								
<b>Total conveyance</b>								
<hr/>								

## Appendix C – Sample Network Elements & FAR

Network Main Category	Network Group	Network Element
<b>Fixed Access Network Components</b>		
Fixed	PSTN & Data Access	Broadband Wireless (Excl. iWAN)
Fixed	PSTN & Data Access	CPE Equipment
Fixed	PSTN & Data Access	ISDN BRA
Fixed	PSTN & Data Access	ISDN PRA
Fixed	PSTN & Data Access	Leased Lines
Fixed	PSTN & Data Access	Local Loop Cu
Fixed	PSTN & Data Access	Local Loop Fibre
Combined Fixed / Mobile	PSTN & Data Access	Maritime Systems
Fixed	PSTN & Data Access	MSU (Local Exchanges) (Line Sensitive)
Combined Fixed / Mobile	PSTN & Data Access	Other Narrowband Wireless Access
Combined Fixed / Mobile	PSTN & Data Access	Payphones
Fixed	PSTN & Data Access	RSU (Line Sensitive)
Fixed	PSTN & Data Access	xDSL
Fixed	PSTN & Data Access	Radio Access Systems
Fixed	PSTN & Data Access	NTU equipment
Combined Fixed / Mobile	Internet and Data Platforms	Internet Wireless Access Network (I WAN)
Combined Fixed / Mobile	Internet and Data Platforms	Data Centre Infrastructure
<b>Fixed Core Network Components</b>		
Combined Fixed / Mobile	Internet and Data Platforms	Access Routers, Access IP Switches, Concentrators and Modems
Combined Fixed / Mobile	Internet and Data Platforms	Application Platforms, Servers and Portals
Fixed	Internet and Data Platforms	ATM
Combined Fixed / Mobile	Network Support	Carrier Select and Preselect
Combined Fixed / Mobile	Other Shared Platform	Contact Centre (Non-Directory Enquiries)
Combined Fixed / Mobile	Internet and Data Platforms	Core Routers and Core IP Switches
Fixed	Internet and Data Platforms	Data Switching (excluding ATM: including FR, DCX, etc)
Combined Fixed / Mobile	Other Shared Platform	Directory Enquiries and Emergency Services



Combined Fixed / Mobile	Internet and Data Platforms	Edge Routers, Edge IP Switches and Concentrators
Fixed	Network Support	Fixed interconnect
Fixed	Network Support	Fixed Retail Billing
Combined Fixed / Mobile	Core Transmission	GMSC - TSU
Combined Fixed / Mobile	Other Shared Platform	IN Platforms
Combined Fixed / Mobile	International & Satellite services	International Transmission - Satellite
Combined Fixed / Mobile	Internet and Data Platforms	IP Enabling Infrastructure and Security Platforms
Combined Fixed / Mobile	International & Satellite services	ITSC
Combined Fixed / Mobile	International & Satellite services	ITSC - International Backhaul voice, data & pvt leased ccts
Combined Fixed / Mobile	International & Satellite services	ITSC - ITSC
Fixed	Core Transmission	MSU - MSU
Fixed	Core Transmission	MSU - TSU
Fixed	PSTN Core	MSU (Local Exchanges) (Traffic Sensitive)
Combined Fixed / Mobile	Internet and Data Platforms	NGN Platform Servers
Combined Fixed / Mobile	Other Shared Platform	Other Shared VANS Platforms
Fixed	Core Transmission	RSU - MSU
Fixed	PSTN Core	RSU (Traffic Sensitive)
Fixed	Internet and Data Platforms	Telex
Fixed	International & Satellite services	TSU - ITSC
Fixed	Core Transmission	TSU - TSU
Fixed	PSTN Core	TSU (National Transit Exchanges)
Fixed	International & Satellite services	VSAT DAMA
Fixed	International & Satellite services	VSAT SCPC
Combined Fixed / Mobile	Network Support	Wholesale Billing
Fixed	International & Satellite services	International Transmission - Undersea Cable
Fixed	Internet and Data Platforms	Internet and Data Platform Equipment
Fixed	Mobile Wireless	Paging Equipments
Combined Fixed	Internet and Data Platforms	FAX PLUS / IMHS Equipments

/ Mobile		
Combined Fixed / Mobile	Other Shared Platform	Interactive Voice Response (IVR) Equipment
Fixed	Internet and Data Platforms	Telegraph Equipment
<b>Mobile Network Components</b>		
Mobile	Mobile Wireless	3G Access (Node B and RNC)
Mobile	Core Transmission	A Interface (BSC - MSC)
Mobile	Core Transmission	abis Interface (BTS - BSC)
Mobile	Core Transmission	BSC - SGSN
Mobile	Mobile Wireless	GGSN
Mobile	Core Transmission	GGSN - GGSN
Mobile	Mobile Wireless	GMSC
Mobile	Core Transmission	GMSC - GMSC
Mobile	International & Satellite services	GMSC - ITSC
Mobile	Mobile Wireless	GSM Access (BTS and BSC)
Mobile	Mobile Wireless	GSM and 3G Enabling Infrastructure (HLR / AUC / EIR)
Mobile	Network Support	Mobile interconnect
Mobile	Network Support	Mobile Retail Billing
Mobile	Mobile Wireless	MSC
Mobile	Core Transmission	MSC - GMSC
Mobile	Core Transmission	MSC - MSC
Mobile	Core Transmission	Node B - RNC
Mobile	Network Support	Number Portability
Mobile	Mobile Wireless	PMR & other Customer Premises Radio equipment
Mobile	Core Transmission	RNC - MSC
Mobile	Core Transmission	RNC - RNC
Mobile	Core Transmission	RNC - SGSN
Mobile	Mobile Wireless	SGSN
Mobile	Core Transmission	SGSN - GGSN
Mobile	Core Transmission	SGSN - SGSN
Mobile	Mobile Wireless	SMSC and MMSC
Mobile	Mobile Wireless	Voicemail
Mobile	Mobile Wireless	Wireless Application Protocol (WAP) Eqpt
<b>Shared and Support Network Elements</b>		
Other Shared / Support Category	PSTN Core	Local Tandem

Other Shared / Support Category	Network Support	Network Related Computer systems and Peripheral Equipment
Other Shared / Support Category	Mobile Wireless	Masts
Other Shared / Support Category	Other Shared Platform	Microwave Towers
Other Shared / Support Category	Mobile Wireless	Mobile Signaling (GSM STPs)
Other Shared / Support Category	Network Support	Network Land and Accommodation
Other Shared / Support Category	Network Support	Network Management Systems - Fixed
Other Shared / Support Category	Network Support	Network Management Systems - Mobile
Other Shared / Support Category	Network Support	Network Management Systems - Data
Other Shared / Support Category	Network Support	Network Power
Other Shared / Support Category	Network Support	Operations & Maintenance
Other Shared / Support Category	Network Support	Support Plant
Other Shared / Support Category	Network Support	Tools & Equipment
<b>Shared and Support Non- Network Elements</b>		
Other Shared / Support Category	Non Network Support	Non Network Land & Accommodation
Other Shared / Support Category	Non Network Support	Non Network Computer systems and Peripheral Equipment
Other Shared / Support Category	Non Network Support	Office Furniture and Equipment
Other Shared / Support Category	Non Network Support	Customer Care Applications
Other Shared / Support Category	Non Network Support	Enterprise Applications

Support Category		
Other Shared / Support Category	Non Network Support	Office Automation Applications
Other Shared / Support Category	Non Network Support	Network Applications
Other Shared / Support Category	Non Network Support	International Settlements Related Applications
Other Shared / Support Category	Non Network Support	E-Payment Applications
Other Shared / Support Category	Non Network Support	E- Selling Applications
Other Shared / Support Category	Non Network Support	Product Specific Applications
Other Shared / Support Category	Non Network Support	Business Units Related Applications
Other Shared / Support Category	Non Network Support	Subsidiaries Related Applications

Fixed Asset Register Fields
Depn Charge Code
Acc Depn Nominal Code
Asset No.
Asset Description
Extended Description
Asset Family
Short family name
Date of Acqn (Mth/Yr)
Asset Life (Mths)
Asset Responsibility.
Asset Class
Original Cost
Additions
Disposals
Transfers
Opening Accumulated Depreciation
Opening Accumulated Depreciation - disposals
Opening Accumulated Depreciation - transfers

Depreciation Charge for the year
Closing Accumulated Depreciation
Opening Net Book Value
Closing Net Book Value