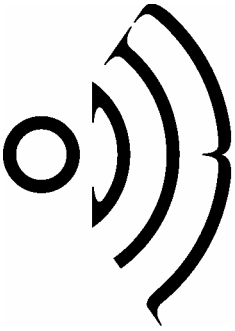

Office of the Director of
Telecommunications
Regulation

Telecom Éireann's Reference Interconnect Offer

Consultation paper

Document No. ODTR 99/16 **March, 1999**

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1. Introduction

The Director of Telecommunications Regulation ("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 ("ODTR") carried out a series of consultations on the services and charges set out in Telecom Eireann's Reference Interconnection Offer ("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, Telecom Éireann 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 now wishes to obtain the views of interested parties on these outstanding issues. It is intended to consider these matters in the light of the requirements in Irish and EU law, in particular the requirements that that the TÉ 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.

The Director welcomes comments on all of the key issues raised in this paper. Comments should be submitted in writing before 5pm on Friday, **16th April 1999** to: -

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Given the importance of and the number of issues contained within this consultation paper, if interested parties feel that a longer timeframe for responses is required, they should make this known in writing to the above contact at this office by Tuesday, 30 March 1999. If there is sufficient demand for an extension to the reply period, this will be extended by 7 days to Friday, 23 April 1999.

All comments are welcome, but it would make the task of analysing responses easier if comments reference the relevant question numbers from this document. In order to promote further openness and transparency the ODTR will, in its report on the consultation, summarise the responses received. In order to satisfactorily answer many of the questions raised in this consultation paper, the Director believes that confidential business information will be of enormous value to her office. She

encourages this information to be forwarded with replies and requests that it is included in a separate annex and clearly marked "Confidential". Information of this nature will only be made available to ODTR staff and will not be disclosed to third parties.

Having analysed and considered the comments received, the ODTR will review the outstanding issues in the RIO and publish a report on the consultation in May 1999.

This is a consultative document only. It is not a legal document and does not constitute legal, commercial or technical advice. The Director is not bound by it. The consultation is without prejudice to the legal position of the Director or her rights and duties to regulate the market generally.

2. Background

2.1 Legislative Background

Both EU and Irish legislation recognise that, in the interests of developing and sustaining competition in the telecommunications sector, the ability of new entrants to the market to interconnect to the network of an incumbent operator is essential.

The most relevant legislative provisions in relation to interconnection are:

- *Council Directive 97/33/EC on interconnection in Telecommunications with regard to ensuring universal service and interoperability through application of the principles of Open Network Provision (ONP), and*
- *The European Communities (Interconnection In Telecommunication) Regulations, 1998, SI No. 15 of 1998, transposing the above directive.*

The Directive and Regulations place special obligations on an operator who is designated by the Director as having SMP in the relevant market. These obligations include:

- interconnection charges should follow the principles of transparency, non-discrimination and cost-orientation;
- the Director may direct an organisation to justify its charges and to adjust these charges where they are not in compliance with these principles;
- the burden of proof lies on the organisation providing interconnection;
- a RIO based on market needs shall be published and the Director may direct changes to this offer;
- charges for interconnection shall be sufficiently unbundled, so that applicants are not required to pay for anything not strictly related to the service requested.

Telecom Eireann is the only operator to have been designated as having SMP in the relevant market to date.

In addition, the Commission has published recommendations on the pricing of interconnection as well as on costing methods that could be used to calculate such prices. The relevant documents are:

- *Commission Recommendation of 8 January 1998 on interconnection in a liberalised telecommunications market (as amended) – Part 1 Interconnection Pricing (98/195/EC as amended by 98/511/EC)*
- *Commission Recommendation of 8 April 1998 on interconnection in a liberalised telecommunications market – Part 2 – Accounting separation and cost accounting) (98/322/EC)*

The Commission Recommendation (the "Recommendation") considers the implication of following the principles of cost orientation for the components of an interconnection charge for call termination.

The Recommendation suggests a "Best Practice" for interconnect charges and the derivation for these "Best Practices".

The Recommendation also states that interconnect costs should be calculated on the basis of forward-looking long run average incremental costs since these costs closely approximate those of an efficient operator employing modern technology.

2.2 The Reference Interconnection Offer

In January 1998, TÉ published a RIO as requested by the Director who then undertook a public consultation process on the scope and range of services in the RIO to assist her in deciding whether the RIO complied with the legislation, and in particular was appropriate to the needs of the market. Following that consultation, TÉ published a revised RIO in August 1998 which, in the opinion of the Director, complied with the market needs at that time.

In a parallel exercise, the Director requested TÉ to justify its interconnection rates and undertook an examination of those rates to determine whether they were in accordance with the principles of the legislation, particularly having regard to the principles of cost orientation, non-discrimination and transparency.

In November 1998, the Director published a notice on outstanding issues in relation to interconnection rates in the Irish telecommunications sector (ref. ODTR 98/52[1]). Some weeks later she published a further report on remaining RIO rates (ref. ODTR 98/60[2]). Most of the relevant adjustments to the RIO in line with these reports were implemented by TÉ in December 1998. A consolidated RIO was published in March 1999. It was acknowledged in these reports that for a range of reasons, including the time pressure to meet the liberalisation deadline and incomplete information in certain cases, a number of issues were settled on an interim basis. It was indicated that a further consultation would be held in 1999 on these, and other relevant issues.

2.3 Interconnection Agreements

In advance of the opening up of the market on 1st December 1998, TÉ concluded four interconnection agreements in addition to two existing agreements with mobile operators. Once again, due to time pressures, a number of issues remained unresolved in these agreements. The Director welcomes the pragmatic approach of the parties to conclude and implement interconnection agreements pending the resolution of those issues.

In March 1999, TÉ proposed that a range of outstanding issues arising from the individual interconnection agreements could be addressed in a multi-lateral operators'

[1] *Interconnection rates in the Irish telecommunications sector: report on outstanding issues.* ODTR 98/52. November, 1998.
[2] *Interconnection rates in the Irish telecommunications sector: report on remaining reference interconnect offer rates.* ODTR 98/60. November, 1998.

forum. The Director welcomes this proposal and looks forward to a consensus approach to the establishment of such a forum which she believes could provide an efficient and effective way for the industry to develop the operational interconnection issues.

2.4 Scope of this Consultation

In preparing this consultation paper the Director took into account:

- The issues that had been flagged as interim in the ODTR reports published in November 1998;
- Comments from interested parties in response to the November reports as to what should be included in a further consultation;
- The issues that were listed as outstanding in the individual interconnection agreements negotiated between TÉ and other parties;
- Comments from the parties to those agreements on what should be addressed in the consultation.

Having considered these inputs, the ODTR has set out in this paper a number of categories of issues for consultation. There are a number of operational issues that have not been included in this paper as it is considered that the interconnecting parties are best placed to resolve these matters in the first instance.

2.5 Related Consultations

This consultation paper is one of a series of linked papers that the ODTR is issuing during the early part of 1999. The issues raised in these papers are closely related and the outcome of each consultation will impact on others. However, the ODTR believes that the modular approach to these consultations provides the most flexible and fastest method of progressing key issues in the market.

Interested parties are referred to the following consultation documents:

Accounting Separation (ODTR 99/10[3]): Consultation paper published on 4th March, comments requested by 31st March, proposed report on consultation in April 1999
This paper addresses the requirement for accounting separation and asks questions about the nature and extent of such separation and what information should be published on foot of such accounting separation.

Costing Principles: Consultation paper due in April 1999
This paper will address the costing principles that should be applied when calculating interconnection costs. It will consider the recommendations set out in Part 2 of the Commission Recommendation on Interconnection (98/322/EC), and will address the appropriate methodology to be applied in establishing appropriate cost drivers and allocation methods to be used primarily for accounting separation purposes.

[3] Accounting separation and publication of financial information by telecommunications operators, Consultation Paper

LRIC (Long Run Incremental Costs): Consultation paper due in March 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 consultation will seek views on the different methods of implementing LRIC and how they may be best applied in Ireland's liberalised environment.

Unbundled Local Loop: Consultation Paper in March 1999
The unbundling of the local loop is seen as a key enabler of competition in local telecommunications services. This consultation paper will consider 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: Consultation Paper in March 1999
This consultation paper, in reviewing the price capping mechanism currently in place in Ireland, will touch on the issue of tariff rebalancing and its relationship with price capping.

Internet in Ireland: Consultation paper in March 1999
This is the second stage of a consultation on internet in Ireland and related interconnection and access issues. The paper will consider the internet market in Ireland, the value chain, the players and the products, and the access regime underlying the provision of internet services.

Dispute Resolution: Consultation paper issued on 18th March 1999; Responses due by 22nd April; Report in May 1999.
This paper proposes a dispute resolution procedure within the ODTR and sets out the linkages to the dispute resolution procedures and service level agreements within operators. The paper seeks views on the proposed process, the scope of its application and the timescales set out.

3. Issues Relating to Physical Interconnection

3.1 Timeframes for Setting Up Points of Interconnection and Interconnection Links

The length of time it takes for the provision of a new interconnect link to a new entrant operator or for the addition of capacity to an existing link between the incumbent and such an operator may have a significant effect on the business of new operators. For example, if demand from customers grows faster than forecast, existing operators may need to add capacity at relatively short notice. Likewise, if a new entrant is funding the purchase of switching equipment through debt, it will need to start operations as quickly as possible to generate the revenues needed to service this debt.

In the RIO, Telecom Éireann quotes timescales for the provision of capacity that compare favourably to those quoted by other European operators, with the exception of the provisioning of new interconnect paths on existing links using an existing PoI and new PoIs using In-Span Interconnect.

Description of service	TE 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	26 weeks (6 months)	4 months[7]

Source: Analysys/Arcome: European Interconnect Atlas

The ODTR is encouraged to see that TÉ meets best international practice in two of the cases. ODTR considers that TÉ should meet or exceed best practice on all categories unless particular circumstances justify longer timescales.

Q.3.1.1: Do respondents consider the best practice timescales above appropriate? If not, why? If not, what alternative timescales should be used and why?

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

3.2 Penalties for Delays in Setting Up Interconnection Links

Telecom Eireann, due to its monopoly position in the market resulting from its ubiquitous network, is in control of a service (interconnection to its network) that is essential to new entrants if they are to be able to compete in the market. Any delay in the provision of interconnection links could seriously affect a new entrant to a degree that is disproportionate to the effect on TE. In such circumstances it may be appropriate for incentive measures to be put in place to ensure the party controlling the essential service has reason to treat the provision of that service with the same priority as the party requesting the service. A commonly used incentive mechanism is penalty payments for failure to meet specified target provisioning times.

Q 3.2.1: Do respondents agree that the introduction of an incentive mechanism based on penalty payments for missed targets is appropriate? If not why? Are there alternative incentive mechanisms that might be appropriate? What are they and how would they operate in the Irish market?

If an incentive mechanism is to be introduced, there does not appear to be a simple way to calculate either the costs of a delay in the provision of interconnection links to a requesting party, or the benefits of such a delay to the provisioning party. For example, a new entrant requesting its first interconnect link may be prevented from operating if it cannot get a link. An existing operator, by contrast can operate, but may incur extra routing charges and may not be able to offer such a high quality of service. It is impossible to prescribe generic charges based on the revenues lost or the extra charges incurred in these situations. It might however be possible to introduce a charge based on a rate for each day's delay that is proportionate to the cost of the relevant interconnection link or to base a charge on a percentage of the cost of the link.

Q 3.2.2: If penalty payments are to be set, on what basis should they be calculated? Why?

Q 3.2.3 Should there be a fixed penalty charge per day or should there be some form of sliding scale? How should the scale be set? On what should it be based? Should there be a combined fixed and sliding system?

Q 3.2.4 Should there be a minimum and maximum penalty payment?

If an incentive mechanism were to be applied to Telecom Éireann in relation to late provisioning of interconnection links, it could be argued that penalties should also apply to the requesting party should it subsequently delay the implementation of a link. Without such penalties, the possibility exists for operators to knowingly request more links than they will require thus putting a commercial strain on TÉ and exposing it to financial risk. The level of such penalties would again be difficult to set. However, the Director does not think it is reasonable that reciprocal penalties be applied to OLOs given that they do not enjoy the same financial security as TÉ in the Irish market. If such penalties were to be set, they could be based on the same principles as set out above, but at a reduced level.

Q 3.2.5: Do respondents agree that there should be penalty charges to parties requesting interconnection links where any delays or cancellations are due to the requesting parties? If not why?

Q 3.2.6: How should penalty payments be calculated? Should they be based on the same principles as any charges that TÉ must pay for late delivery? If not what principles should they be based on? Why?

3.3 Customer Sited Interconnection

In document ODTR 98/60, the Director stated her belief that the ability of new entrants to fully interconnect to the incumbent operator is fundamental to the development and sustainability of competition in the telecommunications industry. In agreeing interim rates with Telecom Éireann for Customer Sited Interconnect paths and Extension Circuits, the Director noted Telecom Éireann's position that interconnection costs should, in the main and in its opinion, be based on leased line tariffs. She further noted that Telecom Éireann was committed to carrying out a comprehensive review of these tariffs.

Nevertheless, the Director was concerned that the current interim rates may reflect costs that are specific to leased lines but may not necessarily apply to interconnection paths and stated her intention to raise the matter in this consultation process.

In response to the Director's invitation for comments by interested parties on the scope and scale of this consultation, a number of issues were raised which relate to interconnect paths. In addition to those outlined above, issues such as the principles, terms and charging assumptions of all form of interconnection, the timeliness of delivery of paths, imposition of penalties on Telecom Éireann for late delivery, and the availability of a greater range of methods of interconnection such as physical co-location were raised. These issues are dealt with in other sections of this consultation document.

Pending her consideration of Telecom Éireann's review of leased line tariffs, the Director would now welcome comments on:-

Q 3.3.1: The elements of Telecom Éireann's leased line costs which may not be appropriate for interconnection paths, Dassnet equipment costs, termination equipment specific to leased lines etc. Respondents should bear in mind that an 8% wholesale discount is presently applied to installation and rental charges for customer sited interconnect links. Where possible, respondents should provide evidence to support their views.

Q 3.3.2: The appropriateness of offering only one interconnect path product (i.e. leased line).

Q 3.3.3: What other interconnection products could be offered and how could they be costed?

3.4 In Span Interconnect

The current interim rates for In Span Interconnection were agreed by the Director with Telecom Éireann on the basis outlined in document ODTR 98/60. In summary, the Director recognised the fact that In Span Interconnection was a new product for Telecom Éireann at that time and accordingly tariffs could, in the main, only be based on supplier quotes and Telecom Éireann estimations. The Director also agreed interim annual maintenance charges with Telecom Éireann of 10% of connection costs as published in Telecom Éireann's RIO in August 1998. Telecom Éireann had suggested that 15% was the appropriate level of charge but had not provided the Director with adequate justification for this increase.

In agreeing the interim rates, the Director required Telecom Éireann to carry out a cost review by April 1999 so that actual costs could be assessed. The Director will reconsider the tariffs on receipt of this review.

Notwithstanding this, the Director would welcome comments on:-

Q 3.4.1 The appropriateness of the current offering, including the level of annual maintenance charge

3.5 Colocation of Interconnection Points

In response to documents ODTR 98/52 and 98/60 the issue of colocation of interconnection points was raised. The Director understands that TÉ currently offers co-location to Internet Service Provider (ISP) PoPs when the PoP is owned by TÉ and leased to the ISP. However, TÉ does not currently offer colocation interconnection services of any form to interconnecting operators. The Director is concerned that this may constitute discriminatory behaviour in contradiction of the principle of non-discrimination as set out in the Directives and the TÉ licence. Accordingly, the Director now wishes to determine if there is a market need for colocation and, if so, whether Telecom Éireann should develop such an offering as an addition to other forms of interconnection currently offered by Telecom Éireann.

Colocation is where an operator rents space on another operator's premises for the purpose of interconnecting with that operator, and either supplies, installs and operates its own equipment on the premises (physical co-location) or the equipment is installed and operated by, and possibly sold or leased to, the access provider (virtual co-location). There are various means of achieving physical co-location, namely in housing the access seekers' equipment in separate rooms, in shared common rooms or in individual cages within a room. The cost to the access seeker will depend on the nature of the co-location provided.

Experience in other countries has shown that colocation may be a more cost-effective and efficient means of interconnection. The interconnecting operators pay the costs of the co-location, including the cost of allocated space within the building in which the interconnection equipment is housed. If several operators are colocated in the same

building of one operator, this may allow interconnection between themselves to be accomplished more easily.

The Director welcomes comments from interested parties on the following:

Q.3.5.1: What are the perceived benefits of co-location compared to other forms of interconnection?

Q.3.5.2: Is there a demand for co-location and if so what is the preferred method e.g. common rooms, separate rooms or cages? Why?

Q.3.5.3: What are the operational matters that need to be addressed in the provision of co-location?

Q.3.5.4: What methodology should be used to cost this service and what are the types of costs of the access provider which should reasonably be charged to the access seeker?

Q.3.5.5: What might constitute a reasonable set-up time for a colocated PoI? What factors may influence this timeframe?

3.6 Charges for Cancellation of Interconnection

The TÉ RIO sets out in Annex D, the process and timescales for ordering interconnect paths. It is noted that a minimum of 2 interconnect paths can be ordered at any one time, but that TÉ allows the installation of the 2 paths to be staggered over a 12 month period. However, should the installation of the second path be deferred beyond 12 months, or the original link ceased within 12 months, the interconnecting operator must pay a penalty of £3,500.

The Director is currently unaware of a justification for such a penalty and welcomes replies to the following questions from interested parties:

Q.3.6.1: On what basis might such a charge be justified?

Q.3.6.2: What is the cost basis for such a charge? Please provide evidence to support your answer where possible.

Q.3.6.3: If the cost is based on the price of equipment already purchased, can this equipment be used at another interconnection point with another operator?

3.7 Uni-directional versus Bi-directional Interconnect Links

There are currently four types of traffic carried over interconnect links between operators:

1. TE traffic to OLO
2. TE originated indirect traffic to OLO
3. OLO traffic to TE

4. OLO originated indirect traffic to TE

In cases 1 and 4, the traffic is owned by TÉ i.e. TÉ bills the end user for the call. In cases 2 and 3, the traffic is owned by OLO, i.e. the OLO bills the end user for the call.

Currently, in a typical interconnection set-up, there will be two interconnect links between each OLO and TE. One carries the OLO owned traffic in both directions and it is the OLO's responsibility both to pay for this link and to dimension it. The other link carries TÉ owned traffic in both directions and TÉ pays for and dimensions this link.

A concern has arisen however, in the dimensioning of these links. Although OLOs have full control and take responsibility for dimensioning the link for their owned traffic, they have no control over the dimensioning that TÉ undertakes on the links it uses to carry TÉ owned traffic to OLO networks. This gives rise to a potential problem where calls from TÉ destined for a number on an OLO network may fail. This could reflect badly on the OLO's network as the calling party cannot judge that the fault is caused by poor link dimensioning by TE, but could have the impression that the OLO network is of poor quality or often congested. It could also lead to a loss of call termination revenue to the OLO. Whilst TÉ would also suffers loss of call revenue, this would account for a much smaller proportion of total revenue to TÉ than to an OLO.

Such an arrangement does not allow traffic from for example, TE, destined for an OLO on a congested link to be routed on the second link paid for and dimensioned by the OLO even though the call is destined for the OLO.

One way to overcome this difficulty would be to allow traffic owned by both operators to be carried over a single interconnect link. However this raises a number of issues such as how the link is dimensioned, who is responsible for this, how are the costs shared between the parties and how is network resilience provided?

The Director welcomes replies to the following questions from interested parties:

Q.3.7.1: *If an interconnect link consisted of one single link capable of carrying traffic owned by both parties in both directions, who should be responsible for dimensioning it?*

Q.3.7.2: *If both parties agree that joint responsibility should be taken for dimensioning, how should disagreements be resolved?*

Q.3.7.3: *Assuming traffic forecasts are used for dimensioning what timeframe should be used, 3 year forecasts, 5 year forecasts? Are there other methods that could be used for dimensioning?*

Q.3.7.4: *How should the costs of the link be split between the parties?*

Q 3.7.5: *Are there specific elements that should be paid for by either party? What are these?*

Q.3.7.6: How should network resilience be provided?

Q.3.7.7: Should quality of service provided over links be addressed in the RIO? If yes how should it be addressed?

4. Call Origination

4.1 Call Set-Up Component of Conveyance Charges

In document 98/52, the ODTR recognised that there may be specific fixed costs associated with call events which are independent of the duration of the call or, indeed, of its successful completion. It also recognised that it is possible to recover these fixed costs either through a separate call set-up charge, or by integrating the costs into a higher time-based charge for the duration of calls. The ODTR is aware of the advantages and disadvantages of both approaches and notes that the call profile of an interconnecting party will determine which approach may be more advantageous to a particular operator. The ODTR also notes how assumptions about average call holding times impact upon the balance between call set-up charges and time-based charges.

In the draft interconnection tariffs, which it submitted for the Director's approval, TÉ proposed that 16% of costs should be attributed to call set-up. This figure was used to calculate a set-up charge based on the '24 hour costs'. TÉ proposed the addition of an additional call set-up premium for call origination and a further, different, figure for transit calls.

The ODTR 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. Therefore, the Director concluded that there should be no explicit call set-up component in interconnection charges for the time being and such costs associated with call events should be included in the overall cost of conveyance.

The Director is now seeking comments on her views in relation to call set-up and, specifically:-

Q 4.1.1 Do you agree that there are specific costs associated with call set up events? If yes, please give reasons why and where possible, provide information about these costs?

Q 4.1.2 If you agree that specific call set up costs exist, how should they be recovered in the interconnect regime?

Q 4.1.3 What is the likelihood of further additional call set-up costs being associated with call origination type calls and transit calls?

4.2 Call Origination as a Competitive Service

Since Document 98/52, the Director has received a number of comments from the industry suggesting that call origination may differ from call termination not only by

the fact that there may be different costs associated with this service 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. The position of these parties has been that if LRIC costing is applied to call origination, mimicking an efficient competitive operator, the returns to potential new entrants to this market may be so low as to discourage investment.

The Director questions the appropriateness of treating call origination differently from call termination. For example, it could be argued that call termination is also in theory a competitive service. Both call origination and call termination use the same local access infrastructure. Although the end user may have greater visibility of the competition in call origination, because he is making the call and paying the retail charges bill, there should be equal competition in the call termination market as the different providers of local access infrastructure will compete with each other to terminate calls and collect call termination revenues. The difference in competition in call origination versus call termination seems to be in the visibility of this to the individual making the call. However, trunk network operators would have a high visibility of competition for call termination services.

It is possible to argue that due to the addition of retail costs to call origination costs, the prices visible to end users for originating a call (making a call) clouds the true call origination costs thus distorting competition at the operator interconnect level based on call origination interconnection prices.

The Director considers that, given the current stage of development of the market, where TÉ continues to have 96% of the fixed telephone market[8], neither call origination nor call termination can be considered a competitive service. The Director welcomes the views of interested parties on this matter in particular on the following points:

Q.4.2.1: Do respondents consider that there is more competition in the call origination market than in the call termination market? Respondents are asked to justify or to explain their answers to this question.

Q.4.2.2: If the position is taken that call origination and/or call termination are or could be competitive markets, to what extent can the charges for these services be above cost? (The current prices are cost based plus a return on capital employed).

5. New Services

5.1 Introducing New Services

The current RIO makes provision for the introduction of new interconnection services between TÉ and OLOs. There are two forms of new service.

[8] Significant Market Power in the Irish Telecommunications Sector – Decision Notice D4/98 (Document ODTR 98/47)

1. A service that is currently provided to another interconnecting operator (a third party), but not currently provided to the requesting operator;
2. A service which is not currently provided to any interconnecting operators.

In the first case where an interconnection service is currently provided to a third party interconnecting operator (which could be TÉ retail), the Director considers that it should be possible for an operator to purchase only those elements of the interconnection service which it requires. In order for this to be possible, the operator seeking to purchase services needs to know what elements of the other operator's network are used to make up the interconnection service it wishes to purchase.

Q.5.1.1:Do respondents consider that details of network elements used in the provision of interconnection services by TÉ to OLOs and to TÉ retail should be available to interconnecting operators? If not, why?

Q.5.1.2:Do respondents agree that interconnecting operators should be able to purchase only those interconnection elements they wish to use to provide their own retail services? If not, why?

In the second case of the introduction of a new service, where the required interconnection service is not currently provided to any other operator and is therefore completely new to the market, the Director is of the opinion that the time set out in the RIO for the introduction of such interconnect services is currently very long. The current timeframe is as follows:

- 1 week for requested party to acknowledge request for service from requesting party.
- 1 month for requested party to confirm whether statement of requirement from requesting party is sufficient.
- 2 months (subject to the requesting party's statement of requirements being sufficient) for the requested party to confirm in writing that it accepts an obligation to enter into an agreement to provide interconnect services.
- 75 days from receipt of statement of requirement to agree to technical and commercial aspects of interconnection.

This gives rise, in a best case scenario, to an operator agreeing to provide a new interconnection service within 75 days or almost 11 weeks. This could in reality be a much longer timeframe as the requested operator could request that the statement of requirement be resubmitted. This would set the whole process back 1 month. It is possible that a requested operator may even ask a requesting operator to submit a statement of requirements a third time or fourth time, so delaying the process by one month with every reiteration.

The Director believes that access to interconnection services should not act as a barrier to the introduction of innovative new services into the market. Views on the questions below are requested:

Q.5.1.3: Are the current timescales in the RIO too long? If so why? What alternative timescales might be set out in the RIO? Please provide reasons.

Q.5.1.4: *Should there be a limit on the number of times a party can request the resubmission of an interconnection request? If not why? If yes, what limit would be reasonable?*

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

The issue of availability of carrier access and carrier selection codes from TÉ payphones was not specifically investigated prior to the introduction of competition into the market for fixed voice telephony services. It has since been raised by interested parties.

The issue at stake is whether access to carrier selection and carrier access services should be provided at payphones provided by TE, particularly those payphones provided under the the current USO obligations on TÉ (pursuant to section 14 of the Postal and Telecommunications Services Act, 1983) and possible future USO. The difficulty arises because permitting carrier selection services from payphones may deny TÉ the call revenues it requires to cover the costs of providing these payphones.

The Director welcomes replies from interested parties to the following questions:

Q. 5.2.1: *Should TÉ provide carrier selection and carrier access services from its payphones?*
Q.5.2.2: *If yes, how might TÉ recover the costs of providing those payphones in the first instance?*
Q 5.2.3 *What are the costs involved in providing payphones?*

5.3 Introduction of New Retail Products

A number of parties have raised the issue of the introduction of new retail products by Telecom Éireann and linkage to the introduction of interconnection products. It is argued that, because of its power in the market, TÉ can introduce retail products to the market in a rapid timeframe, while other operators cannot introduce competing products in the same timeframe. This may provide TÉ with an unfair advantage and the potential to gain market share in advance of the introduction of competing products. Such parties argue that a complete interconnection product underlying any retail products should be introduced before the retail product is introduced. It is suggested that this will allow competing operators to bring competing products to the market in the same timeframe as TE. On the other hand, there is a possibility that by tying interconnection products to retail offerings in this fashion, the incentive to TÉ to innovate will be reduced, or alternatively, offerings by the incumbent could drive the market development disproportionately as other players would have little incentive to innovate – possibly leaving the development of new products to TÉ .

An alternative approach is that TÉ must create its retail products from unbundled interconnection elements in the same fashion as other operators. Given the obligation on TÉ to be non-discriminatory in its treatment of all operators including its own downstream operating arm, the same interconnection services should be available to all operators equally, providing equal opportunity to innovate and introduce new products. It is suggested that the latter approach provides opportunity to all parties to innovate and introduce new products, if the timing of the availability of new interconnection services is appropriate and non-discriminatory.

Q.5.3.1: Do respondents consider that non-discriminatory and timely access to appropriate unbundled interconnect elements would enable fair competition in retail services? If not why?

Q.5.3.2: Do respondents consider that TÉ should be required to introduce a specific interconnect product before introducing any retail product? If so why?

Q 5.3.3: If a specific interconnect product is preferred, should this be a bundled interconnection product? Please give reasons.

Q.5.3.4 How should new products be defined? For example, should a change to tariff structures be considered a new product? Could price changes or discount schemes constitute a new product? Please give reasons for your answer.

For fair competition on the basis of unbundled interconnection products to operate, it is necessary that appropriately unbundled interconnection services are available in appropriate timeframes. Section 5.1 above raises the question of how to deal with the general availability of interconnection products where such products are already available to other parties. It has been argued that where a party negotiates an interconnection product or service with TE, usually with a view to introducing a new retail product, this information is commercially confidential. If there was a requirement that this product was to be notified to all interested parties, via the RIO, the incentive to innovate might be reduced as other parties would be in a position to produce or market the same product as the original innovator.

The Director wishes to see the maximum opportunity and incentive to innovate in the telecomms market that is consistent with fair competition. Innovation will benefit consumers by ensuring there is a greater range of new services to chose from. This in turn should grow the market to the benefit of the Irish economy generally and the benefit of all players in the telecommunications market.

However, given the current imbalance in the market with one operator having 96% of the fixed telephony market, the Director considers that there may be a case for asymmetric regulation of the SMP operator in order to ensure the opportunity for fair competition. The Director proposes therefore that where a new interconnection product or element is negotiated by TÉ retail, that product should be included in the RIO and all other operators should be able to avail of the product in the same timescale as TÉ retail. This would require that where TÉ retail was negotiating and testing an interconnection product with a view to introducing an associated retail product, full information (as far as possible) on the interconnection elements would be

made available to other interconnecting operators. TÉ retail would not be required to reveal details of the new retail service planned. The Director considers that this would provide an appropriate balance between the opportunity to innovate and the requirement to have fair competition. Alternatively, an artificial timelag could be imposed upon TÉ retail once it had negotiated the interconnect service or product in question to allow OLOs to develop competing products should they choose to do so. This timelag would not be applied to OLOs who could introduce their retail product into the market as soon after gaining the necessary interconnect element as possible.

Q.5.3.5: *Do respondents consider that the principle of asymmetric regulation as set out above is appropriate? Please give reasons. If you disagree please give reasons.*

Q 5.3.6: *If yes, which of the two methods is preferred: a) information about the interconnect elements being negotiated between TÉ retail and TÉ network from the start of negotiations, or b) the imposition of a timelag on TÉ retail before introducing a new service based on a new interconnect element after they have negotiated the terms and price of the new interconnect element in question?*

Please explain the view taken.

6. RIO Management Processes

6.1 Operations and Maintenance (O&M) Manual

The current RIO provides for the development of an O&M manual. The Director considers that such a manual may well be a living document that requires a more flexible approach to changes and management of the text than the rest of the RIO. However, the Director also considers the O&M manual to be a valuable element of the RIO.

The Director proposes that the terms and conditions of the O&M manual and amendments to those terms, be subject to a separate process. It is suggested that a technical standing committee be set-up between TÉ and any interested OLOs to agree changes to the O&M manual by mutual consent. Any disputes arising out of disagreement between technical committee members would be resolved in a similar way as other disputes in the RIO. To ensure that the O&M manual was not discriminatory towards new entrant operators which have not yet entered the market and do not feature on the technical committee, the Director proposes that her office would review the O&M manual periodically but individual changes agreed in the technical forum would not be reviewed individually unless the Director received specific representations or had particular concerns about a change.

The Director welcomes the views of interested parties on the questions below.

Q.6.1.1: Should a standing technical committee consisting of TÉ and OLO representatives be set-up to develop this manual as and when necessary? If not why? Are there alternative mechanisms for the management of the manual? What are they and why would they be more appropriate?

Q.6.1.2: What would constitute agreement on the part of the standing committee, majority, unanimous, or other? Why?

Q.6.1.3: In the case of a dispute, should resolution procedures be the same as those set out in the RIO? If not, in what way should they differ? (Respondents' attention is drawn to ODTR Consultation document 99/13 on Dispute Resolution Procedures)

6.2 Review of RIO

The interim rates set out in ODTR 98/52 and ODTR 98/60, are based on the network costs of Telecom Éireann for the year ended 2 April 1998 and a forecast of the traffic volumes for year ended 31 March 1999.

The ODTR notes that there is currently no formal process for reviewing the Telecom Éireann RIO which is in effect a "catalogue" of services and their charges, available from Telecom Éireann to interconnecting operators. In an ever changing market this catalogue needs to be kept up to date to ensure that the products available meet market needs and that the charges remain cost based.

In view of its importance, ODTR proposes that the RIO should be reviewed on a consistent basis until it is no longer deemed necessary to carry out such a regular review. A possible review procedure might be encompass the following:-

a) A six monthly review of the additional services to be included in the RIO. This review could be composed of:-
   i) Requesting the market to provide a list of services for review;
   ii) Issuing of a consultation paper based on these services;
   iii) Review of responses and determining as appropriate;
   iv) Telecom Éireann republication of amended RIO.

b) A yearly review of the service charges that are contained in the RIO. This review would incorporate the principle of interim and approved final charges. The interim rates would be based on the costs of the most recent financial year, adjusted for anticipated cost and traffic volume changes in the period after the review. These charges would apply from the date of the review onwards. During the review the final charges would be calculated for the most recent financial year. This approval of final charges may necessitate refunds or additional payments between Telecom Éireann and OLOs if the interim charges applied during that financial year were materially different from the approved final charges.

   This process of approving final charges for a financial period after that period had elapsed would ensure that the final charges would be based on the most relevant costs and traffic volumes. The use of interim charges based on the most recent financial year would give operators a reasonable estimate of the final rates that will apply.

If this approach is followed, the interim charges set out in ODTR 98/52 and 98/60 would remain in place until the latter half of 1999 at which time Telecom Éireann would have costing information available for the year ended 31 March 1999. The Director would 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).

The costing method used in estimating the interim rates would not necessarily dictate the method to be used in calculating the final rates.

The certainty gained by the regularity of this process should make the whole review process easier for all parties involved and would allow management resources to be allocated accordingly. Issues related to the RIO submitted to the ODTR in between consultations would be included in the subsequent review. This process would be without prejudice to the rights and entitlements of relevant organisations to negotiate individual interconnection agreements and changes to those agreements.

Q 6.2.1: Are the proposed procedures for reviewing the RIO appropriate? If not why? What alternative procedures might be appropriate?

Q.6.2.2: Do respondents have any views on how interconnection charges are calculated and on an appropriate timeframe for TÉ to prepare network-costing information?

Q.6.2.3: Do respondents have comments on the applicable cost adjustments required for estimating future costs?

Respondents should refer to Section 6.3 for further details of how charges could be applied retrospectively.

6.3 Retrospection of Charging

In the lead up to the introduction of competition in fixed voice telephony services in Ireland, the ODTR and Telecom Éireann made great efforts to ensure that an interconnection regime was in place by 1st December 1998 that was suitable for a competitive market. Notwithstanding the efforts of both parties, the Director recognised that some elements of the interconnection regime did not offer full transparency of costs and agreed that a number of rates in the RIO as at December 1998 were by necessity, interim in nature.

The interim nature of these rates indicated that the Director recognised that further work was necessary before rates which more accurately reflected the costs underlying them could be defined. Much of the work of the ODTR in 1999 is concerned with ensuring, as far as possible, that all interconnection rates are cost based.

In an ideal world, the true costs for all interconnection services of TÉ would have been known before liberalisation and truly cost based interconnection rates could have been offered to OLOs from the opening of the market on 1st December 1998. However, as this was not the case, the Director was of the opinion at the time that when interconnection rates are adjusted to take account of better cost information from TE, she would consider on a case by case basis, the merits of applying the new rates retrospectively. The Director's view on this matter remains the same today.

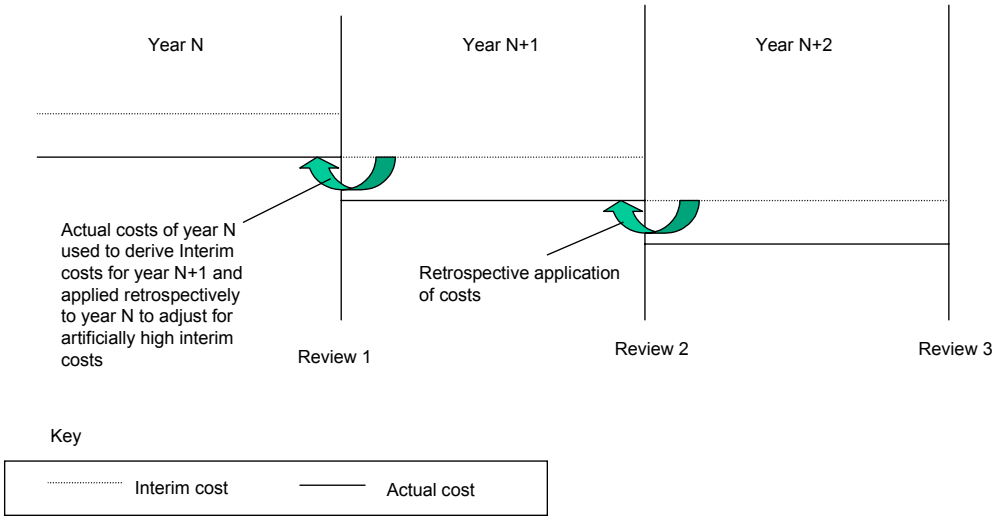
The Director welcomes the views of interested parties on:

Q.6.3.1: What rates should adjustments be made to retrospectively? Answers should be justified.

The Director proposes in Section 6.2 of this consultation paper that the prices for interconnection services will be reviewed on a regular basis and suggests once every 12 months. The Director proposes that if, after determining interconnection costs for a given period following review of cost data from TE, she finds that the charges paid were materially different from the interim rates set, she would apply the actual rates retrospectively with the result that a payment would be made either from TÉ to interconnecting OLOs or vice-versa, from OLOs to TE. The figure below shows how retrospection would work.

This proposal would be without prejudice to the Director's entitlement to review the retrospective application of each charge on a case by case basis and to have regard to the particular circumstances prevailing in relation to that charge.

Retrospective application of interconnect charges



The Director welcomes comments on the following questions:

Q.6.3.2: *Given that it is difficult to accurately forecast real interconnection charges is it reasonable that true costs are assessed on an annual basis when this information becomes available?*

Q.6.3.3: *Is it reasonable that interconnection charges should be applied retrospectively after each pricing review to reflect the actual costs of supplying these services?*

If you disagree with the proposed method of retrospectively applying interconnection charges, please explain why and where appropriate, suggest alternative methods.

7. Costing and Routing Principles

7.1 Return on Capital Employed

Article 7.2 of the EU Directive on Interconnection requires that interconnection tariffs should be designed to recoup the costs of interconnection together with a reasonable return to the operator who is offering the interconnection services. In broad terms, the rate of return chosen should reflect the return, which the operator could obtain internally from his own use of the service. In its recommendation on interconnect services[9], the EU Commission recommended that the Weighted Average Cost of Capital (WACC) method be used to calculate the appropriate return on interconnection tariffs.

The WACC method combines the cost of both debt and equity, with a weighting factor applied to each , dependant on the debt/equity ratio of the business:

(a) Estimating the cost of debt is comparatively straightforward. Data is readily available on the rates of return on government debt of varying duration. Data can also be obtained on commercial rates of return.

(b) However, estimating the cost of equity capital is much more difficult. Actual, or ex-post, returns to equity fluctuate substantially from one year to the next and vary with the perceived risks of the firm issuing the equity capital. The Capital Asset Pricing Model (CAPM) approach to equity costing starts from a consideration of the post-tax returns which investors demand from equity markets. A company must earn sufficient profits to make these required returns and to meet the taxes levied on individual investors and on the business, such as corporation tax. The individual's liability for investor taxes depends on his financial circumstances, while a company's liability for corporation tax depends upon factors such as the form in which investments are made and the capital allowances available. In order to derive an acceptable rate of return via a calculation of the cost of capital, it is thus necessary to incorporate tax considerations.

The assumption underlying the CAPM is that investors can diversify risks, which are not correlated with the stock market as a whole by buying shares in a number of companies each subject to independent variations in fortune. However, the other component of risk, viz. undiversifiable or systemic risk, cannot be eliminated by owning shares in a large number of companies and so it is a component of the cost of equity. According to the CAPM, the cost of equity is made up of two components:

[9] *Commission Recommendation of 08.04.98 on interconnection in a liberalised telecommunications market: part 2 – accounting separating and cost accounting*. OJ No. L141, 13 May, 1998, p6 *et seq*.

(i) A risk-free rate. This represents the guaranteed return which an investor can obtain over the relevant period with no risk of unanticipated capital gain or loss; and

(ii) A risk premium. This depends on the risk characteristics of the firm in question relative to risks associated with investment in the stock market as a whole. The risk premium associated with a particular company can be viewed as the product of the average risk premium for the stock market as a whole and a coefficient expressing the risk characteristics of that company, relative to the market. The expected risk for the stock market as a whole is conventionally estimated as the difference, averaged over a run of past years, between the overall annual return to an investor who held shares in proportion to their weight in the market as a whole, and the risk free rate. The company's risk coefficient, known as its beta (b), reflects the extent to which the returns to the company fluctuate with those to the market as a whole. The beta of the market as a whole is defined as being equal to one. For a company whose returns fluctuate more widely than those of the market as a whole, the beta would be greater than one, while for a company whose shares are less volatile, the beta would be less than one.

The next step is to combine the estimates of the cost of debt and the cost of equity with weights given to each element as appropriate for the level of debt and equity (gearing). The issue arises as to whether the company has adopted an appropriate or "optimal" gearing ratio (debt as a proportion of debt and equity). As debt finance has tax advantages over equity finance (because interest payments, unlike dividends, are a tax deductible expense for a company), it is possible to reduce the overall cost of capital by switching from equity to debt. Higher gearing will increase the firm's equity but over a certain range this will be more than compensated for by greater reliance on debt finance, which is treated more favourably by the tax system. In the CAPM approach the gearing ratio is a fundamental input into the formulae used to arrive at the WACC. The higher the gearing (i.e. the more debt is used as the source of finance) the lower the derived cost of capital because debt has a lower cost than equity.

It is evident that the applicable rate of return, however determined, must be applied to the relevant capital employed. This makes the acceptable level of profitability sensitive to the definition of capital employed. It is generally agreed that the definitions of both profit and capital employed should be consistent with one another but, unfortunately, there is no universally agreed definition of capital employed. In its simplest form, return on capital employed (ROCE) is defined as “profit before interest and tax divided by long term capital employed”, where “capital employed” is defined as long term debt plus shareholders' equity, minority interests and long term provisions. In this simple form ROCE is quick and easy to compute for all sorts of different companies.

There remain considerable problems in bringing together and interpreting these findings. The estimate of the WACC is made on the basis of an estimate of the capital base, which is constantly revised. (This is shown, for instance, in the use of the market valuations of equity and debt in the determination.)

TÉ has followed the Commission recommendation by applying the WACC method based on the CAPM to calculate its rate of return for interconnection purposes. In using the CAPM to determine TÉ's cost of equity, the ODTR, with the assistance of KPMG and TÉ, calculated the three variables for input to the CAPM as follows:

- in determining the risk free rate of return the ODTR took into account the expected drop in interest rates prior to Ireland's entry into a single currency area and the convergence of Irish interest rates to European levels.

- the ODTR accepted TÉ's position that the beta employed should be based on that of Telecom New Zealand - an organisation which had been recently privatised and whose country and network configuration was similar to that facing TÉ.

- the market risk premium was calculated using six market premia (2 for the UK, 1 for the US, 1 for Germany, 1 for Spain and 1 for Ireland) and adjusted for the impact of extreme values related to past market situations which are unlikely to be repeated owing to the globalisation of portfolio strategies and the combined impact of the Euro and the integration of European interest rates and exchanges. Further consideration was made for the fact that TÉ will be dual listed in Dublin and London or New York, where the markets are more mature.

The gearing rate used was that of the TÉ company plus the ITN (treasury) company where the assets and debts have been located. TÉ's current gearing ratio may be different from that of other companies in its risk class. If so, it could be argued that its cost of capital should be adjusted by adoption of a more representative gearing ratio. However, no arithmetic adjustment of the cost of capital has been made at this stage, although the ODTR would welcome views on whether and how it should be done.

The effective tax rate seeks to take into account the expected taxation decreases in 1999.

The resulting WACC before all taxes, derived from the CAPM approach was calculated as follows:

- cost of debt	d
- risk free rate of return	rf
- market risk premium	rp
- beta factor	b
- gearing rate	g
- tax Rate	t

WACC Calculation

Pre-tax Cost of Equity= eq

$$= [rf + (b \times rp)]/(1 - t)$$

Pre-tax Cost of Debt = d

WACC = (eq times (1 - g)) + (d times g)

It should be noted that no adjustment was made to the WACC to allow for the fact that the network business of TÉ is likely to have a lower risk profile than the company as a whole, and the ODTR welcomes views on how such an adjustment might be made. However, for the purposes of calculating appropriate capital employed for the interconnect regime, TÉ calculated a separated balance sheet extract of the assets employed in the network business area only, to minimise distortion from non-interconnect business areas.

In document 98/52, the ODTR agreed with the WACC method for the estimating the return to TÉ and the ROCE rate agreed with TÉ was used to calculate the interim interconnect rates set out in ODTR 98/52 and ODTR 98/60.

The Director appreciates that there are a number of variables and assumptions taken with the approach described above and now welcomes comments on the method used to calculate return on investment for the purposes of the interconnect tariffs. In addition to the specific matters referred to above, comments are particularly sought on the following questions:

Q 7.1.1 *Is the CAPM the proper means of estimating the cost of capital?*

Q 7.1.2 *What is the appropriate way to incorporate investor and other taxes in calculating the WACC?*

Q 7.1.3 *What adjustment should be made to estimates of the cost of capital or rate of return for TÉ as a whole in order to derive appropriate data for the network business only?*

Q7.1.4 *Do you agree with the approach taken by the ODTR outlined above in calculating the inputs to the WACC. If not what approach and possible rates would be more appropriate?*

Q 7.1.5 *What would be an appropriate gearing rate for an incumbent Telecoms provider? Is it appropriate to use an optimal gearing rate in the calculation of WACC?*

Q 7.1.6 *The Director would also welcome views on the most relevant method for calculating return on investment for an incumbent telecommunications operator; e.g. WACC based on the CAPM, the dividend growth model, ROCE or benchmarking the WACCs of other liberalised telecommunications companies.*

7.2 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 condition the network for interconnection and 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.

The Director now welcomes comments on the appropriateness or otherwise of the recovery of these type of costs, should they be justified to her satisfaction. Specifically she seeks views on the questions below:-

Q 7.2.1 *Do respondents agree that there may be additional costs associated with the act of interconnection? If yes, what type of costs are they likely to be? Do you agree that such costs, if fully justified should be recovered? If not why?*

Q 7.2.2 *Do respondents agree transit tariffs should include a charge to recover settlement process costs? If yes, what should be the level of this charge? Please support your answer.*

Q 7.2.3 *Do respondents agree that international interconnect tariffs should include costs arising from the specification, design construction and operation of additional billing functionality for international billing. If not, why not? If yes, what might the level of these costs be? Please support your answer.*

Q 7.2.4 *How should these costs be recovered in interconnection agreements given that such costs are predominantly fixed in nature and are more related to the number of parties interconnecting to TÉ rather than to call volumes?*

7.3 Routing

Routing factors are used to calculate interconnection charges from individual network element costs. Routing factors are measures of the frequency with which particular components are used by each interconnection service. They represent the weighted average use of local and main switches, the average distance of junction and trunk transmission between switches and between local exchange and remote concentrator units and the average number of links used in transmission.

Routing factors will 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 can be measured retrospectively. However, a theoretical approach based on general network averages may also be used and is often more appropriate since traffic profiles may vary between operators and can change over time.

The interim rates in ODTR 98/52 and 98/60 were calculated using theoretical routing factors based on Telecom Éireann's network traffic matrix and routing matrix. These routing factors generally reflect the usage of network components by fixed telephony

traffic. The routing factors that apply for mobile telephony traffic may vary due to the different characteristics of this traffic, as well as in the distribution of interconnection points.

The Director would welcomes comments on the following:-

Q 7.3.1: The appropriateness of using theoretical routing factors.

a) Do you believe that it is appropriate to only use theoretical routing factors to calculate interconnection charges? If so why?

b) If you disagree with the above what alternative routing factors do you consider appropriate? Why?

Q 7.3.2 The calculation of theoretical routing factors.

a) Do you believe it is appropriate to calculate theoretical routing factors using Telecom Éireann's network traffic matrix and routing matrix? If so why?

b) *If you disagree with the above, do you believe that it is appropriate to use theoretical routing factors based on a different set of traffic and routing matrices? What is the basis for your belief, and what would be an appropriate set of traffic and routing matrices?*

Q 7.3.3 Routing factors are measures of the frequency with which particular components are used by each interconnection service. What is an appropriate sampling period for the measurement of the frequency with which particular services use network components and why?

Q 7.3.4 Should a different set of routing factors be calculated and used for different traffic cases, e.g. mobile traffic (if material)? If so why?
Are there any other particular types of traffic that a specific set of different routing factors should be calculated for?

7.4 Routing Factors for TÉ originating and TÉ Terminating Traffic

The Director notes that the routing principles for calls terminating on TÉ's network are different to those for calls originating on TÉ's network.

For calls terminating on TÉ's network, TÉ tandem interconnect nodes will accept TÉ national termination traffic destined for all geographic number ranges.

For calls originating on TÉ's network, TÉ tandem exchanges will deliver TÉ call origination traffic to interconnecting OLO nodes only if the originating traffic is from geographic number ranges in the respective TÉ tandem exchange local catchment area, the catchment areas of their controlled primary interconnect nodes and the catchment area of tandem interconnect nodes for which they have been nominated as the final overflow route.

This means that unless an OLO interconnects with the TÉ tandem exchange for the local call area in which the relevant call is initiated, this will be routed up the TÉ

network to a tertiary node which is capable of delivering TÉ call origination traffic for all geographic number ranges.

The result of this routing up the network instead of across the network, from a tandem node to another tandem node, as is the case for traffic terminating on the TÉ network, is that extra distance related routing charges may be incurred by the OLO.

The Director notes that to allow TÉ originated traffic destined for OLO networks to be carried across the TÉ network from tandem to tandem nodes rather than up the network form tandem to tertiary nodes may involve TÉ in extra data loading at all its tandem nodes.

The Director welcomes the views of interested parties on the following questions:

Q.7.4.1. Do respondents consider the current routing arrangements to be satisfactory? Why?

Q.7.4.2. If not, what adjustments do respondents consider should be made to the TÉ network to allow more flexible routing?

Q.7.4.3. Do respondents consider that such adjustments are feasible or are there any reasons why such adjustments would not be possible?

Q.7.4.4. What would be the costs of any adjustments made and how should these costs be apportioned given that they are one-off in nature rather than related to call volumes? Please support your answer.

7.5 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. When a call is received at a TÉ exchange, the switch performs analysis on the national destination code (NDC) only e.g. 01 for Dublin, 043 for Longford. From this analysis the switch then routes the call to the tandem exchange covering the area of the particular NDC. When the call is routed to the applicable tandem exchange, an analysis of the leading digits of the subscriber number is performed – (under the number allocation system, operators are allocated numbers in either 1,000 or 10,000 blocks, e.g. in the Dublin area, NTL was allocated 244XXXX, Worldcom 246XXXX, and TÉ 207XXXX, etc.). It is only at this point that the TÉ network identifies whether the destination of a call is for an OLO network. Such a call must then be routed to an appropriate point of interconnection with the terminating OLO. This can result in additional transmission requirements and, therefore, increased signalling and data analysis costs. Mobile calls by comparison, are identified by an individual NDC and are therefore identified at the first exchange as being transit calls.

TÉ states that to perform analysis of the subscriber number at the originating tandem switch would currently compromise the security of switch operations, as this would have to be done for all calls transit or otherwise. It would be possible for TÉ to

purchase additional equipment for its switches to allow this extra analysis, but the level of transit calls from OLOs is still not great enough to make this investment worthwhile. TÉ claims that with current OLO transit traffic volumes, the cost to OLOs is lower if additional routing is required than if new digit analysis equipment was purchased and installed.

TÉ's original transit offer consisted of two rates: transit to mobile and transit to fixed, with a higher charge for the latter which TÉ sought to justify on the basis of the additional routing complexity for fixed calls (as explained above). TÉ has proposed that if the originating network can appropriately identify the terminating operator the additional charge will not be applied.

The present transit service consists of one rate split into peak, off-peak and weekend. This rate is applied to all transit calls irrespective of the amount usage of the TÉ network elements. This rate is based on a weighted average of distance related charges.

TÉ states that it is currently not technically feasible to have different tariff bands (e.g. single tandem transit, short double tandem transit, etc.) as sufficient information cannot be captured in the TÉ network to implement such a regime in the existing TÉ billing systems. TÉ also believes that other operators would have no visibility of what charge would apply to individual transit calls unless TÉ provided them with the full details of interconnects with all other operators. This information is contained in Annex E to the RIO and the interconnecting parties have indicated that they consider this information to be confidential. To be able to provide rates based on the usage of network elements TÉ would have to carry out modifications to its network and billing systems.

The Director noted TÉ's arguments and proposed that the matter of appropriate routing arrangements and operator identification codes be considered as part of this consultation. As a pragmatic interim measure, she proposed that the transit to mobile rate be used for all transit calls and that this rate would be recalculated to take account of her concerns identified in section 4 of ODTR 98/52.

The Director would welcome comments on the following matters

Q 7.5.1 What is the appropriate routing and number analysis for transit calls?

Q 7.5.2 Do operator identification codes need to be used to solve this problem or are there other technical solutions? What are these?

Q 7.5.3 If additional number analysis needs to be carried out, and this gives rise to significant once off costs, how should such costs be recovered given that they are largely fixed in nature rather than related to volumes of calls?

Q 7.5.4 What do respondents consider to be the level of such costs? Please support your answer.

Q 7.5.5 Should distance related transit tariffs be introduced? If so, how could this

be done? Can TÉ's switches measure the distance of transit calls?

Q 7.5.6 *What are the appropriate weightings to use in calculating an average transit call rate?*

7.6 Projected Minutes

The ODTR and Telecom Éireann agreed that projected 1999 traffic volumes should be used to calculate the interim interconnection rates set out in ODTR 98/52 and 98/60. These projected volumes were calculated using information provided by Telecom Éireann on traffic routing factors, anticipated traffic volume increases in 1999, and existing traffic volumes.

It was noted in ODTR 98/52 that Telecom Éireann is improving efficiency in its network with the result that volumes of traffic are growing faster than costs. It is likely that the introduction of competition will compound this; lower prices and more active marketing will stimulate overall usage and competitive pressure will require even more attention to cost containment.

The Director now welcomes views on the following:-

Q 7.6.1 *Do you believe that the estimated volume increases used when projecting future minutes should be the percentage increase of the current year's volumes over the prior year's volume? If not, what alternative method or formula should be used when projecting future years' call volumes?*

7.7 Flat Rate –v- Gradient

The current interconnection rates vary according to time-of-day and day-of-week. The current split of interconnection rates between peak, off-peak and weekend (where appropriate) is based on a gradient calculated from the actual revenues and traffic of Telecom Éireann in the period April to August 1998.

The following is a hypothetical example of how the gradient could be calculated using revenue and traffic information:-

(a) Total traffic is split into day, evening and weekend to match the corresponding retail tariff bands, and each is stated as a percentage of the total traffic volumes.

	Minutes	**Percentage**
Daytime	300	50%
Evening	200	33%
Weekend	100	17%
Total	600	100%

(b) Total retail revenue collected is also analysed among the retail tariff bands. The revenue collected is then divided by the number of minutes in that band. This results in an average revenue per minute per retail tariff band figure. The results

are then normalised on the daytime revenue per minute, i.e. the daytime revenue is set at 100% and evening and weekend are stated as a % of daytime.

	Minutes	**Revenues**	**Revenue Per Minute**	**As % Daytime**
Daytime	300	600	2	100%
Evening	200	300	1.5	75%
Weekend	100	125	1.25	62.5%

(c) The percentages calculated in steps (a) and (b) for each tariff band are multiplied by each other, and then totalled.

	Time of day split	**RPM as %**	
Daytime	50%	100%	0.5
Evening	33%	75%	0.2475
Weekend	17%	62.5%	0.10625
		Total	0.85375

(d) The daytime gradient is calculated as the reciprocal of the total figure at step (c). The evening and weekend gradients are calculated by multiplying the daytime gradient by the results of step (b).

Daytime gradient = 1/ 0.85375 = 1.1713

	Daytime Gradient	**RPM as %**	**Gradient**
Evening	1.1713	75%	0.8785
Weekend	1.1713	62.5%	0.7321

(e) The gradients were then applied to the 24 hour average cost.

The use of Telecom Éireann retail revenue and traffic ties the interconnection gradient and hence charges to the retail charging structure of Telecom Éireann. The ODTR does not consider this linkage to be inappropriate at the present time, due to the recent liberalisation of the Telecoms market and the fact in October 1998, following consultation, the Director determined that only Telecom Éireann has SMP in the fixed public telephone network and services sector[10].

The 24 hour cost or average cost does not differentiate between the time of day or day of week. The cost using the network is the same at all times, i.e. a flat rate is charged irrespective of the time of day or day of week, no gradient is used.

The Director now welcomes comments on the following:-

[10] 'Significant Market Power in the Irish Telecommunications Sector – Decision Notice D4/98' (Document no. ODTR 98/47)

Q 7.7.1 Should a gradient be applied to interconnect tariffs or is a flat rate (24 hour) tariff more appropriate?

Q 7.7.2 If gradients should apply to interconnect tariffs, is the retail gradient the most appropriate method for calculating the interconnect tariff gradient. If not, what alternative method should be used and why?

Q 7.7.3 What sample period should be used for collecting revenue and volume data when applying such gradients?

7.8 National Termination

National call termination rates apply to calls passed from an OLO network to the Telecom Éireann network for termination in that network. National termination calls are limited to calls to geographic number ranges allocated to Telecom Éireann .

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 current charges for Double Tandem traffic have been de-averaged into 'Double Tandem < 50km' and 'Double Tandem > 50km'. The underlying principle is that interconnecting operators should be charged less, if they use less of Telecom Éireann's network. De-averaging of the Double Tandem charge also introduces greater transparency in relation to the underlying network costs, and enables OLOs to evaluate the economic efficiency of increasing their interconnection points with the Telecom Éireann network.

The Director would welcome comments on the following:-

Q 7.8.1: Principle of de-averaging Double Tandem National Termination calls.

a) Do you agree that Double Tandem National Termination calls should be distance de-averaged? Why?

b) If you disagree with the above, do you believe that Double Tandem National Termination calls should be distance averaged? What is your reason for this?

Q 7.8.2 Appropriateness of the current 'Double Tandem < 50km' and 'Double Tandem > 50km' charging levels for Double Tandem National Termination calls.

a) Do you believe that the current charging structure for Double Tandem National Termination calls is the most appropriate? Why?

b) If you disagree with the above , do you believe that the current charging structure for Double Tandem National Termination calls should be further distance de-averaged? What do you consider to be an appropriate charging structure and what is your reason for choosing this structure?

7.9 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. The Director welcomes comments from interested parties on the following;

Q 7.9.1 How should the charges for these services be calculated? Please provide analysis supporting your views.

Q 7.9.2 In advance of implementing a fully LRIC based costing system, is estimated LRIC a more appropriate basis for calculating these services rather than fully allocated historic costs? Please provide reasons for your answers.

7.10 Data Build & 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.

These charges are designed to recover the costs which TÉ incurs when an OLO interconnects with the TÉ network at any particular point, where an intervention is required to identify the specific OLO codes and to route them out of the TÉ network at that point. An intervention at one exchange may require similar interventions at controlled or twinned exchanges. Specifically these charges relate to the specification and development of the software data for analysis and routing, the implementation and testing of the data analysis and routing in each affected exchange and the project management needed to ensure that all required activity is completed in a co-ordinated manner so that all support systems (maintenance, billing etc) are fully supported with the information on changes to the network.

The Director now welcomes comments on the following:-

Q 7.10.1 Do respondents believe that where costs for data build and data modification can be fully justified, there should be charges for these? If not why?

Q 7.10.2 If yes, how should these costs be recovered from interconnecting parties?

Q 7.10.3 What is the likely resource involved in data design, project management, implementation and testing?

Q 7.10.4 What is the typical cost of this resource? Please support your answer.

7.11 Packet Switching Services

As part of its RIO, TÉ conveys packet service access calls handed over from an OLO's network for delivery to operators connected to the TÉ network. The standard and quality of service of the calls is the same as if the calls originated within the TÉ network. Other operator calls are delivered to TÉ at the tertiary node. Access to packet switching is provided over a user network interface which is similar to that used to deliver switched minutes to any large customer. The ODTR agreed with TÉ that national termination rates are the most appropriate basis for charging for this service. As connection to packet switch services is normally at tandem level in the TÉ network, a weighted average of the tandem and long double tandem rates were used to derive the tariff.

Q 7.11.1 Are the costs for Circuit Switched Networks appropriate for calculating the tariffs for Packet Switching Services? If not, why not?

Q 7.11.2 What are the costs associated with Packet Switched Networks? What is the basis for your views? Please provide supporting data where possible.

7.12 Access to Paging Services

As part of its RIO, TÉ conveys paging service access calls handed over from an OLO's network for delivery to further OLOs connected to the TÉ network. Access to the paging network is treated by TÉ as the same as access to any other network, with a call termination fee paid to the owner of the network terminating the call and a charge to transit the call across the TÉ network. As the paging network is a separate TÉ subsidiary, TÉ charges for transiting the call from the originating operators network through the TÉ network for hand over to the paging network.

The ODTR agreed with TÉ that the transit rates published by TÉ on the 17th November would be used for this charge.

Q 7.12.1 The Director welcomes comments on the appropriateness of this method of for calculating access to paging services, together with suggestions for alternative methods of calculation where relevant.

7.13 Emergency Services

Telecom Eireann currently applies no charge for the conveyance of calls destined for the emergency services. Prior to liberalisation, Telecom Éireann did not provide sufficient information to justify why a charge should be made for such calls

considering that these were provided free of charge at the retail level before the introduction of competition.

The Director welcomes comments from interested parties on:

Q 7.13.1 *Whether a charge should be made for the conveyance of calls to emergency services. If not, why not?.*

Q 7.13.2 *If a charge should be applied, what should be the basis for such a charge?*

7.14 International Access Traffic and Northern Ireland

This service covers the conveyance of International Access traffic (including traffic destined for Northern Ireland) handed over from an OLO's network for delivery through the Telecom Éireann international network. It comprises all traffic with the leading digits "00" and "080".

The current charging structure in the RIO is based on a combination of country specific charges and chargebands. The latter represent the weighted average cost of international access to a group of countries e.g. Band 8 Middle East & South Africa includes Bahrain, Lebanon, Oman, etc. The actual cost of access to the international destinations included within each chargeband will be higher or lower than the weighted average cost charged for the band.

Telecom Éireann currently provides international access at the Tertiary node only. Telecom Éireann is not currently in a position to provide access at the tandem node, owing to constraints in its billing system.

Set out in ODTR 98/60 are the interim international access service charges agreed by the Director with Telecom Éireann in November 1998. The interim charges are split into peak, off-peak and weekend (where appropriate) and bundle the following major components of international access:

- International gateway switching costs;
- National transmission from the international switch to the access point for the international transmission, e.g. earth station for satellites;
- International transmission costs (including transit costs where applicable); and
- Settlement charge.

The ODTR considers it may be appropriate that the per minute cost of international access for 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 now welcomes comments on the following:-

Q 7.14.1 *The current international access charges are a combination of country specific and chargebands charges.*

a) Do you believe that the current charging structure is the most appropriate? Why?

b) If you disagree with the above, what alternative charging structure should be used and why?

Q 7.14.2 Delivery of international access calls to the tertiary node

a) Do you believe that international access calls should only be delivered to the tertiary node? Why?

b) If you disagree with the above, do you believe that international access calls should also be delivered to Tandem? Why?

Q 7.14.3 International access charges 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.

a) Do you agree with the above?

b) If you disagree with the above, what would be an appropriate alternative basis for the calculation of international access charges?

7.15 Access to Directory Database

Since the publication of ODTR 98/52 and 98/60, Telecom Éireann has included access to it's directory database as a new service in its RIO. This service allows interconnecting OLOs to access and retrieve directory information from the Telecom Éireann directory database. This is done by means of on-line access to the 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. Access is limited to the following elements of the database only:

i) Telecom Éireann fixed line customers listed in Telecom Éireann's Directory Enquiry Database and White Pages Directory;
ii) BT Northern Ireland Database listings (subject to the consent of BT); and
iii) listings of the Eircell Database (subject to the consent of Eircell).

No access will be given to ex-directory numbers.

To date, no justification has been received by the ODTR for Telecom Éireann's proposed interconnection charges for directory database access of

a) £9,000 per annum for the first 10 terminals and,
b) £7,000 per annum for each additional terminal.

Q 7.15.1 Is the charging structure proposed by Telecom Éireann and the level of charges appropriate for this service? If not why? What alternative charges might apply and why?

Q 7.15.2 Is the level of access and structure of service as currently offered appropriate? If not, what alternative forms of access and service might be provided?

APPENDIX I: The Stages of Calculating a Cost Based Interconnection Rate

Establishing the linkage between the costs to an incumbent (in this case Telecom Eireann) of providing interconnection and the rates to be charged is not a simple process. This appendix describes the main stages involved.

One key issue that has been the subject of much discussion throughout Europe is the basis on which costs are calculated. Costs may be historic or forward-looking. The Director intends to follow the European Commission Recommendation 98/195/EC which states in paragraph 3 that:

> "Interconnection costs should be calculated on the basis of forward-looking long run average incremental costs since these costs closely approximate those of an efficient operator employing modern technology."

Therefore the Director intends to move rapidly towards a forward looking approach based on long run incremental costs (LRIC) and a consultation is planned for March on the implementation of Long Run Incremental Costing. This consultation will consider the different methods of implementing LRIC and how they may be best applied in Ireland's liberalised environment.

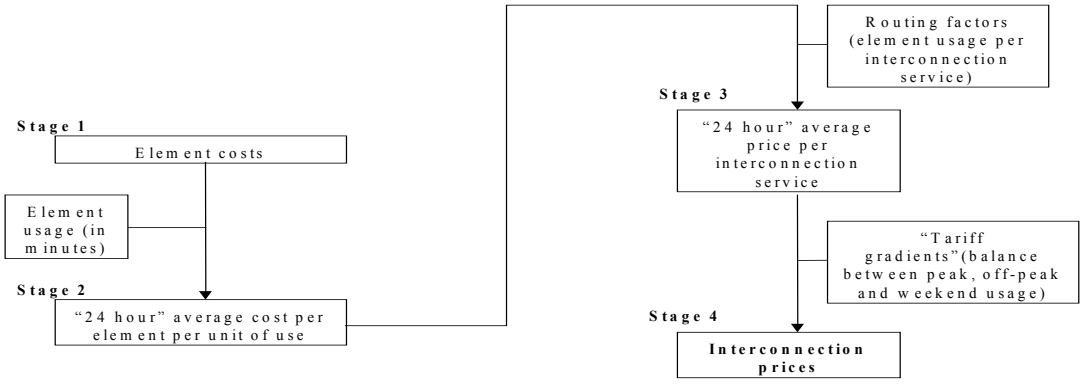


Figure 1: Description of stages of calculating interconnection rate

Stage 1 – Calculation of Element Costs

The first stage in establishing the linkage between cost and interconnection price is to calculate the cost of key network elements that are used to deliver an interconnection service. The output from this stage is the total cost of the principal network elements,

for example, the costs of primary switches or transmission links between local and primary switches.

Stage 2 – Calculation of an average cost per element per unit of use

The basic unit of use of an interconnect service is the paid minute and thus the next stage of the process is a calculation of the average cost per network element per minute. This is often referred to as a "24 hour rate" for the reason that there is, at this stage, no differentiation between the different times of day when the call might be handled.

To perform this calculation, it is necessary to understand how much each network resource is used. This may be derived from measurement (possibly supplemented by growth predictions) or, as appropriate, a theoretical appreciation of how calls are routed through the network and what resources an average call therefore consumes. For example a local call may use one or two local switching centres. If an average percentage is known for how many switches are used for an average call and the number of local calls are known the total usage of switches by local calls can be calculated.

Implicit in this process, is the understanding that network resources will carry a mix of traffic including both interconnection traffic and traffic from Telecom Éireann's own customers. As Telecom Éireann is not permitted to discriminate between its own retail divisions and other operators, all traffic is used when calculating the rate.

Stage 3 – Calculation of average price per interconnection service.

The next stage of the process involves a consideration of what network elements are needed to provide what interconnection services. This considers how an 'average' interconnection call would be routed through the network and what resources would be used. This is done by applying routing factors to weight the cost of each network element used.

Routing factors will 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. However, a theoretical approach based on general network averages may also be used and are often more appropriate since profiles vary between operators and can change over time.

The output of this stage is the average cost per minute of each interconnection service

Stage 4 – Application of tariff gradient to get interconnection prices

Retail tariffs for telecommunications services vary by time of day and it may be appropriate for interconnection rates to vary in a similar manner. Therefore, the final stage of the process is to adjust the 24-hour rate to take account of these differences.

The aim is to get to a stage where the rate used when applied to a representative usage profile results in the average 24-hour rate.

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 & 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