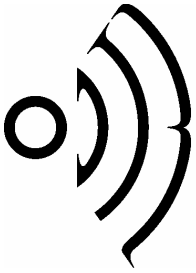

Office of the Director of
Telecommunications
Regulation

Telecom Éireann's Reference Interconnect Offer

Decision Notice D12/99

Document No. ODTR 99/54 **September, 1999**

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PART I - Introduction to RIO Decision Notice

1. Introduction

The Reference Interconnection Offer ("RIO") prepared by Telecom Éireann (TÉ) is a fundamental document that influences the way competition operates in the telecommunications sector in Ireland. The RIO defines the mechanisms that allow competing operators to pass telephone traffic between each other (a task that is essential if a 'complete' telecommunications service is to be offered) and the prices that will apply in such cases.

TÉ, under the Interconnection Regulations[1], is required to have in place a RIO complying with the law and Director of Telecommunications Regulation (the Director) is required to ensure that this happens. In March 1999, the Office of the Director of Telecommunications Regulation ("ODTR") launched a consultation process in relation to the RIO. The process involved the publication of a consultation document (ODTR 99/16)[2].

ODTR 99/16 sought views of interested parties in the following areas:-

- Issues Relating to Physical Interconnection
- Call Origination
- New Services
- RIO Management Processes
- Costing and Routing Principles

This Decision Notice sets out the report on the consultation process, together with the decisions the Director of Telecommunications Regulation ("the Director") has made to date with regard to the RIO.

Telecom Éireann, as an operator designated as having significant market power (SMP), is obliged under the Interconnection Regulations to provide interconnection services to other licensed operators and to publish a reference interconnection offer (RIO), and to re-publish the offer where there is any change made to it.

In accordance with Regulation 8 of these Regulations, the Director is empowered to direct Telecom Éireann to justify its RIO and shall, where appropriate, direct that the offer be adjusted so as to ensure that the offer is transparent and cost-oriented and satisfies the requirements of the Regulations. The directions given by the Director in this Decision Notice are in accordance with this Regulation.

One direction in this decision paper is particularly key. It requires Telecom Éireann to republish its RIO, and to do so in a manner that conforms to certain other decisions of the Director as set out in the rest of this notice. This Decision Notice also includes a number of decisions that relate to general points of principle or longer-term work items.

In all cases, it should be noted that many of the decisions in this paper are already in hand and are not disputed by interested parties. Indeed, the Director wishes to thank all interested parties for the substantial progress made to date. The inclusion of a particular decision should not therefore be taken to imply any unwillingness by any party to implement it. Instead, the inclusion indicates that the decision relates to a point of sufficient importance in terms of the Director's responsibility to protecting the interests of telecommunications users that the Director wishes her views on the matter, as they currently stand, to be formally recorded.

The decisions included in this paper relate both to:

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[1] European Communities (Interconnection in Telecommunications) Regulations, 1998 (S.I. No. 15 of 1998)

[2] Telecom Éireann's Reference Interconnect Offer, consultation paper

- the content and scope of TÉ's RIO;
- the prices to be charged for the services offered.

These two aspects are covered in Parts II and Part III respectively of this report. Please note that this is not the structure of the consultation document (ODTR 99/16), but the new format makes the context of individual decisions more clear.

Eleven organisations responded to the consultation document and the Director wishes to thank respondents and others that contributed to the process. The comments received have played a major role in informing the decisions contained in this document.

Responses were received from the following organisations:-

- Cable and Wireless
- Conduit Enterprises Ltd
- Eircell
- ESAT Digifone
- ESAT Telecom
- GTS
- MCI WorldCom
- OCEAN Communications Ltd
- Princes Holdings Ltd
- Telecom Éireann
- Telenor Ireland

This document sets out the substantive issues raised in the responses. On some issues, there was broad agreement amongst respondents, whereas on others, different perspectives or analysis led to quite different views.

The Director notes how much work has been undertaken to get to the current position. She considers that this document should resolve the key issues that remained open at the time of liberalisation. She re-iterates her desire that competitive forces be allowed to operate effectively in the telecommunications sector. She therefore anticipates that operators will increasingly be able to agree mutually acceptable solutions to new issues as they arise.

2. Background

The Director is responsible for the regulation of the Irish telecommunications sector in accordance with national and EU legislation. A key issue of importance to the sector is that of interconnection. In preparation for the full liberalisation of the telecommunications sector in December 1998, the Director and her office carried out a series of consultations on the services and charges set out in the RIO. This led to the publication of two position papers and the availability of services and rates to allow the fully liberalised market to start working. Since then, TÉ has published a consolidated RIO that takes account of the positions agreed in 1998.

Due to the time pressures of introducing liberalisation and the unavailability of full information in certain cases, a number of key matters in the RIO were determined on an interim basis pending further consideration. ODTR sought the views of interested parties on these outstanding issues in its consultation paper ODTR 99/16. It considered these views in the light of the requirements in Irish and EU law, in particular the requirements that that the RIO be appropriate for the market and in compliance with the principles of the legislation, including the principles of cost orientation, transparency and non-discrimination.

2.1 Related Consultations and Decision Notices

This Decision Notice is one of a series of linked papers that the ODTR is issuing as part of its 1999 work programme. The issues raised in these papers are closely related and the outcome of each consultation and decisions taken will impact on others. However, the ODTR believes that the modular approach to these consultations and Decision Notices provides the most flexible and fastest method of progressing key issues in the market.

Interested parties are referred to the relevant consultation documents and Decision Notices as set out in Appendix I.

3. Republication of the RIO

In parts II and III of this document a number of changes required by the Director to either the scope and content of the RIO or the prices to be charged for RIO services are given. Some of these need to be included in a republished version of the RIO. The Director requires that TÉ makes the changes and submits a new version of the RIO to her with the intention of republishing the full RIO including prices in conformity with the directions given in Part III.

Decision 3.1

The Director directs Telecom Éireann to adjust its RIO in accordance with the decisions as set out in this document. TÉ shall provide the text of the adjusted RIO to her office by 22nd September, 1999. The revised text shall be republished by 22 October 1999 in accordance with the requirements of the Interconnection Regulations.

Part II - Content and Scope of RIO

In this section of the Decision Notice, the Director considers the need to modify the content and scope of the RIO: it discusses matters of policy. Part III goes on to consider more detailed issues relating to the calculation of prices for individual interconnection services. Due to the limited time available prior to liberalisation, many of the issues discussed were not considered by ODTR at that time. These issues include rules and procedures for the physical interconnection of network, the introduction of new services and RIO management procedures. Issues (which have already been raised) relating to call origination are also considered.

4. Issues Relating to Physical Interconnection

With relatively little experience of operating in the liberalised environment it is important that all parties understand how interconnection is realised in practice. It is also important to ensure that interconnection operates as planned and that there are no untoward delays in implementing new links or modifying existing ones.

This section of the report is concerned with the physical delivery and general composition of the physical links required for interconnection. Notably the section addresses:

- contents and status of an operations and maintenance (O&M) manual
- the need for a service level agreement (SLA) to form part of the contractual arrangements between operators;
- timeframes for setting up points of interconnection (PoI) and interconnection links;
- penalties for delays in setting up links;
- issues relating to customer sited interconnection (CSI);
- issues relating to in-span interconnect (ISI);
- uni-direction versus bi-directional interconnection links.

Since the consultation paper was issued, there have been several developments that have affected the Director's consideration of the opinions received, namely:

- Work of the Interconnect Forum, including the preparation of an agreed “Interconnect Operations and Maintenance Manual” (the O&M Manual) and Technical Plan which provide operational and procedural backing to the contractual arrangements for installing and operating physical interconnection links.
- Publication of ODTR 99/48 – “Service Levels provided to Other Licensed Operators by Licenses with Significant Market Power – report on the consultation”.
- Agreement between TÉ and Other Licensed Operators (OLOs) in relation to the delivery of interconnect circuits and leased lines and implementation of agreed forecasting procedures for future orders including interconnect circuits.

4.1 Development of the O&M manual

The Director set out in ODTR 99/16 her view that an agreed Operations and Maintenance (O&M) manual is required if interconnection provisioning and operation is to function smoothly. She also stated that she considered such a manual should be an integral part of the RIO but sought views on the extent to which such a document should be "self managed" by the industry.

Since releasing ODTR 99/16, a group consisting of TÉ and a number of OLOs (henceforth referred to as the Working Group (WG)) has been created and has agreed O&M and Technical Plan manuals.

The Director welcomes this initiative and would like to receive any updates to the manual and have the opportunity to review it with the WG from time to time. She anticipates that the WG will be able to agree a dispute resolution process through discussion and negotiation.

The Director notes that the TÉ RIO has an annex which includes details entitled 'Network Plan' which contains a sub-set of the information contained in the O&M Manual and the TÉ Technical Plan. The Director does not believe that this level of information is adequate without reference to the latter documents. The Director therefore considers that the O&M Manual and the TÉ Technical Plan should be considered an integral part of the RIO.

Decision 4.1

The Director requires that the O&M manual and TÉ Technical Plan should be an integral part of the RIO that is to be republished by TÉ in accordance with Decision 3.1.

4.2 Service Level agreements

The O&M Manual contains a list of procedures between TÉ and OLOs, for the purposes of provision and ongoing operation of interconnect links. However, the manual is currently for guidance only and there is no SLA for these processes. Development of such an SLA should ensure that:

- the standards which are set in the O&M Manual are, where appropriate, binding on TÉ and the OLO;
- failure to adhere to such standards may be sanctioned through a penalty payment structure.

It is in this context that the Director has considered the comments of respondents to this consultation. The Director, noting both Condition 18.2 of TE's General Telecommunications Licence and her general powers requiring a transparent on non-discriminatory interconnection regime, requires TÉ to develop an appropriate SLA and include such an SLA as part of its RIO. Furthermore, this Decision Notice (notably appendix III) sets out the Director's position on the content of an appropriate SLA.

SLAs offered for interconnection services should, where practical, be consistent with those offered for other carrier services (e.g. the provision of leased lines by TÉ to OLOs to augment the OLO's own infrastructure). The SLAs should, in particular, cover the same areas and principles as set out in the SLA report[3] recently issued by her office relating to carrier services. The SLA should set a measurable "standard" level of service against which TÉ would be measured. Furthermore, the Director proposes that the provisions of the SLA for each service should be documented in a Schedule for that service in the RIO. The Director requires TE to propose SLAs for Interconnection Links (Annex D of the RIO) for inclusion in the RIO. Where market demand requires, TE in consultation with the industry should develop SLAs for other RIO services

Decision 4.2.1

The Director requires that TÉ's RIO shall include appropriate SLAs. These SLAs shall incorporate the requirements of the Director on the content and scope of SLAs as set out in this Decision Notice.

[3] Service Levels Provided to Other Licensed Operators by Licensees with Significant Market Power – Report on the Consultation (ODTR 99/48)

TÉ shall provide the text of an SLA to her office by 1st October, 1999. The Director will review the proposed SLA and it shall be republished by 22 October 1999. The Director may direct TE to amend the SLA prior to republication.

Decision 4.2.2

Furthermore, the Director requires that TÉ includes SLAs for those Interconnect Services in Annex D of the RIO (Interconnection Paths) in the RIO that is to be republished in accordance with Decision 3.1.

Decision 4.2.3

The Director requires TE, after consultation with OLOs, to develop SLAs for other RIO services where there is market demand for same.

4.3 Timeframes for Setting Up Points of Interconnection and Interconnection Links

The Director wishes to ensure that the time required to set-up new interconnect links is as short as possible. A table of European best practice contractual interconnection set-up times is given below. TÉ sets or equals best practice in two of the four categories of interconnection on the basis of information that is publicly available.

Table 3.2/1 - Implementation time scales

Description of service	TÉ RIO	EU best practice (shortest timeframe)
New interconnect paths on existing interconnection links using an existing PoI (capacity augmentation)	8 weeks (2 months)	1 month[4]
New interconnect links using an existing PoI	10 weeks	10 weeks[5]
New PoI using Customer Sited Interconnect (CSI)	16 weeks	16 weeks[6]
New PoI using In-Span Interconnect (ISI)	26 weeks (6 months)	4 months[7]

Source: Analysys/Arcome: European Interconnect Atlas

Views of industry

OLOs were of the opinion that best European practice should be used as a guide for interconnection set-up times. A number pointed out that these times were the contractual maximum times that were allowed for set-up and that, in most instances, less time is actually required to set-up interconnection.

Some OLOs questioned the large difference in time required to set up ISI (6 months) compared to CSI (16 weeks).

TÉ suggested that the timescales for provision of interconnection is dependent on the quality of capacity requirement forecasts from OLOs. Capacity which is forecast can be supplied within the times guaranteed by TÉ, whilst capacity not forecast will not necessarily be delivered within the contractual timescales.

Position of the Director

The Director considers it essential that OLOs can rely on the commitments given by TÉ on lead-time for delivery for interconnection circuits.

[4] KPN RIO (Netherlands)
[5] TÉ RIO
[6] TÉ RIO
[7] Telia RIO (Sweden)

In terms of what is a 'reasonable' commitment, the TÉ's current proposal is acceptable to the Director for the present. Going forward, she will expect that TÉ achieve a delivery time that is in the top quartile of EU operators for all categories.

The Director therefore proposes the contractual timeframes proposed in the SLA in Annex III be used by TÉ as the basis for its interconnection provision times. The Director notes, however, the need for accurate forecasts. Section 4.4.2 indicates the Director's opinion in this area and, in particular, that SLAs need not be binding for circuits above the level forecast.

To ensure that its commitments are realised, the Director requires that TÉ publishes as part of the RIO a clearly defined order and provisioning process (including target time scales for key milestones). The process should in the first instance be defined by TÉ having sought the views of OLOs. The timescales should then become part of the SLA.

The Director also intends that TÉ should produce statistics, which indicate the proportion of interconnection links delivered on or before the maximum timescales set out in the RIO. The detailed requirements and the review periods and publication dates will be set out following the current consultation on Performance Indicators[8].

Decision 4.3.1

The Director requires that the RIO, to be republished in accordance with Decision 3.1, shall include, inter alia, within its SLA for physical interconnect, timescales for delivery that are at least as good as those set out in Appendix III. These timescales shall be the maximum limit for delivery of ready for service circuits from the time of acceptance of the order.

Decision 4.3.2

The remaining SLAs as referred to in Decision 4.2.3 shall include delivery or implementation timescales as appropriate.

4.4 Penalties for Delays in Setting Up Interconnection Links

A target without a sufficient sanction or incentive is unlikely to be effective and the issue of penalties must, therefore, be considered. Nevertheless, it is noted that delays may result from the actions of either party, and it is important to consider both situations.

4.4.1 Penalties for delays caused by Telecom Éireann

Presently, TÉ has a commercial incentive to co-operate with OLOs to set-up PoIs. ODTR 99/16 asked if other penalties should be introduced for missing the timescales in the RIO, and, if this was considered to be desirable, upon what should they be based. Of relevance in considering this issue is the report on Service Level Agreements (ODTR 99/48[9]) that has been carried out by the ODTR.

Views of industry

One operator voiced concern that the use of penalties would focus TÉ on the contractual timescales in the RIO rather than the delivery of interconnect links in the shortest possible timeframe. However, the industry was generally in favour of the application of penalties. A number of operators suggested that timescales for interconnection set-up should become a QoS variable and should be monitored with the results made public.

A large number of respondents suggested that the penalty charges should be based on the cost of the interconnect links ordered and not delivered. Many suggested that some form of

[8] Performance Indicators (ODTR 99/41 – Measuring Licensed Operators Performance)

[9] Service Levels Provided to Other Licensed Operators by Licensees with Significant Market Power – Report on the Consultation

sliding scale should be used with the penalty for late delivery increasing exponentially as the delay increases. They felt that there should be no upper limit to the penalty that could be imposed.

Position of the Director

The Director considers that a reasonable penalty charge should be payable late delivery of time-sensitive services. In the recently published report on the consultation on SLAs (ODTR 99/48), the Director set out a framework for the calculation of penalty payments linked to service targets for carrier services that are not interconnection services. The Director considers that this methodology is also appropriate and should be applied to services covered by the RIO.

The Director considers that, where it is clear that TÉ has failed to deliver properly forecast circuits by a set period due to its own fault, then it should be subject to penalties as set in an SLA. If the failure to implement the circuits by the Ready For Service date is due to errors or omissions by the OLOs then no penalty is applicable to TÉ (see also Decision 4.4.2). Therefore if TÉ delivers the circuits within the timescales but the actual implementation over-runs because, for example, of a lack of testing resources by the OLO, the process should be frozen until the OLO has completed its task. At such time the 'clock' would start again. However this is not to undermine in any way the need for TÉ to be pro-active in its co-operation with the OLO to avoid such errors or omissions by either party.

Decision 4.4.1

The Director requires that the RIO to be republished in accordance with Decision 3.1 shall include in the SLA for interconnection links penalties for delays caused by TÉ in setting up interconnection links. The penalties shall conform to the principles referred to above.

Remaining SLAs as referred to in Decision 4.2.3 shall also include appropriate penalties.

4.4.2 Penalties for delays caused by OLOs

If Telecom Éireann incurs penalties for failure to meet deadlines for setting up PoIs, yet OLOs suffer no penalty for any delays they cause, it is possible for OLOs to request more links than they require, and then to delay their implementation, thus forcing TÉ to incur unnecessary costs.

ODTR 99/16 considered whether, in order to prevent such abuse, OLOs should incur penalties for delays in set-up of interconnection points caused through their own fault rather than TÉ's.

Views of industry

A significant group of operators remarked that penalties should not be applied to OLOs in this instance as OLOs incur costs - generally unspecified - when making a request for interconnection set-up. A couple of operators acknowledged that the application of some form of penalty on OLOs would be just.

TÉ suggests that many new operators are subsidiaries of large operators established in other national markets so they are capable of supporting a penalty symmetrical to that which might be imposed on TÉ. TÉ is of the opinion that penalties should reflect the loss of revenues by one party as a result of delays by the other party. TÉ therefore suggests that the penalty should be a sliding scale and should rise towards 100% of connection charge plus costs of set-up of the interconnection link on the day of planned activation of the new link or new capacity.

Position of the Director

Forecasting of the size of each interconnect link is covered extensively in the O&M Manual. The process described provides plenty of scope for OLOs to provide accurate forecasts for each interconnect path, in terms of the number of incremental paths required per link, per quarter. The Director does not consider that the question of relationship between OLOs and its affiliates in other countries is relevant. However she considers that a reciprocal penalty regime should be in place that encourages accurate forecasting but does not impose an undue burden on new operators. The penalty should:

- be based on a sliding scale
- not include equipment charges (as equipment can be redeployed) but may include labour
- be proportional to the connection charge
- have a 'reasonable' margin for error built-in
- allow OLOs to order an amount over the forecast without penalty, but remove SLA penalties on TÉ for such paths
- provide for a maximum penalty.

The Director considers it essential that no unreasonable burdens are placed on OLOs, especially new OLOs. For example acceptable margins for forecast accuracy will need to reflect the genuine problems such new operators would have.

If forecasts were too low (i.e. the OLO orders more paths than forecast), no SLA penalties for late delivery would be applicable to any paths above the forecast value. Such paths shall be delivered by TÉ on a "best efforts" basis. If forecasts are too high (i.e. the OLO orders fewer paths than forecast) then TÉ should be compensated for any pre-provisioning work it has done on the basis of the forecasts.

Decision 4.4.2

The Director considers it reasonable that an SLA includes penalties to OLOs for costs incurred by TÉ in pre-planning services where these services are not subsequently required. These penalties must take account of the requirements set out above.

4.5 Customer Sited Interconnection

Several issues have not yet been completely resolved on CSI. These include:

- prices (which are discussed in Part III);
- the related issue of interconnection extension circuits (IECs);
- the availability of higher speed circuits (greater than E1).

Views of Industry

Respondents found the current interconnection offer was very limited. A number of respondents requested that higher capacity interconnection links be made available, although no services were specified in detail. One operator suggested that interconnection should be permitted over different technologies such as radio. Another requested that interconnection extension circuits and access to TÉ's signalling system be made available to minimise interconnection costs.

Position of the Director

Regarding extending the range of interconnection products, the Director considers that it is reasonable for interconnecting operators to ask for higher capacity service to be made available on terms that allow for appropriate discounts. She therefore requires TÉ to make an offer to provide higher functionality or band-width services that complies with market

demand. In making this offer, TÉ shall consider specific requests from OLOs which include appropriate detail. However, while the Director expects TÉ to offer an interconnect service fulfilling these specific requests it should, at the same time, ensure the offer is sufficiently general to encompass the needs of the market as a whole. If TÉ can demonstrate the absence of specific market demand, there would be no need for it to make the offer.

Interconnect Extension Circuits are a valuable option to interconnecting operators and meet an identified market need. The Director considers that operators require greater detail than is currently outlined in the RIO.

Decision 4.5

The Director requires TÉ to include full details of Interconnection Extension Circuits as an offering in the RIO to be republished in accordance with Decision 3.1.

The Director further requires TÉ to develop generic offers for higher capacity services that are in accordance with declared market demand and to include these in the RIO.

4.6 In-Span Interconnect

Views of industry

A number of operators were concerned about the limited flexibility and appropriateness of the ISI offer. In particular, one respondent believed that the provision of a footway box at a suitable place close to each of TÉ's switches should be provided. Another operator required the provision of logical interconnection.

Position of the Director

While the Director considers that it is essential for interconnecting operators to have an ISI offer that fully meets their needs, she has not enough evidence to suggest that the current offer does, or does not, do this. Therefore, should specific requests be received from OLOs (and provided these include sufficient detail), she requires that TÉ develop an offer to provide ISI in a manner that complies with this market demand. The Director expects TÉ to offer an ISI service fulfilling any such specific requests but which, at the same time, is sufficiently general to encompass the needs of the market as a whole.

Decision 4.6

The Director requires TÉ to develop, following consultation with OLOs, an extended ISI offer where a market demand exists and to include it in the RIO. TÉ shall publish this offering by 5th January 2000.

4.7 Co-location of Interconnection Points

The issue of co-location of interconnection points was raised in response to ODTR consultation papers 98/52 and 98/60 in November last year. Since then, the ODTR has become aware that ISPs are currently offered a form of co-location service by TÉ. ISPs are able to rent PoP equipment which belongs to TÉ and which is housed in TÉ premises.

Co-location of equipment (on a TÉ site) for interconnection would appear on the face of it to facilitate rapid and early interconnection of networks. The Director was keen to identify the demand in Ireland for co-location. Respondents were asked what benefits they perceived from co-location over other forms of interconnection, what type of co-location they favoured, if any, how co-location should be costed, what operational aspects needed to be considered and what timeframes would set-up of co-location require.

Views of industry

All OLOs responding to this question expressed a desire to have the option to co-locate. Two stated that they did not require it at present but that they wished to have the option of co-location. Half the respondents believed that co-location would be required for effective implementation of LLU.

Respondents favoured a method of co-location, which allowed a high level of security, i.e. separate rooms or cages if common rooms were used and if possible, some stated a preference for separate rooms. However, respondents recognised that they would need to weigh up the costs of additional security against the benefits.

Operational aspects which would need consideration included access to co-location premises and the environmental conditions of such premises such as air conditioning and power supply.

Most respondents agreed that the costs of co-location that should be shared included those incurred as a result of modifying the co-location premises plus a share of maintenance or lease charges related to space used. However, few specific details were proposed.

TÉ suggested that benefits of co-location may be outweighed by the costs and operational difficulties associated with it. It mentioned such difficulties as the requirement for 24-hour access to premises and associated security requirements. Difficulties were also foreseen concerning practical implementation and potential discrimination favouring early co-location seekers. TÉ felt that whilst co-location could allow for easier interconnection between OLOs, it pointed out that the same could be achieved through a telehouse facility without requiring co-location on TÉ sites. TÉ felt all costs incurred as a result of co-location should be shared. These would include feasibility studies, construction and preparation work, rental charges and operational costs.

Position of the Director

Leaving aside LLU (about which there is a separate consultation) there is an interest in co-location in Ireland. The benefits of this appear in part to be a facilitation of interconnection between OLOs. The same can be achieved through a telehouse operation run as a commercial operation by a third party. Given the growth in the liberalised market in Ireland, the introduction and growth of telehousing facilities for telecommunication companies can be expected especially for those operating in the Dublin area.

The Director notes the impact of the ongoing consultation on LLU on co-location decisions and does not want to pre-judge the results of this process.

Notwithstanding these various uncertainties, the Director can see benefits in promoting co-location and notes that in 9 out of the 13 EU countries providing information require some form of co-location (Annex IV provides a summary of the position in other EU states). She considers that it is appropriate at this stage of the market's development to require in the first instance that TÉ to define a package of co-location services, after consultation with OLOs, that could be offered nation-wide. This will be based on stated demand. The offer may include exchange premises, other TÉ buildings and subsidiaries ' exchanges, radio sites etc.

Decision 4.7

The Director requires that TÉ, following consultation with OLOs, define a co-location service for inclusion in the RIO that meets market demand. TÉ shall publish this offering by 5th January 2000.

4.8 Uni-directional versus Bi-directional Interconnect Links

Interconnection links in Ireland only carry traffic owned by one operator. The operator that bills the customer is said to "own" the traffic. This means that calls by subscribers of an operator, TÉ for example, to another network operator are owned by TÉ. Likewise calls

made by an OLO customer using indirect access to TÉ's network would also be TÉ owned traffic as the customer in this scenario is also billed by TÉ.

A potential difficulty arises when interconnect paths may carry only one operator's traffic as is the case in Ireland. If the operator does not dimension a particular interconnection link correctly, this may lead to calls to other operators' networks failing. This denies the operator hosting the number called valuable call termination revenues and it may also provide a bad impression of the called operator's network if the calling party happens to know to which network operator the called party subscribes.

Some OLOs have expressed concern that the links which carry calls owned by TÉ to OLOs are not of a sufficient capacity to handle all the calls made, leading to the problems described above.

Industry views were sought as to the viability of introducing bi-directional interconnection links that carried traffic in either direction irrespective of the "owner" of the traffic. Who should be responsible for the dimensioning of such a link, on what basis? How should disagreements be resolved? How should the cost of the link be split and how should resilience be provided?

Views of industry

Two operators thought that the current arrangement, whereby interconnect links carry traffic owned by one operator only, was satisfactory. They found this arrangement the easiest to implement because each link is dimensioned and paid for by one party only.

The majority of operators felt that it should be possible to route traffic owned by two operators over the same link. The dimensioning of such a single bi-directional link should be a shared responsibility and many operators thought that forecasts of between one and three years should be used for this purpose. Most agreed that 6 month rolling forecasts should be used. They considered that disagreements should be resolved by the ODTR. Any costs were thought best shared according to usage of the link (billed minutes of operator A compared to billed minutes of operator B).

Resilience should be provided by the ability to re-route calls to other interconnect links. It was thought that network engineers would be able to resolve the practical problems for the implementation of these links without great difficulty.

Position of the Director

The Director notes that according to traffic engineering principles bi-directional routes are more efficient. She further notes that uneven traffic demand and routing arrangements can lead to uneven use of the bi-directions circuits and that, in order to forecast requirements, different planning procedures are needed. The Director also understands that bi-directional links exist in some other countries and are operated successfully.

The Director considers that efficiency arguments alone are sufficient to make it incumbent on TÉ to make bi-direction routes available should the market demand be present, and notes that safeguards for traffic as well as planning procedures will need to be laid down in the O&M manual and SLA.

Decision 4.8

The Director requires TÉ, following consultation with OLOs, to offer bi-directional interconnection links in accordance with declared market demand. TÉ shall publish this offering by 5th January 2000. The RIO offering will need to recognise that service provisioning, operation, dimensioning and path protection options are different from uni-directional links and would to be fully detailed in the O&M and Technical manuals.

4.9 Second Interconnection Link

Presently, an interconnecting OLO is required to purchase a minimum of two 2 Mbit/s links when it wishes to interconnect with TÉ. A cancellation charge of £3,500 is applied to an interconnecting operator if it either cancels an interconnect link within 12 months of commencement of interconnect service for the link in question from TÉ or if it does not take up the second 2 Mbit/s link that it is required to order from TÉ. A justification for this charge was sought.

Views of industry

There was general concern that the £3,500 charge imposed by TÉ was not transparent although most respondents suggested that it was reasonable for TÉ to recover any unavoidable and fully justified costs incurred as a result of non-take-up of ordered links.

TÉ has justified the requirement for operators to purchase two interconnect links to its network to ensure that the same network standards are achieved by interconnecting operators as it achieves on its own network. TÉ appreciates that this may impose unnecessary costs on new entrants, hence it allows them 12 months to take-up the second link. It justifies the penalty of £3,500 for non-take-up of the second link by the costs of providing the link and the opportunity cost of setting the link aside for the use of the operator that ordered it. TÉ agreed that equipment used at PoIs could be transferred and used at other links, but raised concern that there should be no surplus demand for interconnect links of new entrants were forecasting their requirements correctly.

Position of the Director

While the Director agrees that TÉ should be able to charge for expenses incurred in setting up PoIs which are subsequently cancelled (see Sec. 4.4.2), she considers that TÉ has not yet provided evidence to support its current charge of £3,500 or indeed the need for a second link.

In this respect, she is concerned about TÉ's arguments on network quality. TÉ states it requires two circuits to preserve network standards, yet it allows this requirement to lapse upon payment of a penalty charge. Either two links are needed (a requirement about which the Director is not in any case convinced) or they are not. Unless there is additional evidence to indicate that two links are essential she proposes that this requirement be removed from the RIO.

The Director appreciates TÉ's concern about the quality of service over interconnection links and considers this an important issue but considers the O&M and SLA to be a more appropriate mechanism for ensuring that quality of service is ensured.

In relation to cancellation charges she considers it is reasonable to charge one in cases where a circuit is used for less than one year but this should be based on labour costs only as the equipment can be used at other PoIs. She considers that given the recent liberalisation of the market in Ireland, that the demand for new PoIs is sufficiently high that no equipment will go unused.

Decision 4.9

The Director requires that the requirement for a second link should be removed from the RIO due to be republished in accordance with Decision 3.1. She considers that it is reasonable to charge a cancellation fee if a link is used for less than one year but that charges in such circumstances should relate only to labour costs.

5. Call Origination

5.1 Call Set-Up Component of Conveyance Charges

In document 98/52, the ODTR acknowledged the issue of call set-up costs for both successful and failed calls and the issues surrounding their identification and methods of charging for them. It is possible to charge for these through a call set-up fee or by including the costs in the duration based charges. The ODTR understands that both the call profile of an interconnecting party and assumptions about average call holding times impact upon the balance between call set-up charges and time-based charges.

In their initial draft interconnection tariffs TÉ proposed that 16% of costs should be attributed to call set-up to calculate a set-up charge based on '24 hour costs'. TÉ proposed the inclusion of an additional call set-up premium for call origination and a further, different, figure for transit calls.

Views of Industry

All operators agree that there are specific costs associated with call set up events which include signalling and processor costs. However all the OLOs believe that a separate call set up charge was inappropriate.

One respondent believes that there are significant disadvantages in bringing about de-averaging of interconnection costs by splitting out call set-up costs from per minute charges, in particular they believe it will create imbalances with retail tariffs.

Other respondents were concerned over a number of issues, which they believe would need to be resolved prior to the introduction of a separate call set up charge. These include the following: -

- Confirmation that the cost of call set up could be estimated at all and that any separate set up charge would accurately reflect these estimated costs
- Determination of whether the call set-up charge is sufficiently significant to warrant a separate set up charge
- In estimating the cost of call set up, a distinction would need to be drawn between the cost of setting up calls which originate on the TÉ network and any set up costs incurred by TÉ relating to calls which are passed by interconnecting operators to TÉ for termination.
- If a call set up charge is applied to the cost of interconnection, then it must also be applied to retail tariffs, otherwise it will result in a cost-price squeeze which would work to the disadvantage of new entrants.

Another respondent felt that in the absence of LRIC figures, the costs could only be based on TÉ's historical and fully allocated costs, which do not reflect the costs of an efficient operator. With a separate charge for call set up, whether call set-up is done via TÉ's core network or Intelligent Network, this respondent believes that new entrants would in effect be either penalised for TÉ's inefficiency or paying TÉ to improve its efficiency. Either way, they believe it is unacceptable and is totally against the aim and principles of the promotion of effective competition.

TÉ believes that a distinction can be made between call set up related costs and call duration costs. They see call set up as a driver of costs. TÉ notes that two-part charging is adopted in eight EU countries, with seven other countries adopting one part charging. While detailed analysis is required to identify the two types of cost accurately, TÉ claims that this is being done as part of LRIC. TÉ disagrees with the ODTR view that the costs of set-up and conveyance cannot be "sensibly divided". They state that this view is supported by an Ovum report submitted to the ODTR in October 1998.

OLOs believe that there should be no explicit call set up component in interconnection charges and felt that costs associated with call events should be included in the cost of conveyance via inclusion in an overall per minute charge.

TÉ believes that costs associated with call set up events should be recovered separately by means of per call charges. They propose the introduction of two part interconnection tariffs, comprising; a call set up charge and a call duration charge.

Given the EU requirement for cost causality, TÉ believes that interconnection charges should reflect the way in which the costs of interconnection are actually incurred. They claim that if call set up and call duration are not separately identified, there will effectively be a subsidy from longer to shorter calls. This will impact on the users of residential Internet and e-commerce, the importance of which was emphasised by the Director.

Position of the Director

The Director is unconvinced of the principle that cost components of switching can be sensibly divided in a *transparent* manner between the cost of call set-up and the cost of conveyance. The key reason for this is that the call set-up and the conveyance elements of the service cannot at present be offered or bought separately. She is also concerned about imbalances between 'retail' and 'wholesale' pricing structures. Therefore, the Director remains of the opinion that there should be no explicit call set-up component in interconnection charges for the time being and that such costs associated with call events should be included in the overall cost of conveyance. Nevertheless, she recognises that there may be a need to revisit the issue at some future date on evidence that the take-up of e-commerce or Internet services was being jeopardised by the lack of a call set-up charge.

Decision 5.1

There should be no explicit call set-up component in interconnection charges and such costs associated with call events should be included in the overall cost of conveyance. The Director will keep this issue under consideration having regard to the development of the interconnection regime and the development of advanced services generally.

5.2 Call Origination as a Competitive Service

As outlined in the consultation paper, a number of operators had suggested that call origination may differ from call termination not only by the fact that there may be different costs associated with call origination compared to termination, due to call set-up charges, but also because call origination could in theory be a competitive service were enough competing access providers to enter the market. These operators suggested that if LRIC costing was applied to call origination services, mimicking an efficient competitive operator, the returns to potential new entrants to this market may be so low as to discourage investment. Views were sought on call origination as a competitive service.

Views of Industry

Respondents expressed a range of views, which may be categorised into three groups.

The first group thought that there was greater competition in call origination than call termination. The second though that there was greater potential for competition to develop in call origination than call termination and the third group did not express views as to whether there would be greater competition in origination than in termination, but stated that currently, it was difficult to consider that there was significant competition in either in Ireland.

Position of the Director

Given that TÉ has 96% of the market for telecommunications in Ireland[10], the Director is presently unconvinced that the market for either call origination or call termination can be considered to be competitive. She notes the positions of some respondents that suggest that in

[10] Significant Market Power in the Irish Telecommunications Sector – ODTR Decision Notice D4/98

the future, call origination may be viewed as potentially more competitive than call termination.

The Director proposes that charges for both call origination and call termination should be based on costs, which in turn should be based on LRIC cost methodology. The method of LRIC costing adopted will impact the LRIC cost estimated and applied. This will be a function of the Director's final decisions in implementing LRIC in the Irish market.

The Director is of the opinion at present that the use of LRIC costs should not deter investment in the local loop. There is no evidence that the use of the LRIC methodology per se has deterred such investments in other telecommunication markets.

Decision 5.2

The Director does not consider that there is sufficient evidence available at present to support the assertion that call origination is currently a competitive service or will become one in the near future.

6. New Services

Innovation in the provision of telecommunications services is a fundamental concern of the industry and users alike, and the Director is concerned to ensure an environment is in place that promotes such innovation. In this context, the Director notes the rapid and continued development and implementation of new technologies where software tools are used to combine different hardware components into new services. The Director therefore re-emphasises her commitment to a regime that supports the unbundling of interconnection elements to the greatest practical degree possible thus facilitating all operators to develop their own new services.

The Director also notes the need to ensure that TE's network division treats OLOs in an equitable manner to that in which it treats its own retail divisions and Subsidiaries.

In terms of the legislative background, SI 15 of 1998 Reg. 8 (12)(a) states, "an organisation providing interconnection shall ensure that charges for that interconnection shall be sufficiently unbundled so that an applicant is not required to pay for anything not strictly related to the service requested…"

With these fundamentals in mind, the Director considers in this section the unbundling of service offerings, the need for procedures to expedite the introduction of new interconnection services, the relationship between retail services and interconnection services, and a specific issue relating to public call offices.

6.1 Unbundled service offering and procedures for agreeing new services

In the interests of supporting innovation, it is important that:

1. there is sufficient transparency in the market for interconnect services
2. timescales for setting-up interconnection supporting new services are not too long.

The first issue can be addressed through an increased level of unbundling of the network elements involved in the provision of interconnection services and the clear presentation of such offerings.

In respect of the second issue, the Director sought in ODTR 99/16 the views of the industry on the timescales as currently quoted in the RIO for provision of new interconnection services.

Views of the industry

All of the respondents agreed that transparency in the offer of interconnection services from TÉ *could and should* be increased where possible.

Regarding timescales for setting up interconnection for new services, all OLOs that responded thought that the existing timescales in the RIO were too long although specific alterations were not proposed.

Respondents were also asked in ODTR 99/16 to comment on the number of reiterations that TÉ could make for information pertaining to the request for interconnection to be set-up for a new interconnection service. Responses were mixed.

Position of the Director

The Director recognises that full unbundling of interconnection service elements may not be possible immediately. Nevertheless, she considers that TÉ should provide (and keep updated) a list of unbundled interconnection elements supplied to its own downstream retail division(s), and to Subsidiaries. She further considers that this list (including prices for each element) should form the basis of an unbundled interconnection element within the RIO.

Furthermore, she requires that all new interconnection products should be made available, as far as is possible and reasonable, in an unbundled format. As new products will share many of the same individual elements as existing bundled services, many individual elements will therefore become available naturally as interconnection services develop.

The Director considers that the current timescales for implementing new services should stand for present. However, she notes that these timescales should, over time, become binding.

Concerning the number of iterations that TÉ can demand on a statement of requirements from an OLO for the setting-up of interconnection for new services, the Director notes the dual responsibility of TÉ and OLOs for ensuring a smooth process. To facilitate the process, the Director proposes that TÉ produces and agrees with OLOs a template for information requests that includes any necessary information to implement the interconnection service, while at the same time excluding details that are not strictly needed. A set maximum timescale for turning around a service request from the submission of an appropriately completed form should then be set.

If despite the use of such a template, TÉ is still not satisfied with the information supplied by a requesting party, it may request further clarifications. If this is still insufficient, a face to face meeting between the parties should ensue to agree outstanding issues.

Decision 6.1

The Director requires TÉ to prepare a *complete* list of unbundled interconnection elements supplied to its own downstream retail division(s) and/or to Subsidiaries. These services should be included in the RIO to be republished by TÉ in accordance with Decision 3.1. The list shall then be constantly updated in line with the procedures set out in section 7.2 of this document.

The Director also considers that the current timescales for new service introduction should stand for present. TÉ should, following discussions with OLOs of their concerns, submit proposals to ODTR by 1st December, 1999 for a streamlined procedure for new service requests including a full description of the process timescales, information required and service request pro-forma with the intention that this is included as part of the SLA. As a minimum, the Director would expect to see commitment to provide an initial response to requests within 3 weeks of receipt.

6.2 Introduction of New Retail Products

In addition to seeking views on the unbundling of interconnection elements, ODTR 99/16 also sought opinions on whether TÉ should be required to introduce new interconnection products before introducing any retail product. The Director noted the need to set this discussion within the context of TE's significant power in the Irish telecoms market and the appropriateness, or otherwise, of asymmetric measures in respect of new retail products.

ODTR 99/16 proposed two asymmetric measures. Option A required TÉ to alert OLOs of all its discussions between retail and network divisions concerning new interconnection services while option B would impose a delay on the introduction by TÉ of any retail service dependent on new interconnection service elements until those elements were available in the RIO. Only details of the interconnection services should be made available to OLOs; details of the retail service should remain confidential until notification of its launch.

View of Industry

Access to unbundled interconnection elements was considered to be one of the conditions required for fair competition to the development of new retail services. However, concern was expressed by two respondents that full unbundling of interconnect elements, although desirable, could not be achieved in the short term. Furthermore, many operators supported

the idea that a *specific* interconnection service should be introduced by TÉ before it launched an equivalent retail service.

When charged with defining a new product, a range of views was expressed although all except three included price changes (perhaps as a result of discounts) as new products (if they could not be supported by the interconnection arrangements in place).

In terms of asymmetric measures relating to new retail products and their associated interconnection service elements, respondents favoured option B (i.e. that launch of new services should be dependent on the available in the RIO of appropriate interconnection services).

Position of the Director

The Director does not believe that the best course of action is to tie retail services to *specific* interconnection services as this is likely to stifle rather than promote innovation as retailers may follow a 'me-too' product development strategy. It is noted that other EU countries also work on the cost–orientation basis outlined by the EU rather than a retail minus basis. However, a complete set of interconnection service elements used to provide retail services must be made available to all operators in a timely fashion.

The Director considers it essential that OLOs have a reasonable time to respond to new interconnection services. She proposes that TE alert the ODTR, on a confidential basis, of all substantive decisions on new interconnect services being discussed between TE Network and its retail division(s) or Subsidiaries. This notification will include the proposed timetable for introducing new retail services using these interconnection services. The Director considers this an appropriate measure given the current state of market development.

Based on the complexity of, and market need for, these new services, the ODTR will consider the length of notification time it is appropriate to give OLOs about the services. TE will then have to amend its RIO to include the new proposed services in advance of launching dependent retail products.

Decision 6.2

Where a TÉ retail division or a TÉ subsidiary negotiates a new interconnection service with TÉ network that service shall be included in the RIO. This should, as far as possible, be in an unbundled format.

Furthermore, TÉ shall alert ODTR immediately of all substantive decisions on new interconnect services between TE networks and retail division(s) or Subsidiaries. Henceforth TE will be permitted to launch a new retail product only if it has either:

- **declared that no new interconnection services are used to deliver the retail product; or**
- **already amended its RIO to include appropriate new interconnection services. The length of time between amending the RIO and notification of the launch of the new retail product will be determined by the ODTR based on TE's advance notification to the ODTR of intra-group interconnection services. This period shall be at least four weeks.**

6.3 New Services Requested by the Industry: Carrier Selection and Carrier Access from Telecom Éireann Payphones

Currently, it is not possible to use carrier access and carrier selection services from TÉ payphones. The question was posed in ODTR 99/16 whether TÉ should make these services available from its payphones and if so, how relevant costs might be recovered.

Position of the Director

Despite support from OLOs for the provision of carrier access for TÉ payphones, the Director notes that OLOs already offer consumers an equivalent service by providing a freephone number. The Director therefore questions whether consumers would gain substantially. She notes that the freephone solution is more expensive to OLOs but considers the costs to the industry as a whole of providing the feature would outweigh the benefits. She does not therefore intend to insist that TÉ provides the capability at this time. There are other issues concerning freephones that are being dealt with separately.

Decision 6.3

The Director does not currently require TÉ to provide carrier selection and carrier access services from Telecom Éireann Payphones in the RIO at this time.

7. RIO Management Processes

It is important that a balance is struck between ensuring that that RIO is as current as possible, and the effort involved in keeping it up to date by all parties (TÉ, OLOs and ODTR). In this section review procedures are considered. So too is the important issue of retrospection.

7.1 Operations and Maintenance (O&M) Manual

The O&M manual includes details of ongoing activities and procedures relating to the forecasting, pre-provisioning, provisioning and operating interconnection facilities. These are discussed in section 4.1 and will require regular work commitments by TÉ and the OLOs. Should the O&M manual itself need updating then the procedures outlined in section 7.2 below should be followed.

7.2 Review of RIO

There is currently no formal process for updating TÉ's RIO and reviewing the updates. The Director considers that the establishment of a regular process will result in a more efficient use of time and resources.

A suggestion was made that the review might be split into two with a bi-annual review of services and an annual review of the costs of these.

Respondents were also asked to comment on how interconnection charges should be calculated, an appropriate timeframe for TÉ to prepare its network cost information.

View of Industry

Respondents were in general agreement with the process suggested by the Director. The following main points were raised: -

1. Interconnection services to be included in the RIO should result from commercial negotiations between operators and not be subject to formal review by ODTR;
2. Costs of TE's network are known only to itself and ODTR. OLOs need to view these if they are to make valid comments on costing during any ODTR review on prices and costs. LRIC costs should be used as soon as possible rather than historical costs;
3. Only non-competitive services should be included in the RIO.

Position of the Director

The Director agrees that the introduction of new services in TÉ's RIO should generally be the result of commercial negotiations between OLOs and TÉ or the introduction by TÉ of new interconnection services for use by its own retail divisions or Subsidiaries. Section 6 above discusses this matter and the timescales for publishing the availability of new services. Nevertheless the Director reserves the right to require TÉ to include services in the RIO at any time in the interests of market development.

The Director proposes that a review of the RIO should take place every 6 months to ensure that it accurately reflects services available to all operators in the Irish market. This will include consideration of new services as well as, where appropriate, proposals by interested parties that certain services be removed from the RIO as they are now considered to be provided in a fully competitive environment.

She considers that a review of prices of those services should form the basis of a more extended review to occur on an annual basis..

The Director agrees that LRIC costs should be used to determine TÉ's costs in accordance with accepted European best practice and Decision Notice (D6/99). Further information on

the use of LRIC costing has been released in a decision paper by the ODTR following the consultation paper on the topic[11] that has already been issued.

The Director considers that in order to facilitate review of the RIO it should be available in electronic form. TE should make this available on its Internet site.

Decision 7.2

The Director will review the generality of prices of all the services in the RIO on an annual basis.

The Director will review all the services in the RIO on an annual basis. However, while expecting that commercial discussions will inform the bulk of alterations to the RIO, given the current stage of market liberalisation the Director intends to review services bi-annually, dates will be announced in the ODTR work programme.

The Director reserves the right to investigate individual services and prices at any time outside these review dates.

7.3 Retrospection of Charging

A forecast of the true costs of interconnection will in all likelihood include some inaccuracies, although it can be expected that accuracy should improve with experience. Acknowledging this difficulty, ODTR 99/16 suggested that the true costs of interconnection might be assessed annually when regulatory accounting information is produced by Telecom Éireann and prices adjusted retrospectively.

The Director sought views on the appropriateness of applying such retrospective charges. She also sought opinions as to whether such a process should be applied to all interconnection services or only certain services.

View of Industry

The majority of respondents thought that the retrospective application of true interconnection charges was a good idea and that this should apply to all interconnection services. Two respondents were not favourable towards retrospective charging adjustments. Two questioned the validity of applying retrospection to all interconnection services as this could place a large administrative burden on OLOs for relatively little gain. They suggested that only the main interconnection services should be made retrospective.

Suggestions for alternatives to retrospection centred around the application of a price cap applied to interconnection charges.

Position of the Director

Retrospection has the following advantages:

- post-adjustment, all operators will have paid or received a true charge for interconnection based on costs incurred;
- the threat of retrospection will act as an incentive to accurate first round forecasting as operators know that they could subsequently incur a large one-off correcting charge;
- it avoids the need to recalculate interconnection charges everytime a major change in network design occurs.

It disadvantages, however, include:

[11] The Development of Long-Run Incremental Costing for Interconnection – ODTR Consultation Paper 99/17 **and** The Development of Long-Run Incremental Costing for Interconnection – Decision Paper D6/99 (ODTR 99/38)

- uncertain cash flows for all operators with the potential for significant adjustments to net revenue;
- if interconnection charges were to be overstated, new operators would not get the benefit of lower rates for a year at least - at a time when they probably would most benefit from such benefits;
- administrative complexity and additional work would result from the need to present or refute arguments twice rather than just once annually.

The disadvantages are certainly genuine, significant and recognised by the Director. The Director anticipates that as experience develops, she will be able (based on a past record of minor adjustments) to get to the stage when she can declare that the rate set at the start of the year (for some or all of the services) will be regarded as the final rate unless there are exceptional reasons to modify it.

Nevertheless, given both the current state of market development the fundamental importance of interconnection to the profitability of new operators and the need to move rapidly to a open market played on a level playing field, the Director is persuaded that the advantages currently outweigh the disadvantages and therefore supports the concept of retrospection application of rates for the immediate future.

The Director has considered the concerns raised on the practicality of operating and administering retrospection. Retrospection *was* a feature of the interconnection regime in the UK while competition was being introduced. In terms of practical operational procedures the carriers stored summary tables of billing information upon which revised estimates of amounts owed or due could be calculated when the new interconnect rates were agreed. There appear to have been few problems with the storage and calculation using this data. Interconnect billing systems are now even further advanced and the Director would not expect implementation or data archive problems to be a constraint given advance notice of retrospection. She therefore considers that retrospection is a practical option.

It remains therefore to consider how best retrospection can be implemented so as to maximise the advantages and minimise the disadvantages already quoted.

The Director considers that retrospection of charges should occur for all charges that are covered in the RIO. This encompasses both conveyance and non-conveyance services.

Where the Interim Charges and the Final Charges differ Telecom Éireann shall offer to include in its interconnection agreements with each operator terms that provide for:

(i) If the Interim Charge is greater than the Final Charge Telecom Éireann shall pay the operator the amount of the difference.

(ii) If the Interim Charge is less than the Final Charge the Operator shall pay Telecom Éireann the amount of the difference.

If retrospection is to ensure accurate forecasting of interim rates, it would appear sensible that interest charges should be included. However the Director notes that such changes may not always be appropriate. She will therefore consider the matter of interest charges when determining the final rates. As an example, the Director is likely to consider the failure to provide relevant information, at the time when interim rates were set, as sufficient reason to charge interest. However if the organisation needing to make an adjusting payment could not reasonably influenced the availability of the information on which the decision was made, there may well be a case for not charging interest on that payment.

The Director reserves the right under her statutory duty to review the applicable terms and interest payable.

The Director considers that retrospection should be reviewed annually and be based upon the actual traffic, operational and cost measures that have occurred in the past year. The Director

will however still reserve the right to review specific rates at any time in line with her statutory duty.

The need for retrospection is not considered to be undermined by the introduction of LRIC based calculation of interconnection charges.

Decision 7.3

The Director will annually review charges for all the interconnection services within the Telecom Éireann RIO to satisfy herself that these are in compliance with the legislation.

Given the current state of market development, the Director considers that, until otherwise notified, the annual review shall determine the final charges applicable for the accounting year or period gone by including interest, where appropriate, and will also estimate charges that will apply on an interim basis from that date forward. Where the charges determined as final for any particular year or period are materially different from those that had been previously estimated for that period, the final charges shall apply retrospectively.

PART III - Costing and Routing Principles

In this section, a number of issues relating to the prices charged for interconnection services are discussed as well as the related issue of routing calls requiring interconnection. Many of these issues have been raised before. They are revisited here because either there was insufficient time during the liberalisation process to resolve completely the various concerns of the parties involved, or new and relevant data are now available.

Areas covered include:

- Costing and Routing Principles
- Customer Sited Interconnect
- In-Span Interconnect
- ROCE
- Billing and Carrier Administration Charges
- National Transit
- Projected Minutes
- Time of Day Dependant Charging
- National Termination
- Operated Assisted Services
- Data Build & Modification
- Packet Switching Services
- Access to Paging Services
- Emergency Services
- International Access Traffic
- Access to the Directory Database
- Routing Factors
- Routing Principles for TE originating and TE terminating traffic

8. Costing and Routing Principles

8.1 Cost Review

Section 7 of this report looked at RIO management and quoted the need for annual review of costs and allowed for the use of retrospection. The principle of retrospection means, in principle, that the costs used during a year will be interim.

The Director also notes the ongoing work being undertaken to realise LRIC based prices for interconnection services and current activity on a review of leased line charges.

In this section, a number of changes to prices or their method of calculation are proposed. Some of these, in the Director's opinion, are relevant to the republished RIO required by

Decision 3.1. Others will be taken into account at the next annual price review, whilst still others will be encompassed within either the leased line price review or the LRIC study. The Director's views on retrospection of charges are detailed in section 7.3.

For those decisions that are required to be implemented in the RIO that is to be republished in accordance with Decision 3.1, the Director will, unless specified to the contrary (as is the case in, for example, Decisions 8.6 and 8.11) only reconsider a further recalculation in the following circumstances:

- substantially new data question the validity of the calculation;
- the recalculation conforms to the principles set out in the remainder of this section.

In saying this, the Director recognises that, for such decisions, a change to rates currently in force would only be made in the annual cost review under these conditions. The rates can therefore be considered to be final subject only to such exceptional circumstances.

Decision 8.1

The next annual review of the generality of prices (see Decision 7.2) to be included in the RIO will be applied with effect from 1 December, 1999. The interim charges currently applicable will remain until new rates are determined. The Director will approve the calculation of the final rates for the period ended 31 March 1999, and a revised set of interim rates (adjusted for projected changes in the year ended 31 March 2000), will be applicable from 1 December, 1999.

8.2 Customer Sited Interconnection

In section 4, modifications to the CSI offer were discussed. In this section the pricing for such services is considered.

Position of the Director

The rates set out in TÉ's RIO for Customer Sited Interconnection are based on TÉ's retail charges for leased lines pending the leased line cost review. TÉ notes that leased line pricing must according to other legislation be cost based, and that use for interconnection rather than other commercial use does not impact basic cost of provision. However, economies of scale and marketing cost avoidance arguments are used to justify a wholesale discount of 8%. The Director sought the views of interested parties as to the suitability of such a discount.

Views of Industry

All respondents to this question, except one, stated that the rates for leased lines used for interconnection should be cost based like other interconnection services. One operator stated that the wholesale discount should be a function of total sales and general administration costs applicable to leased lines. It was thought, although justification was not supplied, that these would amount to closer to 25% than the current 8% discount.

Position of Director

The Director is currently engaged in a work stream to review the costs of provision of leased lines and recognises that leased lines for interconnection costs cannot be considered in isolation. She will take into account relevant comments made as part of this consultation.

8.3 In-Span Interconnect

Charges for in-span interconnection (ISI) have, to date, not been considered by the Director to be adequately cost justified. This results largely from insufficient detail concerning the totality of costs involved in realising the offer in practice. Notwithstanding this, the Director sought the industry's views on the appropriateness of the current offering along with the level of the annual maintenance charge.

Views of Industry

A number of respondents re-iterated their replies to the question of the appropriateness of the interconnect offer for CSI, stating that higher capacity interconnection was likewise required. Respondents said they were unable to provide comments on costs of the service as this information was only visible to TÉ.

Telecom Éireann said it would provide a costing study to as great a degree of accuracy as possible given that it still lacked sufficient information about maintenance costs.

Position of the Director

The level of information is not yet sufficient for the Director to come to a robust conclusion on the matter of cost orientation in this issue. TÉ's offer of additional information is welcomed by the Director.

Decision 8.3

The Director requires TÉ to provide greater detail on the costs associated with ISI service provisioning options that reflect OLO requirements in time for the next cost review referenced in Decision 8.1.

8.4 Return on Capital Employed

The cost of capital must be assumed when calculating a cost-based interconnection charge. Furthermore, assumptions on the cost of capital can make a significant difference to the final cost charged.

In the consultation paper (ODTR 99/16) the Director welcomed comments on the methodology used to calculate the return on investment for the purposes of the interconnect tariffs. Specific questions were asked in regard to the following: -

- The most relevant method for calculating the cost of capital
- The use of the Capital Asset Pricing Model ("CAPM") to estimate the cost of equity
- An appropriate way to incorporate investor and other taxes in calculating the WACC
- Adjustment to estimates of the beta cost for TÉ as a whole in order to derive an appropriate beta for the network business only
- The appropriateness of the approach used to calculate the inputs to the WACC
- An appropriate gearing rate for an incumbent telecoms provider

As much of this discussion is technical in nature the details are presented in Appendix IV.

It is sufficient to say here that Director intends, in line with respondents' general support, to continue to use the WACC to calculate the cost of capital but proposes a few changes in how this should be calculated.

In line with Decisions 7.3 (retrospection) and 8.1 (date of next review), the Director proposes that the new method of account WACC be used when calculating the final interconnection charges.

The Director further notes concerns on the use of benchmarking. She considers that benchmarking against the returns of other international operators should only be used to the extent that it may identify inconsistencies in the inputs to the WACC.

Decision 8.4

The WACC shall be used to estimate the cost of capital. Calculation of WACC shall be as follows:

- **The CAPM will be used as the model for estimating the cost of equity.**

- **CAPM will be estimated using a combination of the following forms:-**
  - **Modigliani and Miller**
  - **Miller form**
- **Ideally a separate beta for TÉ's interconnection services and its estimation should be a long term objective. In the interim, a beta for the company shall be used i.e. a beta for the fixed line business.**
- **In estimating the beta for TÉ, additional privatised telecoms operators other than Telecom New Zealand shall be considered.**

These principles will be applied when prices are reviewed in accordance with Decision 8.1.

8.5 Billing and Carrier Administration Charges

The act of interconnection itself may generate additional costs over and above the interconnect specific costs. These can arise from the cost of physical additions to the system necessary to enable the network to handle interconnection traffic. Such costs may arise from administrative activities involved in setting up, maintaining and billing for interconnection.

In compiling its RIO, TÉ proposed the inclusion of additional costs for carrier services billing and administration to be applied variously to call origination, termination, transit and international rates. However, as the Director considered that the additional charges had not been fully justified by TÉ, they were excluded from the final agreed interim rates.

Views of the industry

All respondents agree that there are additional costs associated with the act of interconnection.

TÉ believe that these costs can be grouped into the following broad categories: -

1) Interconnection billing

2) Relationship management

3) Interconnection traffic management

4) Product development

However, there was differing views on what was appropriate to include or how such costs, if justified, should be recovered. Views can be summarised as follows: -

- Two respondents believe that operators should bear their own costs.
- One respondent thinks that additional costs relating to the physical interconnection should be recovered in the installation and annual maintenance charges of the interconnect facilities.
- Another respondent feels that only incremental costs should be recovered and that these costs should be spread across all network minutes (including all those generated by TÉ retail).
- One respondent also believes that interconnect specific costs should be recovered from all call minutes travelling over the network.
- Another view given is that non-discrimination requires that TÉ bear its own costs and interconnecting operators are charged only for incremental costs they have genuinely caused. There may be considerable difficulty in analysing such costs into those that are caused by TÉ and other operators. This respondent suggests that identifying the total costs

of such activities and recovering them equally over all minutes of traffic over the network is the best solution.

- One respondent is of the opinion that it would be appropriate to spread the common costs across an assumed number of parties and then to attribute these costs on an interconnect link basis.
- Another respondent believes that the principle of cost causality requires that these costs are recovered though the services which caused them to be incurred in accordance with EU Directives. In fact, this respondent believes that if these costs are not recovered from interconnecting operators it is a de facto example of TÉ customers cross subsidising the customers of other operators. They believe that the all interconnection specific costs should be recovered on a per minute basis in interconnection traffic.

The issue of whether transit tariffs should include a charge to recover settlement process costs was not considered a special case and one respondent felt that the same principles of cost causality and non-discrimination should apply.

One respondent believes it important to separate out those costs which are caused by interconnecting operators, and those which are general overheads, and which should be borne by TÉ.

In relation to whether international interconnect tariffs should include costs arising from the specification, design, construction and operation of additional billing functionality for international billing there were varying views. However, the majority of respondents felt that these costs should be recovered on a similar basis and calculated using the same principles used for national rates.

Position of the Director

The Director considers that additional costs for billing and carrier administration may be caused by the provision of interconnection services and that these costs should be recoverable to the extent that they have been both fully justified and identified as being incremental to interconnection and not incurred from the normal activities of the company. In preparing such a justification, full account must be taken of the special form of interconnection that occurs between TÉ Network and either the retail divisions of TÉ or Subsidiaries.

If such charges are justified they should be applied on a pence per minute rate.

In light of the above, the Director considers that she has not received adequate justification at the present time for the inclusion of specific additional charges for carrier billing and administration costs. The Director is also of the opinion that no special case has yet been justified for the inclusion of additional specific costs applying to transit or international traffic.

Decision 8.5

Additional costs caused by the provision of interconnection services may be recovered but only to the extent that they have been both fully justified and identified as being incremental to interconnection and not incurred from the normal activities of the organisation. This approach also applies to transit settlement and international billing costs.

Any incremental costs where justified should be recovered through a per minute charge on all minutes of relevant (e.g. international costs recover from international interconnection traffic) traffic[12] over the network.

[12] OLO and TÉ Retail

TÉ has provided no additional justification for the billing and carrier administration costs submitted in November and the Director requires that no such charges be included in the RIO to be republished in accordance with Decision 3.1.

TÉ has provided no additional justification for the transit settlement and international billing costs submitted in November and the Director requires that no such charges be included in the RIO to be republished in accordance with Decision 3.1.

8.6 National Transit

Transit rates apply to calls handed over to the TÉ network from an originating OLO's network for termination in networks other than the TÉ network. Transit traffic can currently be passed to the TÉ network at any tandem exchange, but TÉ does not at that point necessarily know to what network the call is destined. TÉ states that to perform the necessary analysis at the originating tandem switch would, without additional equipment, compromise the security of switch operations.

TÉ's original transit offer - considered unacceptable by ODTR - consisted of two rates: transit to mobile and transit to fixed.

However, some transit calls need switching once only, while others pass through more exchanges. The need for different transit bands (e.g. single tandem transit, short double tandem transit, etc.) was therefore raised. TÉ stated that it was not currently feasible to have different tariff bands.

The Director noted TÉ's arguments and proposed that the matter of appropriate routing arrangements and operator identification codes be re-considered as part of this consultation.

Views of the industry

There was little consensus on either the most appropriate transit charging regime or the practical measures needed to implement one. There was, nevertheless, concern that even the interim rate was excessively high.

TÉ strongly disagrees with the Director's view that all transit calls, irrespective of their routing patterns, be charged at the lower 'mobile' rate.

Position of the Director

The Director is concerned that OLOs should not be penalised because of inefficiencies in the operation of traffic analysis and routing by TÉ but, unfortunately, considers that she has insufficient information to make a clear decision on transit rates now. The development of a LRIC model will enable a clearer decision to be made. The Director therefore considers that in the interim the current single transit rate should continue.

While the Director is not satisfied with using one transit rate she considers that there are a number of requirements that need to be addressed to introduce multiple transit rates which reflect the use of interconnecting operators' network elements. To commence this process, the Director asks TÉ to describe the improvements required in their interconnect billing system to be able to bill multiple transit rates

Decision 8.6

The Director requires that in the RIO to be republished in accordance with Decision 3.1 the current single transit rate shall continue to be used for all transit calls. However, transit rates will be further reviewed as part of the LRIC study.

8.7 Projected Minutes

Traffic volumes (real or estimated) are needed to calculate cost based interconnection charges. Projected 1999 traffic volumes were used in calculating the interim interconnection

rates to take account of the increasing network efficiency of TÉ with the volume of traffic growing faster than associated costs. These projected volumes were calculated using information provided by TÉ on traffic routing factors, anticipated traffic volume increases in 1999, and existing traffic volumes.

Views of Industry

While respondents favoured the use of projected minutes when calculating interim interconnection rates they disagreed with the use of using past volume increases to calculate the projected increase in future minutes. Some respondents believed that this would systematically underestimate the increases in minutes, while one respondent believed that this would overestimate the projected increases.

A number of different approaches to overcoming the perceived weaknesses in the approach were suggested. These included using TE's forecast minutes rather than past volumes, independent market analyst forecasts and the development of an econometric model.

Position of the Director

The Director considers that, whilst not the most accurate, the current method of predicting minutes is practical and proportionate in level of cost and effort to the desired outcome. She therefore recommends that the method continue to be used.

Nevertheless, the Director recognises that the construction of an econometric model would be the more robust approach to forecasting the projected minutes to be used in calculating interim interconnection minutes. The Director would welcome proposals on how such a model should be constructed and managed, and how the data on which it relies should be collected and validated.

Decision 8.7

Calculation of rates to be used in the RIO to be republished in accordance with Decision 3.1 should use the same minutes as those used in the last calculation. The cost review will use actual minutes for the relevant period in so far as is practicable.

8.8 Time of day dependent charging

The current interconnection rates vary according to the time-of-day and the day-of-week when a call is made. The current split of interconnection rates between peak, off-peak and weekend (where appropriate) is based on a retail traffic gradient.

The consultation paper sought the views of interested parties as to whether the charges for the use of TE's network should vary in accordance with a traffic gradient or should be averaged over a 24-hour period. The paper also sought the views of respondents on the type of traffic gradient that should be used and over what period should this information be collected.

Views of Industry

The majority of respondents favoured the use of a retail traffic gradient to price interconnection charges. This was regarded as being a pragmatic solution for the current interconnection regime. Three respondents favoured the use of an average 24-hour rate.

One respondent regarded the use of data from a full year to be the optimal solution when determining gradients. This respondent believes that practical constraints would lead to the use of a shorter timeframe and that one month would provide a representative and statistically reliable sample.

The PSTN network is normally dimensioned according to the maximum traffic required in the busiest hour of the day. The network capacity used for peak and off-peak[13] calls is a joint cost between these services i.e. capacity used to meet peak demand also provides the ability to

[13] Including Weekend where appropriate.

meet demand in the off-peak times. It is therefore very difficult to attribute the costs between the charging periods, particularly at extreme off-peak times when the network is, to all intents and purposes, empty.

Using the retail traffic gradient has some disadvantages. It departs from true cost causality and also ties other operators call costs and therefore their retail tariffs more closely to TÉ's existing tariff structure. This may not be optimal or desirable for all new operators. However, the use of an average 24 hour rate is even more arbitrary as this does not recognise that the bulk of costs are associated with dimensioning the network for busy hour traffic. Despite the disadvantages of using a retail traffic gradient, it is usually a pragmatic solution commonly adopted to the difficulties of measuring true cost causation.

Position of the Director

The Director considers that use of a traffic gradient to be a pragmatic solution to the difficulties of measuring the true cost causation of interconnection charges. The retail traffic gradient shall be calculated from the relevant period over which the charges shall apply. Where this is not possible the sampling principles outlined in Decision 9.1.3 (routing section) shall be applied.

Decision 8.8

A traffic gradient shall be used when calculating the costs of interconnection calls.

The traffic gradient to be used shall be a retail traffic gradient.

The retail traffic gradient shall be calculated from the relevant period over which the charges shall apply. Where this is not possible the sampling principles outlined in Decision 9.1.3 shall be applied.

The charges to be included in the RIO to be republished in accordance with Decision 3.1 shall be based on the same gradients as used for the last calculation.

8.9 National Termination

National call termination rates apply to calls passed from an OLO network to the Telecom Éireann network for termination in that network.

The conveyance charges that apply to the Primary and Tandem charging levels are currently averaged across the country. However, an element of distance de-averaging has been used for Double Tandem calls, so that the interconnection charges are more closely related to the actual usage of the Telecom Éireann network.

The consultation sought the views of interested parties on whether double tandem calls should be distance de-averaged and if so, what would appropriate charging levels.

The majority of respondents agree that Double Tandem calls should be distance de-averaged and that the current extent of de-averaging is sufficient. One respondent while agreeing that the current structure is appropriate, believed that there could be a case for introducing a third distance band for distances greater than 100km. They considered that the majority of this type of traffic would be on one route and that in practice the effect of introducing this band would be small. Another respondent believed that the current extent of double tandem de-averaging should be simplified and not further complicated.

The Director considers that the additional complexity would outweigh benefits and it is appropriate to use the current charging structure.

Decision 8.9

The current charging structure for National Termination Double Tandem shall continue to be used in the RIO to be republished in accordance with Decision 3.1.

8.10 Operator Assisted Services

In ODTR 98/60 the Director agreed interim rates with TÉ for operator assisted services, on a fixed charge per call basis, in the following areas:

- National Directory Enquiries
- International Directory Enquiries
- National Operator Assistance and
- International Operator Assistance

For these services, TÉ conveys calls handed over from the network of an OLO to a TÉ operator centre. Both enquiry services are the same as that offered to customers directly connected to the Telecom Éireann network.

The rates agreed were of an interim nature as not all the relevant information had been provided by TÉ to enable the ODTR to assess compliance with the relevant interconnection legislation.

Views of the industry

Respondents believe that charges for these services should be calculated on a LRIC basis and, in advance of implementing a fully LRIC based costing system, estimated LRIC would be an appropriate basis for calculating charges for these services rather than fully allocated historic costs.

TÉ believes that wholesale rates should be based upon Fully Allocated Costs. However, Telecom Éireann recognises that, since the publication of the FAC figures, significant technology and organisational changes have resulted in significant reductions in underlying cost and, therefore, believes the FACs should be adjusted to reflect these gains. As a consequence, TÉ is currently undertaking a detailed analysis of relevant costs, and should be in a position to propose new cost-based rates in the coming months.

Position of the Director

Given the fundamental difference of opinion between TÉ and the OLOs the Director intends to review this matter as part of the LRIC study and will take TÉ's new data and all views into account at that time.

Decision 8.10

The current charges shall continue in force until the matter is reassessed as part of the LRIC study.

8.11 Data Build and Modification

In document ODTR 98/60, the Director agreed interim rates with TÉ for the costs that may be incurred when initially setting up data build in the switches and for future modifications to that data. The rates were agreed pending this consultation on whether, and, if so, to what extent, there should be a charge to recover the costs of data build.

Views of the industry

One respondent believes that where the costs of data build and modification can be fully justified, they should be recovered through a specific interconnection charge to interconnecting operators.

Three respondents believe that these costs should be recovered by means of a PPM charge over all call minutes. A number of arguments have been advanced by these respondents for this treatment of the data build costs. They believe that: -

- the costs of data build are caused in part by OLOs and in part by TE's own updating requirements;
- charging OLOs up front for the full cost of data build would represent a potential barrier to entry, as it is a charge that will have to paid before any business is generated by an OLO;
- it provides an incentive for TÉ to incur costs efficiently;
- data build and modifications are incurred to provide inter-operability between networks and thus benefit the customers of both TE and OLOs. Data build and modifications being essential if TÉ's customers are to call the customers of OLOs;
- they are a general overhead of competitive network environment from which all consumers benefit.

One of these respondents believes that the only data build and modification costs that might be excluded should be those that do not relate to the provision of "any to any" connectivity.

Four respondents believe that that TE should not recover these costs, but that each operator should bear its own costs. Two of these respondents do not charge TE for their own data build and modification costs and do not believe that these costs can be sufficiently quantified and justified.

No additional information was provided in relation to what were the likely resources involved in data design, project management, implementation and testing of data build and modification.

Position of the Director

The Director has not received sufficient justification for the maintenance of separate charges for data build and modification and considers that data build and modification costs should be recovered through a Pence Per Minute charge on all network minutes. The Director notes that there may be instances when certain types of data build and modification may need to be charged for separately.

Decision 8.11

The RIO to be republished in accordance with Decision 3.1 shall maintain current arrangements for Data Build and Modification. Fully justified pence per minute charges may be considered as part of the full annual cost review referred to in Decision 8.1.

8.12 Packet Switching Services

TÉ currently conveys packet service access calls handed over from an OLO's network for delivery to operators connected to the TÉ network. These are currently delivered to the TÉ network at the tertiary node. The charge for this service is composed of a weighted average of the tandem and long double tandem national termination rates.

The current service provides access only to the packet switch network and the charge relates to the use of the PSTN for this purpose.

Two respondents agreed that the current approach is sensible as a start but requires further examination. Another respondent queried the acceptance of Packet Switching Service access calls at the tertiary node only and the payment of a weighted average call termination rate for these calls.

The Director has considered the above views of the respondents and considers that as connection to Packet Switch Services are generally at the tandem level in TE's network that OLO should be able to deliver calls to the tandem level of TE's network (unless TÉ can provide sufficient justification for doing otherwise). The charging for this service should also

be modified to charge the individual call termination rates instead of a weighted average of these rates.

Decision 8.12

TÉ shall provide access to Packet Switching Services at the Tandem (Secondary) switch level of its network.

The current charging structure for access to packet switching services shall be modified to charge the individual call termination rates instead of a weighted average of these rates.

8.13 Access to Paging Services

TÉ currently transit paging service access calls received from OLOs to the networks of paging operators. Access to the paging network is treated by TÉ as the same as access to any other network, with a call termination fee, where appropriate, paid to the network terminating the call and a charge to transit the call across the TÉ network.

The consultation paper sought the views of interested parties on the appropriateness of the current charging structure for access to paging service.

One respondent proposed that two-part charging be introduced (i.e. a separate call set-up charge and a duration charge). They believe that this would ensure that market signals are not distorted where shorter calls are effectively subsidised by longer calls.

Two respondents believe that the tariffs applied to OLOs should be cost-oriented, transparent and non-discriminatory. Another respondent agrees with the current charging method for this service. One respondent feels that the present charging structure is only appropriate so long as OLOs are able to offer paging services or can obtain direct interconnects to TE's paging subsidiary's network.

The Director considers the current charging structure for access to paging services to be appropriate, subject to the changes in the transit element of any charge as set out in Decision 8.6. At present, sufficient justification has not been received for the use of separate call set-up and duration charges. In regard the obtaining direct interconnection to TÉ's paging subsidiary, in the first instance, new RIO services should be requested of TÉ with instances of non-resolution of requests being referred to this office.

Decision 8.13

The current charging structure for access to paging services of applying a transit charge for use of the TÉ network and a termination charge for using the paging network is considered appropriate subject to the changes in the transit element of the charge arising from Decision 8.6 above on National Transit.

8.14 Emergency Services

Telecom Éireann currently makes no charge for the conveyance of calls to the emergency services.

Prior to liberalisation the Director did not consider that TÉ had provided sufficient justification why a charge should be made for these calls. She once again sought the views of industry on the question of charges for this service.

View of Industry

None of the OLOs thought an interconnection charge should be made for calls to emergency services. One pointed out that the costs of establishing call centres to deal with such calls are sunk. It is unlikely that there will be significant growth in this type of traffic. Extra costs should be recovered from general call revenues.

Position of the Director

No further information has been submitted by TÉ which changes the view of the Director. She considers that TÉ should not presently be able to charge for calls to emergency services.

Decision 8.14

Emergency services shall not be charged for pending the outcome of the consideration of wider policy issues relating to Universal Service Obligation.

8.15 International Access Traffic

The international access traffic service covers the conveyance of international traffic handed over from an OLO's network for delivery through the Telecom Éireann international network.

The current charging structure in the RIO is based on a combination of country specific charges and chargebands[14].

The majority of respondents favour the use of a combination of individual country charges and country chargebands. With the individual country charge approach used for those countries to which significant proportions of total traffic flow to, and the chargeband approach used for those countries which relatively insignificant traffic flows.. One of these respondents believes that the interconnection charges should separately identify the costs of the international network components and the settlement charge costs and that this should be incorporated into the accounting separation statements so that the network cost elements can be subjected to audit.

One respondent believes that international traffic charges should be based on an average rate with no differentiation between peak, off-peak and weekend rates.

One respondent believes that individual country charges should be used for all international destinations.

Two respondents believe that the provision of international services is competitive service and as such the market will dictate the appropriateness of the charges.

The Director considers the use of a combination of country specific charges and chargebands to be appropriate. The use of charges based on a traffic gradient versus charges based on an average 24 hour rate has been considered previously in this Decision Notice. An adequate justification of the competitiveness of the international market has not been received and therefore the Director does not believe that at this point in time that the international market is sufficiently competitive to justify a reduction in regulatory oversight.

Decision 8.15.1

The Director considers that the current structure for international charges of using a combination of chargebands and country specific rates to be appropriate.

The international market is not yet sufficiently competitive to justify a reduction in regulatory oversight.

Currently, international access is only provided at the tertiary node level in TÉ's network. TÉ is not currently able to provide access at the tandem node level, due to constraints in its billing system.

One respondent believes that the costs of adjusting TÉ's billing systems would outweigh any potential benefits arising from providing access at the tandem level, as these would have to be directly recovered from interconnecting operators.

[14] Which represent the weighted average cost of international access to a group of countries e.g. Band 8 Middle East and South Africa includes Bahrain, Lebanon, Oman, etc

A number of other respondents believe that that international access should also be offered at the tandem level. One of these respondent believes this would allow more flexibility, better network utilisation and provide a more cost-effective and thus competitive solution if operators are allowed to hand over international traffic at either tandem or tertiary nodes.

The Director considers that the provision of international access at the tandem level could allow operators more flexibility and better network utilisation in their operations and would like to see it in place unless the costs of implementing the scheme can be shown to out weight the benefits. The Director therefore considers that TÉ should develop the relevant plans and costings for the required changes to its billing systems by the 29th October, 1999 which are based on the demands of OLOs. These plans should enable the required changes to be completed within 6 months of the project's start. At that time the Director will consider the cost effectiveness of the changes on interconnection changes.

Decision 8.15.2

TÉ shall, subject to market demand, develop by 29 October, 1999 relevant plans and costings for the implementation of changes to its billing system to enable access to international services to be provided at the tandem level in its network to be completed within 6 months of the project's start.

Respondents agreed that it is appropriate for the per minute cost of international access to each destination should be based on the actual cost of the international network elements used to carry traffic to that destination divided by the volume of traffic to that location.

The Director considers it appropriate that the per minute cost of international access should be based on the actual costs of the international network elements used.

Decision 8.15.3

International access charges shall be based on the actual costs of carrying the traffic to its final destination.

8.16 Access to the Directory Database

The current 'Access to Directory Database' service offers on-line access to the directory database by the use of an agreed number of terminals for connection via a leased line from the OLO's premises to Telecom Éireann's premises.

The consultation document sought the views of interested parties about the charging structure, the level of access and the structure of the service.

In relation to the current charging structure, one respondent supported cost-based charging for services as a means to providing efficient market incentives and promoting competition. Another respondent believes that the charges for these services should be on a LRIC basis.

One respondent considers that the charges should be based on two components. The first component the fixed charge for the use of the database and the second charge specifically related to the cost to provide interconnection to the OLO. Another respondent noted that in the UK, BT charges for access to its directory database via a fee for a terminal, which is similar to the current charging structure in the RIO. TE is currently reviewing the cost basis for the current published changes pursuant to a separate ODTR request.

The Director considers the current charging structure to be appropriate, subject to the link between the OLO's and TE's premises being included as part of the RIO service offering.

Decision 8.16

Access to Directory Database shall be on a fixed fee basis. TE shall include the costs and details of the link between and OLOs premises and the Directory Database in the RIO.

TE shall provide justification for its directory access charges by 1st October, 1999.

As mentioned above, the consultation document sought views on the level of access and the structure of the access to directory database service

One respondent believes the current structure of the services to be efficient, to the extent that operators pay only for those network elements that are used.

Another respondent considers the ability to obtain a database download and regular updates from TÉ to be critical to enabling the provision of competitive directory services.

Another respondent believes that the database should contain all numbers under the Irish Numbering Scheme due to the increasing number of operators being allocated numbers. One more respondent feels that both the method of access to the database and the charges levied for such access need to be reviewed in the wider context of the liberalisation of DQ services.

TE have indicated in their response to the consultation that in the interest of promoting a competitive market and providing choice to consumers, it is willing to discuss alternative service offerings, if so requested by interconnecting operators. The Director welcomes this offer.

9. Routing

9.1 Routing Factors

Routing factors are fundamental to the calculation of interconnection charges as they are a measure of the frequency with which particular network components are used by each interconnection service.

Routing factors depend on the profile of calls generated by an interconnecting party in terms of both time of day and location. Thus for existing operators they could be measured retrospectively. The current interim rates were calculated using theoretical routing factors based on TÉ's network traffic matrix and routing matrix. These routing factors generally reflect the usage of network components by fixed telephony traffic. The Director was not presented with satisfactory evidence that the factors used were inappropriate and should continue as the basis of the calculation.

Theoretical measures will continue to be used in future and these will be based on regular sampling of network element usage by traffic.

Decision 9.1.1

Theoretical routing factors based on general network average usage shall be used for calculating interconnection charges. The routing used in the RIO to be republished according to Decision 3.1 should be the same as those used in the last recalculation.

The majority of respondents were in favour of using TÉ's network traffic and routing matrices to calculate theoretical routing factors. One of these respondents believes these routing factors should reflect those that would result from an efficient network, and that their calculation is analogous to one of the steps involved in building a bottom-up LRIC model.

Another respondent believes that using figures generated from the TÉ network to produce theoretical routing factors would be inappropriate. Instead they believe that more generic types of routing factors should be used.

The Director considers that the use of TÉ's network traffic and routing matrices when calculating theoretical routing factors to be appropriate. Nevertheless, the Director notes that this issue is likely to need to be addressed again as part of the working group on developing a bottom up LRIC model.

Decision 9.1.2

The use of Telecom Éireann's network traffic matrix and routing matrix is appropriate for the calculation of average theoretical routing factors.

Statistical confidence is seen to be a key requirement by respondents when selecting an appropriate sampling period, and the extent to which the period is representative of the year is also seen as important. Two respondents believe that the traffic sampling should include all the call types that use the network.

The Director reflecting on these concerns makes the following decision.

Decision 9.1.3

The period of sampling used when measuring the usage of network components should be sufficient to ensure it is:

- **unbiased\objective;**
- **is statistically significant;**
- **representative of the entire population;**
- **is not skewed by seasonal or other factors;**
- **determined in a statistical manner.**

The traffic sampling shall include all the call types that use the network.

The majority of respondents are of the opinion that there should not be a different set of routing factors for different traffic cases. One OLO believes that other than in the area of mobile, there are no compelling reasons for a different set of routing factors.

Another respondent believes that different routing factors should only be used when there is a systematically different pattern of consumption associated with a particular product.

The Director considers that different routing factors should only be used when there is a systematically material difference in the usage of network components by a particular type of traffic.

Decision 9.1.4

Different routing factors shall be used where there is a systematically material different network component usage associated with a particular type of operator.

9.2 Routing Principles for TÉ originating and TÉ Terminating Traffic

The routing principles set out in the RIO for calls terminating on TÉ's network are different from those for calls originating on TÉ's network. This could lead, in some instances, to OLOs either increasing the PoIs they have with TÉ or in them incurring extra routing costs.

TÉ considers the routing principles to be appropriate especially in light of the limited network build out in Ireland at present.

View of Industry

Most respondents felt that routing for origination and terminating calls on TÉ's network should, in fact, be the same. Some felt that they were incurring additional routing costs as a result of this difference.

Respondents felt that the costs of modifying routing tables in exchanges, which is a simple software amendment, would not be that great and felt that TÉ should bear the cost of this as OLOs may also have to change their routing tables, something for which they could not recover the costs. The number of tandem switches in the TÉ network is quite small.

TÉ pointed out that switching costs may rise due to a greater number of digit analysis being required on each call. ODTR does not have full details concerning the level of costs involved.

Position of the Director

The Director considers that traffic should be routed in the manner of an efficient best practice operator. The Director requests that TÉ and the OLO's examine the options for more efficient routing of traffic between themselves.

The Director considers that TÉ should offer a Data Management service for interconnecting carriers to enable efficient routing of operator's traffic in accordance with the other operator's routing plan. The Director expects that any charge for this service will be quite low as TÉ already provide basic routing information in their Tandem exchanges. The Director also notes that number portability requires such software improvements on TÉ exchanges.

The Director will discuss with TÉ the level of costs involved, the charges for a Data Management service - to ensure that it is cost-orientated and transparent and a timetable for the implementation of efficient routing in TÉ's exchanges.

Decision 9.2

The Director requires TÉ to provide national call origination from any tandem switch in order to provide routing in an efficient manner. The Director considers that the costs of implementing such efficiencies in routing are relatively small. The Director requires TÉ to cost the development of and provide a draft timetable by 31st October 1999 for its implementation including the offer of a Data Management interconnection service in the RIO. In the interim the Director directs that the Routing Factor for Origination traffic shall be equivalent to the current Routing Factor for Termination traffic.

Appendix I - Related Consultations and Decision Notices

Accounting Separation (ODTR 99/35& ODTR 99/52[15]): Decision Notice published in May 1999 and August 1999

Document ODTR 99/35 addresses the requirement for accounting separation, the nature and extent of such separation and what information should be published on foot of such accounting separation. In also highlighted some issues relating to Telecom Éireann subsidiaries that required further industry consultation. The report on these issues was published in August (ODTR 99/52).

Costing Principles (ODTR 99/43[16]): Decision Notice D8/99 published in July 1999

This Decision Notice sets out the Director's position in regard to the costing principles that should be applied when calculating interconnection costs. It considers the recommendations set out in Part 2 of the Commission Recommendation on Interconnection (98/322/EC), and addresses the appropriate methodology to be applied in establishing appropriate cost drivers and allocation methods to be used primarily for accounting separation purposes.

LRIC (Long Run Incremental Costs)(ODTR 99/38[17]): Decision Notice D6/99 published in June, 1999

A key issue that has been the subject of much discussion throughout Europe is the basis on which interconnection costs are calculated. In line with best practice throughout Europe and in particular Part 1 of the European Commission Recommendation on Interconnection (98/195/EC), the Director considers LRIC based costing to be the most appropriate basis to be used. This Decision Notice sets out the Directors position on how they may be best-applied in Ireland's liberalised environment.

Unbundled Local Loop (ODTR 99/21[18]): Consultation Paper published in March 1999; Report due in September 1999

The unbundling of the local loop is seen as a key enabler of competition in local telecommunications services. This consultation paper considers the benefits and costs of unbundling the local loop in Ireland, the forms of unbundling that might be implemented and how such access might be priced.

Price Capping (ODTR 99/33[19]): Decision Notice published in May 1999

This Decision Notice, in reviewing the price capping mechanism currently in place in Ireland, touches on the issue of tariff rebalancing and its relationship with price capping.

Internet in Ireland (ODTR 99/46[20]): Report published in July 1999

This report concludes the second stage of a consultation on Internet in Ireland and related interconnection and access issues. The report sets out a new interconnect framework for calls to the internet that is designed to enable variety and choice in the provision of services to

[15] Accounting separation and publication of financial information by telecommunications operators, Decision Notice 5/99 and consultation report and issues for further consultation (ODTR 99/35) & Accounting separation and publication of financial information by telecommunications operators, Decision Notice 10/99 and consultation report (ODTR 99/52).

[16] Costing Methodologies for use in Accounting Separation, Decision Notice and Report on Consultation.

[17] The development of Long Run Incremental Costing for Interconnection, Decision Notice D6/99 and Report on Consultation

[18] Local Loop Unbundling, consultation paper

[19] Price Cap on Telecom Éireann 1998, decision notice

[20] Interconnect for calls destined for Internet Services and Number Translation Codes, Report on Consultation

consumers and ensure a level playing field for Internet Service Providers and other operators in the telecoms market in Ireland

Dispute Resolution: Consultation paper (99/13)[21] issued in March 1999; Report in September 1999.

This paper proposes a dispute resolution procedure operated by the ODTR and sets out the linkages to the dispute resolution procedures and service level agreements of operators. The paper seeks views on the proposed process, the scope of its application and the timescales set out. Disputes may arise between TÉ and OLOs regarding carrier services. Consequently, the dispute resolution procedure proposed should be considered in light of its applicability to the processes highlighted in this document.

Service Levels Provided to Other Licensed Operators by Licensees with Significant Market Power – (ODTR 99/48) Report on Consultation published in August 1999

This report sets out the Director's conclusions on a number of carrier services and associated service levels. completed a review of the service levels to be offered by Telecom Éireann to other telecommunications operators. Service Level Agreements (SLAs) are to be introduced by Telecom Éireann by 1 November next, in respect of key services for other licensed operators (OLOs). The report outlines the Director's position on the delivery timeframes, quality levels and maintenance terms for services provided by Telecom Éireann to OLOs

[21] Dispute Resolution Procedures – Consultation Paper

APPENDIX II - Acronyms used in Consultation Paper

BT	British Telecom
CAPM	Capital asset pricing model
CSI	Customer Sited Interconnect
EU	European Union
ISI	In Span Interconnect
ISP	Internet Service Provider
NDC	National dialling code
O&M	Operations and Maintenance
ODTR	Office of the Director of Telecommunications Regulation
OLO	Other licensed operators
ONP	Open network provision
PoI	Point of Interconnect
PoP	Point of Presence
PSTN	Public switched telecommunications network
RIO	Reference interconnect offer
ROCE	Return on capital employed
SI	Statutory instrument
SMP	Significant market power
TÉ	Telecom Éireann
USO	Universal service obligation
WACC	Weighted average cost of capital

Appendix III - SLAs for TÉ Reference Interconnect Offer

1. Introduction

The Reference Interconnect Offer (RIO) of Telecom Éireann (TÉ) has an associated "Interconnect Operations and Maintenance Manual" (O&M Manual). This manual contains an agreed list of procedures between TÉ and Other Licensed Operators (OLOs), for the purposes of provision and ongoing operation of interconnect links.

However, there is currently no Service Level Agreement (SLA) for these processes, whereby:

- the standards which are set in the O&M Manual are binding on TÉ and the OLO
- failure to adhere to such standards is sanctioned through a penalty payment structure.

This document sets out the Director's position on the attributes of the O&M Manual that should be the subject of the SLA. TÉ shall draw up a draft SLA, including penalties, for the processes contained in this report and submit it to the Director by 15 October 1999. Following approval by the Director of the TÉ draft SLA, TÉ will publish a final SLA on 15 November 1999 to come into effect from 1 December 1999.

2. The O&M Manual

The O&M Manual contains descriptions of a number of processes which have been agreed between TÉ and the OLOs. Amongst these processes, the following have specified "target" values and are of sufficient importance to be the subject of an SLA.

Table: O&M Manual Processes for Inclusion in an SLA

Process	**"Target" in O&M Manual**
Pre-provisioning	
Order acknowledgement	By TÉ, **within 5 working days**[22] of receipt by the Order Control Point
Offer of alternative service	By TÉ, **within 10 working days** of acknowledgement of a completed order form. This will only be required if TÉ is unable to offer the interconnect service requested
OLO acceptance confirmation	Acceptance of any alternative offer **within 10 working days** of receipt.
Provisioning	
Provision of circuit designations and notification of applicable acceptance test suite	Not specified currently in O&M
Notification of Ready for Test date	Not specified when this will be offered. However, testing will take place within the following 2 week period, with 3 working days' notice from the OLO. Otherwise by mutual agreement.
Service provisioning timescales	
	New Path on existing Link to an existing PoI - 8 weeks from order

[22] 0900-1700 Monday to Friday excluding public holidays

	acknowledgement
	New Path requiring new Link to an existing PoI - 10 weeks from order acknowledgement
	New Path on new Link to a new PoI using CSI[23] - 16 weeks from order acknowledgement
	New Path on new Link to a new PoI using ISI[24] - 26 weeks from order acknowledgement
	Rearrangement of existing Path - 8 weeks
Post-provisioning	
Fault reporting	24-hour, 365 day reporting Customer Service Affecting : 60 minutes initial response with status updates every 60 minutes Non-Customer Service Affecting : 1 working day, with updates every following working day
Planned maintenance	10 working days' notice by either party. No provision for over-running works.
In-service quality	
Grade of Service	<0.5% blocking in the busy hour Provided in Technical Manual but not guaranteed.
Number range allocation	
Acknowledgement of receipt	By TÉ, within 5 working days
Implementation	By TÉ, within six weeks of notification By OLOs, within six weeks of a bulletin from TÉ.

Paragraph 1.1.1.1 of the O&M Manual states that it [the manual] is not a legal document but provides descriptions of the processes associated with implementing and operating interconnect between operators.

The ODTR has determined that such processes require a contractual framework, a Service Level Agreement, against which TE's performance can be measured. Such a Service Level Agreement should:

- state which attributes are covered by this legally binding contract between the parties
- the levels of service which are guaranteed for each attribute
- any penalty due for non-performance against any SLA attribute.

As such, the SLA will extend the O&M Manual into a legally binding contract between the parties.

3. Proposals for Content of the TÉ RIO SLA

After reviewing the O&M Manual and the 'best practice' in Europe, the Director wishes to make the following recommendations for attributes of the TÉ SLA, the standards to be set, and any conditions attached.

[23] Customer Sited Interconnect
[24] In-Span Interconnect

Where "standards" are not guaranteed, TÉ should continue to make best efforts to achieve the targets set out in the O&M Manual. The ODTR should require TÉ to maintain statistics on its achievement of such targets for periodic review.

Table 2: Proposed SLA Content

SLA Attribute	Standard to be Guaranteed	Conditions
Pre-provisioning		
Forecasting of requirements by OLO	As stated in para 3.2.1.6 of the O&M Manual.	Provisioning penalties shall be waived for circuits that fall outside of the forecast maximum requirement.
Provisioning		
Notification of Ready for Test date	After 50% of the provisioning period.	Penalty to be paid for late notification.
Service provisioning timescales		
	New Path on existing Link to an existing PoI - 8 weeks from order acknowledgement	Penalty to be paid for late delivery, if the OLO fulfils all the requirements placed on it and TÉ provides notice of such requirements as stated in the O&M Manual.
	New Path requiring new Link to an existing PoI - 10 weeks from order acknowledgement	As above
	New Path on new Link to a new PoI using CSI- 16 weeks from order acknowledgement	As above
	New Path on new Link to a new PoI using ISI - 26 weeks from order acknowledgement	As above
	Rearrangement of existing Path - 8 weeks	As above
Post-provisioning		
Fault reporting	24-hour, 365 day reporting Customer Service Affecting : 60 minutes initial response with status updates every 60 minutes Non-Customer Service Affecting : 1 working day, with updates every following working day	'Working hours' is redefined to become 24-hour, 365 days for interconnect services. Penalty covered by availability standards. See below.
Planned maintenance	10 working days' notice by either party. No provision for over-running works.	Penalty covered by availability standards. See below.
In-service quality		
Availability	99.9% over one year, per interconnect link. This equates to 8.76 hours per year.	Penalty payable for non-conformance

4. Penalty Regime

There should be a penalty regime. This is discussed in the main body of the text. The Director considers that penalties should be based on the same principles as those used for other carrier services. For details of these please see [reference to SLA paper].

Annex IV - Status of Co-location in Other Countries

Germany

Physical co-location prepared at 52 locations nation-wide. Physical preparation means provision of 10 separate rooms at main locations and 5 separate rooms at other locations. Each room has 10 m2; aircon, own door and same power supply as DT. Principle of first come, first served will be used. DT must give 12 months notice to co-locating competitors if it wishes to move its equipment or that of a competitor, in the co-location building.

The interconnection seeker is responsible for the cable to the last manhole on public grounds before DT's site. A maximum of two cables from each co-locating operator is allowed into each building due to capacity problems at the manhole. Switching equipment, intercarrier connections and microwave access are forbidden on DT co-location premises.

Operating principles- each carrier has 24-hour access through its own access door. DT has access to all rooms in case of emergency, but must normally give notice if entry to competitor's room is for routine purposes.

Pricing principles

- one-off fee for installation of common room DM 83,000
- one-off fee for co-location room DM 11.500
- annual rental charge

Annual rental charge is location specific. Energy bills are paid separately. One-off fee for common room is paid for 100% by first access seeker, then 50% is paid to first access seeker by second, then 33% is paid to first two access seekers by the third, etc. Competitor pays costs of DT of taking cable from manhole to co-location room. Subsequent changes due to DT are borne 50% by DT, 50% by the access seeker. DT bears cost of unused co-location rooms.

The Netherlands

Co-location can be realised at 20 PoIs with the trunk network in the Netherlands. A pro-forma co-location agreement is adapted to meet the needs of each access seeker and is adapted depending on the location. Number of square metres is not fixed and equipment used should be ETSI standard approved. Reserve power supply is optional extra.

First come, first served principle, with KPN only providing co-location where space is available usually in a large common room for access seekers. This common room is separated from KPN's equipment. Access seekers can demand separate lockable rooms. Inter-carrier connection is possible at co-location sites, but only through use of leased lines managed by KPN. Microwave links for interconnection may be installed. Number of cables an access seeker can take into a building is not limited.

No request yet made for co-location switching equipment. This would be considered but space required might mean it was denied to avoid prevention of non-discriminatory co-location by a greater number of access seekers.

Provisioning Principles - Access seeker requests co-location and specifies requirements including location and size of space required. KPN has 30 days to inform access seeker if request is feasible. Time to set-up co-location is not defined, but is between 2 and 6 months.

Carriers are not required to provide co-location forecasts to KPN.

Operating Principles - Access seekers have access to their rooms via separate entrance. Maintenance in the common rooms is carried out by the access seekers. KPN may enter these in emergencies.

Pricing Principles - Access seekers pay for the space they use in the common room. This is priced on an annual fee per m2 according to the location. Access seekers have to pay for modifications made to the KPN premises like extra walls and any preparatory work.

France

Co-location is permitted at FT PoI sites. However, the sites were not originally built with co-location in mind so housing capabilities are limited. Connection between access seekers within the FT buildings is not available (in the RIO).

A telehouse facility is also provided in Paris. This allows for OLOs to "optimise their interconnection costs with the other networks." However, OLOs pay a premium over the co-location costs proposed by FT in its RIO. The telehouse facility offers far greater possibilities such as OLO to OLO interconnection.

Belgium

Co-location services recently offered in the latest Belgacom RIO.

Denmark

TeleDanmark offers co-location to access seekers using their own transmission equipment. Costs of establishing a co-location site are borne by the access seeker. Each access seeker also pays a quarterly rental charge for use of the TeleDanmark site.

A standard co-location site takes up to one year to establish and deliver. Six months delivery for connection to an existing site.

Finland

A form of physical co-location is available determined on a case by case basis.

Italy

Co-location is available from selected sites in the Telecom Italia network.

Luxembourg

Co-location is available from EPT.

Norway

Physical co-location is available from Telenor.

Spain

Co-location is available on Telefonica sites. The access seeker provides the transmission equipment. However, Telefonica is responsible for the maintenance of all the transmission equipment located on its premises.

Austria, Sweden and UK

No co-location services are available. Some provision for co-location in the UK at BT sites has been recently recommended by OFTEL for ADSL services.

Sources for the above data are: "Case Studies for the Recommended Practices for Co-location and other Facilities Sharing for Telecommunications Infrastructure" by Eultelis Consult, Horrocks Technology and Tera Consultants for DGXIII and European Interconnect Atlas by Analysys and Arcome. Available at http://www.analysys.com/atlas/

Not considered in the above is the impact that introduction of Local Loop Unbundling may have on co-location format and costing/charging principles.

Appendix V - Return on Capital Employed: Calculation Methodology

1 Use of WACC to calculate the cost of capital

The majority of respondents supported the use of the Weighted Average Cost of Capital as the most relevant method of calculating the cost of capital. One respondent believes that the rate of return must be adjusted to account for the fact that an operator's capital employed may be understated for a number of reasons:-

- accounting convention does not fully recognise intangible assets such as brand, research and development, etc. even where they have a real economic value;
- fully depreciated assets may still be in service and generating revenue streams;
- price changes mean that historical expenditures do not reflect current values.

Another respondent believes that although the WACC is precise, judgements must be made on the value of the input parameters. They also believe that benchmarking other telecommunications providers could be very problematical, due to international differences in accounting standards, differences in the business mix of the incumbents and differences the regulatory regime. Another respondent believes that the any results should be evaluated against international benchmarks to identify any potential problems with the inputs to the WACC.

The Director considers that the use of the WACC to calculate the cost of capital is appropriate and in line with the Commission Recommendation[25].

[25] Commission Recommendation of 8 April 1998 on interconnection in a liberalised telecommunications market (Part 2 - Accounting separation and cost accounting)

2. Use of CAPM to estimate the cost of capital

Most respondents supported the use of CAPM for estimating the cost of the equity in the WACC. One respondent believes that the Dividend Growth Model ("DGM") should be used to provide a crosscheck on the CAPM.

The Director considers the use of the CAPM to calculate the cost of the equity to currently be the most appropriate method of estimating the cost of equity. She believes that there is currently insufficient information available for the estimation of a creditable cost of equity using the dividend growth model, and as such the DGM should only be used as a high level crosscheck on the results from using the CAPM.

3. Use of alternative calculation forms for CAPM

One respondent believes that the cost of capital has a natural interpretation in after tax terms as equity and debt holders will provide capital in a manner that is designed to maximise after tax returns, suitably adjusted for risk. However, they believe it is more convenient for the purposes of interconnection pricing and for other regulatory reporting requirements to work in pre-tax terms as they see this approach being consistent with that recommended by the European Commission.

Another respondent believes that the parameters needed for the CAPM, will in general be observed after corporate taxes and before investor taxes but that in the context of setting interconnection charges, the WACC must be applied to pre-tax asset values. They believe that financial theory does provide descriptions of how to treat corporate and investor taxes. In particular, the tax rates to be used are those of the marginal investors, i.e. those which actually set the cost of equity and debt. They point out that there are in essence two forms of the "post tax" CAPM as follows: -

- "Miller-Modigliani" ("MM") form; and the
- Miller form

They believe that both forms of the model should be used in estimating TÉ's cost of equity. They draw reference to the use by OFTEL of both forms of the model in establishing British Telecom's cost of capital during its 1996 price control review and the fact that there is mixed evidence on which of the two forms of the CAPM should be used, with support being arguably biased toward the MM form. They also point that: -

- the MM form assumes that the marginal investor pays the same rate of personal tax on returns from equity and debt. In the absence of a system of advance corporation tax (ACT) this form of the CAPM defines the cost of equity (Re) after full corporation tax as Re = Rf + B (Rm-Rf)
- the Miller form assumes that in order for equilibrium to hold in the market for debt and equity, the combined effect of all corporate and personal taxes must be the same on returns from both debt and equity i.e. Re = Rf (1 -Tc[26]) + 9 (Rrn-Rf(1 -Tc))

One of the most important differences between the two versions is the impact of gearing. The MM form implies that there is a large tax advantage in increasing borrowing, thereby reducing the cost of capital and requiring the estimation of the optimal level of gearing. The Miller form does not share this feature, being much less sensitive to the level of gearing.

The Director has considered the above and considers the Miller form should be used to estimate the CAPM cost of equity in addition to the MM form. While the MM form has

[26] Tc refers to the effective corporate tax rate on profits (this is adjusted for the delay that occurs between incurring a tax liability and its payment, as well as any definitional differences between taxable and accounting profits)

generally more support than the Miller form, the Miller form is not as sensitive to the level of gearing of a company.

4. An appropriate beta

One respondent believes that the most practical and defensible approach is to use a single beta for the company as a whole, as this there is no robust mechanism for estimating the particular cost of capital that reflects each individual projects risk characteristics. They see attempts to modify the betas by seeking a comparator, which reflects the activity of a particular business, in practice being rarely possible because of the diverse and varied product portfolios and different mixes of investments across products that occur in most telecoms operators. They also believe that the significance of the Core Network's assets and hence capital employed is such that company beta is unlikely to deviate significantly from that of the network business.

Another respondent believes that the cost of capital should only be estimated for the part of the business that supplies interconnection services, but that it is impossible to directly observe the beta factor for such a business. They referred to the quoted mobile companies in the UK and abroad where these have in general higher betas than fixed line companies. They believe that by estimating the relative values of TÉ's mobile and fixed line businesses it might be possible to produce an estimate of a beat for fixed line business.

The Director considers that ideally a separate beta for TE's interconnection services should be estimated and used but due to the practical difficulties of doing this, a beta for the company should be used instead i.e. the fixed line business.

5. Beta estimation

One respondent agreed with the broad approach adopted for the estimation of the WACC but believed that certain input values in the CAPM should be changed. They believe that actual tax rates should be used and that the current risk free rate of return should not be adjusted for anticipated interest rate reductions.

Another respondent believes that the approach is appropriate provided the effective rate of tax is used. This respondent has estimated a pre-tax cost of capital for TÉ at 10.8%.

While another respondent believes that using the beta of Telecom New Zealand to be inappropriate for the following two reasons: -

- New Zealand has a different economy; and that
- it has been liberalised for some time with no regulator having overseen the liberalisation.

This respondent believes that international benchmarks should be used to calculate the inputs to the CAPM and the result should then be evaluated against international benchmarks.

One respondent believes that the method and actual input data used in the calculation of the return should be assessed by an independent body (e.g. an external auditing company), and that a statement should be issued that the calculations are in line with best international practice.

The Director considers that it would be appropriate to consider the beta of other privatised telecoms operators in addition to that of Telecom New Zealand. The Director considers that additional deliberation is required on all the inputs to the WACC calculation before a final decision can be made, and intends to do this as part of the review of TE's justification of its interconnection rates based on the results from its financial year 1998/99.

6. Gearing

One respondent believes that it is appropriate to use the actual gearing of TÉ in the calculation of the WACC, as an optimal gearing level is difficult to estimate because of distress and agency costs. Also the optimal level of gearing may change over time.

Another respondent believes that an optimal gearing ratio of 30% is appropriate but has provided no justification for this figure and recognises that that there is no theoretical answer to the derivation of the optimal level of gearing.

Another respondent believes that instead of using the actual debt/equity ratio of TÉ, an international benchmark should also be used for this ratio. They believe it would be easy to calculate the tax effect where the international benchmark differs materially from the actual gearing of TÉ.

The Director considers that due to the difficulty with the calculation of an optimal level of gearing and the fact that Miller form of the CAPM will also be considered when estimating the cost of equity that it is appropriate to continue to use the actual level of gearing of TÉ. The use of benchmarks is sensitive to international differences in accounting standards and practices as well as difference in the operating environments of the benchmarked operators.