Report on the ODTR consultation on local loop unbundling

Decision Notice D6/00

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1 Foreword

The key to the development of new and innovative telecommunications services and access methods in Ireland is liberalisation. Since I was appointed, Ireland has opened up its transmission market, encouraged investment in infrastructure, cut the costs of access and provided opportunities for telecoms and cable operators, broadcasters and Internet providers to enter the market. All of this has led to greater competition and hence tangible benefits to the consumer in terms of choice, price and quality.

However many believe that local access is a significant bottleneck to development of competition in telecommunications and the Internet. I believe that Ireland needs to develop the greatest variety of feasible means of enhancing local access competition – cable, fixed wireless access and Local Loop Unbundling.

Therefore I am pleased to bring out this Decision Notice providing a framework for the development of Local Loop Unbundling (LLU). LLU is an access service that can be used as a means of delivering added choice to consumers, encouraging growth of the telecommunications market and delivery of new services. It has the potential to reduce the cost of access to subscribers, complement alternative access infrastructure and offers the prospect of facilitating greater competition in access markets over the coming years. LLU should be in place in Ireland by April 2001.

During the consultation held by my office on this matter, *eircom* offered to provide a bitstream LLU service. I welcome this initiative and will do what I can to facilitate trials and other development activities needed to ensure that the proposed service meets the requirements of providers and users. The essential principle here is that the terms, conditions and prices of any service be non-discriminatory.

Although LLU is primarily a commercial matter, regulatory involvement will be needed to ensure it progresses swiftly but with due consideration to the genuine complexities involved. This is particularly important in the light of recent EC initiatives and the feeling at the recent Lisbon summit that LLU introduction should be hastened. With this in mind, I am today announcing the convening of two working groups. These will examine the complex issues surrounding operation of the LLU service and methods of access.

The work ahead is formidable if Ireland is to keep up the pace of development that we have seen to date, but the potential benefits are there to be gained. I want to call on interested parties co-operate and participate in these groups and help to shape the final LLU offering in Ireland in a way that will foster competition and ultimately ensure that consumers get the best range and value in services. The only way this will be achieved is with the dedicated co-operation of the parties in the market.

I am very much aware of the fact that competing companies in Ireland see copper unbundling as their key requirement, but this is not supported by the EU framework within which the ODTR operates. The EU Commission has highlighted a third form of access known as “line sharing” but this option is relatively new to European markets. Rather than delay the start of preliminary work needed by all parties if unbundling is to be introduced, this paper outlines a staged approach which engages all parties to do the groundwork common to all types of unbundling. Additional forms may be developed more rapidly as required/enabled at a later date.

Etain Doyle
Director of Telecommunications Regulation

2 Background

Local Loop Unbundling (LLU) is an access service that can be used as a means of delivering added choice to consumers, encouraging growth of the telecommunications market and delivery of new services.

2.1 ODTR Consultation

In March 1999, the Office of the Director of Telecommunications Regulation (ODTR) launched a consultation process in relation to local loop unbundling. The process was based on the publication of a consultation document (ODTR 99/21), which discussed local loop unbundling under the following headings:

- The case for unbundling the local loop;
- Forms of local loop unbundling;
- Costs and benefits of local loop unbundling;
- Costs and pricing;
- General regulatory issues.

The consultation paper recognised that, while LLU is primarily a commercial and technical matter to be agreed between the parties concerned, regulatory assistance can be provided on critical issues.

The responses received to the consultation paper have been of assistance to the Director is helping her to form a view on appropriate regulatory measures in relation to local loop unbundling in Ireland.

Nine organisations responded in writing to the consultation document, as listed below:

- Cable and Wireless (C&W)
- *eircom*
- Esat Telecom
- Forfas
- MCI Worldcom
- NTL
- Ocean Communications
- Portlaoise District Branch of the Communications Workers Union (CWU)
- The *eircom* ESOP Trustee.

The Director wishes to thank everybody who contributed to the consultation. With the exception of responses marked as confidential, their written comments are available for inspection at the ODTR's office in Dublin.

2.2 Developments Since the Consultation

Since the ODTR consultation there have been a number of developments in the area of LLU. First, some EU member states have implemented a requirement to offer LLU. The types of unbundling offered varies and include full copper unbundling and bitstream access with no particular pattern emerging. In some cases prices are regulated (Germany, Austria, Netherlands) and in others they are a matter for commercial negotiation (Finland, Sweden). Some countries have made decisions on the degree of regulatory intervention, the types of access and timetables set for the introduction of LLU (notably the UK), and others are still dealing with operational issues such as co-location in the context of specific or general requests for access. The actual take up of unbundled local loops remains low and this is not surprising given that it is in the early stages of introduction. Annex 1 attached is taken from the European Commission DG Information Society Working Document on unbundled access to the local loop, 9 February 2000 and sets out the current status of LLU in some EU member states.

Second, the European Commission has proposed a draft recommendation on LLU. This is currently being discussed with a view to publication by the end of April. The Commission proposes to recommend that member states introduce legislative and regulatory measures to ensure that LLU is available by the end of 2000.

Third, the European Council meeting of 23-24 March under the Portuguese presidency has arrived at a number of conclusions and agreed actions including:

> "the Member States, together with the Commission, to work towards introducing greater competition in local access networks before the end of 2000 and unbundling the local loop in order to help bring about a substantial reduction in the costs of using the Internet;"

Finally, in Ireland, much has happened since early 1999. Following liberalisation of the telecommunications market, competition in that market has begun to develop and consumers are beginning to see the benefits in terms of price, choice and quality of services. In regulatory terms, the development of competition has been facilitated by the introduction of non-geographic number portability and carrier preselection as well as further reductions in interconnection rates. A number of new licences have also issued and new operators have entered the market. Overall, the market share of new entrants has increased from 4% in March 1999 to between 6-7% as of the fourth quarter of 1999.[1]

Notwithstanding this, competition is clearly in the very early stages with *eircom* still holding at least 93% of the fixed telephony market.

[1] ODTR 00/21, The Irish Telecommunications Market, Quarterly Review, December 1999 – February 2000

2.3 Legislative Background

Special network access (SNA) is provided for in both Irish and EU legislation. The relevant provisions are set out in Regulation 20 of the European Communities (Voice Telephony and Universal Service) Regulations, 1999 (S.I. No. 71 of 1999), transposing the Voice Telephony and Universal Service Directive (98/10/EC).[2] Regulation 4 of the European Communities (Interconnection in Telecommunications) Regulations (S.I. No. 15 of 1998) and Article 4(2) of the Interconnection Directive (97/33/EC) are also relevant. Key requirements include the following:

- Operators with Significant Market Power must deal with requests for access to their networks at network termination points other than those commonly provided (Special Network Access).
- The provision of such access must be at cost oriented rates and comply with the principle of non-discrimination.
- The conclusion of agreements is a matter for negotiation between the parties in the first instance.
- The National Regulatory Authority, (the Director of Telecommunications Regulation) may intervene and shall do so if requested by either party, to set terms and conditions for access and to ensure that agreements are implemented in the interests of users.

The regulations renew the provisions on special network access originally included in previous legislation. In particular, Regulation 20(8) empowers the Director to intervene in the market to ensure effective competition or interoperability or both.
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2.4 Format of This Document

This Decision Notice presents the outcome of the consultation and the Director's decisions. Specifically, this document:

- outlines each of the issues analysed in the consultation document
- provides a summary of the views expressed by respondents
- presents proposals for action by the industry and the ODTR on each of the issues in the light of the consultation.

The report is structured along the same lines as the earlier consultation document. Each section is divided into three parts:

- A listing of the relevant topics from the consultation document, adding context where necessary.
- A summary of the responses to these questions
- The Director's views on the issues.

Chapter 9 then brings the analysis together by describing the Director's conclusions and planned next steps.

[2] See, in particular, Article 16.

3 Summary of the Decision

As already stated, this document follows the format of the original consultation in order to present all of the views and positions as clearly as possible. The Director's position is therefore set out in the context of each individual issue in the main text of the decision. The key decision of the Director on the need for regulatory intervention and the form that such intervention should take in relation to LLU is founded on Regulation 20 (8) of the European Communities (Voice Telephony and Universal Service) Regulations 1999 and is set out in section 5.2 of the document. That decision states:

> **Under the terms of Regulation 20(8) of the European Communities (Voice Telephony and Universal Service) Regulations, 1999, the Director considers that in order to ensure effective competition, operators with SMP in the Fixed Public Telephone Network and Services Market should offer unbundled bitstream access on non-discriminatory, fair and reasonable terms. In particular, *eircom* is required to provide its competitors with the same facilities as those that it provides to itself or to its associated companies, and in the same timescales.**

In addition to this requirement, the Director considers that work should commence on the investigation of other forms of LLU that operators may wish to request in order to ensure sufficient information and clarity for all parties to make decisions on the form and nature of access that they may require.

The Director is therefore convening two working groups to address the operational issues surrounding LLU:

- An Operations Group to address the operational issues surrounding LLU, bitstream and other forms of LLU, including line sharing and full copper unbundling, and
- An Access Group to address the method of access – i.e. physical co-location, virtual co-location and direct connection.

Further detail on these two groups and their work programmes are set out in section 9 of this paper.

In support of this key decision, the Director has set out her position on a range of issues that were raised in the original consultation. Her positions on these issues are adopted in the context of Regulation 20 of the European Communities (Voice Telephony and Universal Service) Regulations 1999. The main body of this paper provides further detail on each position as summarised below:

- **The Director considers that LLU should support all required telecommunications services. It is clear that broadband access services will be required. In addition, the programme set out in section 9 and associated annexes to this paper will provide further information on demand for narrowband services that may be required.**

- **The methods of access to be provided shall include co-location, virtual co-location and direct connection, where a demand for any such method is demonstrated and where, on a case by case basis, there are not clear and justifiable grounds for**

refusing any specific type of access. Such grounds must conform with the legislation, including regulation 20(2) of the European Communities (Voice Telephony and Universal Service) Regulations, 1999.

- **Where requested, remote access via leased lines or other links shall be provided to backhaul bitstream services through the network to a central location.**

- ***eircom* is required to produce appropriate draft SLAs in the context of the Next Steps set out in section 9 and these should be based on Document ODTR 99/48. As set out in the proposed LLU work plan (Annex 2), draft SLAs should be agreed by the industry, with any outstanding issues determined by the Director, by Decision Point 2 at the end of September 2000.**

- **Prices of LLU services should be set on a geographically averaged basis.**

- **The Director considers that LRIC forms an appropriate basis for calculation of prices for LLU. However, the Director also notes that there are circumstances that may justify a deviation from the LRIC standard initially and these will be taken into account in any final pricing arrangements.**

- **The access provider should recover the reasonably and efficiently incurred costs of LLU.**

- ***eircom*, as an organisation designated as having significant market power in the Fixed Public Telephone Network and Services market, is required to provide SNA in accordance with legislation. LLU as a form of SNA must be provided in accordance with the decisions set out in this Notice. The Director will periodically review this requirement.**

- **Access seekers should be provided, on a non-discriminatory basis, with information necessary for them to plan their service offerings. Specification of this information and the processes needed to collect and deliver it are included in the work plans set out in Section 9.**

The positions adopted by the Director are designed to ensure that LLU is made available in Ireland in the interests of effective competition to the benefit of users.

4 The case for unbundling the local loop

The first section of the consultation document was largely descriptive, discussing what local loop unbundling is and demonstrating its potential benefits. It also discussed the alternative means of providing services, i.e. resale of *eircom* services, local interconnect and competing infrastructure (e.g. fixed wireless access, cable networks) and sought views on whether LLU should be considered to be an appropriate alternative access mechanism in the Irish Market.

Views of respondents

Respondents were divided in their views. Forfas and the Other Licensed Operators ("OLOs") generally agreed that LLU is an appropriate alternative means of access. The reasons put forward to support this contention varied but could be can be summarised by the statement of one respondent who stated that " the Irish market has an almost total lack of alternative access network. This means there is a need for Ireland to implement LLU more rapidly and to a greater extent than in other countries ". Respondents were cautious in their views on cable TV networks and fixed wireless access ("FWA"), believing that both will take time to become effective forms of local competition. In the case of FWA, one respondent further considered that it has inherent spectrum limitations and as yet speculative and unproven characteristics for the supply of broadband services.

Without LLU, it was stated that *eircom* would have unrivalled scale and ubiquity in a market where these factors are a fundamental source of competitive advantage. The optimal local loop strategy according to another respondent would be a combination of fibre, wireless and unbundling. LLU is complementary to, rather than a substitute for, infrastructure investment.

On the other hand, a number of respondents took a different view, believing that Ireland is likely to have genuine competition in the local loop before most of its EU partners (because of high penetration of independent cable TV, and the intention to issue licences for fixed radio access). The view was expressed that development of alternative types of infrastructure may be undermined by the mandated provision of LLU. The consultation document was also felt to be too optimistic about the prospects for LLU attracting entrants to the local access market. This it was stated has not proved to be the case in other countries where LLU has already been implemented. It was also stated that mandating LLU at this time would be inappropriate and would be an extreme regulatory response, which makes economic sense only where the over-riding policy presumption is one of continued actual or *de facto* local loop monopoly, a situation that does not hold in Ireland.

Position of the Director

The Director recognises the benefits to be gained from development of competing forms of infrastructure. She is confident that cable networks and fixed wireless access will provide infrastructure competition for both narrowband and broadband applications within the coming years. Her intention to issue new licences for fixed wireless access reflects this confidence. However, in some parts of the country, it may be quite some time before there is an infrastructure-based competitor to *eircom*. Even in the longer term, the number of infrastructure-based competitors is always likely to be limited due to the costs of rolling out nationwide infrastructure and the limited availability of alternative means of access – i.e. radio spectrum.

It is the Director's view that LLU is an important access mechanism both in the short and longer term. In the short term while there is little by way of alternative networks, LLU can provide the opportunity for competition in all parts of the country and can spread the benefits of competition much more widely and earlier than might otherwise happen. In the longer term LLU can complement alternative access infrastructure where such infrastructure develops and can offer competition where such infrastructures may not develop. As a result LLU offers the prospect of facilitating greater and more widespread competition to *eircom*. Ultimately, the Director expects that competition will ensure that the most appropriate, efficient and effective configurations will be most successful, as these will provide platforms for the delivery of services that consumers will choose to buy.

The Director accepts that the size and shape of the market for LLU in Ireland are uncertain at this time. This matter along with the costs and benefits of LLU are addressed later in this paper. In general however, the Director does not consider it appropriate to favour one form of infrastructure over another and believes that the development of competition is best served by ensuring that there all feasible means of enhancing competition in local access should be developed, including cable, fixed wireless access and local loop unbundling. It is then up to the market to decide between the various solutions and ultimately consumers will decide, by their choices, which operators provide the best services in terms of price, choice and quality of services.

5 Forms of local loop unbundling

5.1 Services offered

The consultation document presumed that unbundled local loops could be used to provide the following services, either individually or as a bundled service package:

- Analogue PSTN
- ISDN basic access
- New telemetry services such as meter reading
- Higher rate xDSL services.

The Director sought the views of interested parties, and operators in particular, on the nature and timing of the services that could and would likely be provided over unbundled local loops.

Views of Respondents

The responses on these questions were, in general, somewhat vague. One respondent listed a number of services which it believed could be provided, including advanced telephony, High Speed Internet, Interactive TV, Video on Demand, Multi-media information and Education and Training. Forfas considered that the services listed in the consultation paper were certainly capable of being delivered over unbundled local loops and that, in the short term, are likely to be the primary services offered. It further believed that xDSL represented the most interesting opportunity because it opens up a whole new range of broadband services previously unavailable to customers.

None of the other relevant respondents gave a clear indication of the type of service offerings for which they would intend to use LLU. Equally they provided little information or analysis in support of their views.

However, it would appear that higher rate xDSL services form the core market for LLU applications. The main requirement is for higher bandwidth services such as xDSL and ISDN but many of the services that will be required are unknown. A huge pent-up demand for high bandwidth applications was identified. A number of respondents indicated that they wish to address this market as soon as practicable.

Respondents were divided as to whether narrowband telephony applications would be supported over LLU. Some believe that this is unlikely whilst retail line rentals are below cost, whilst others argued that advanced telephony would be a key part of the initial service offering based on LLU.

Position of the Director

It is clear that broadband access forms the major part of the commercial opportunity offered by LLU. However, that is not to exclude the provision of voice telephony services entirely. They may either be offered as an adjunct to broadband access on unbundled loops or, through innovative pricing and marketing, they could become the primary LLU service for some high usage customers.

Position 5.1

The Director considers that LLU should support all required telecommunications services. It is clear that broadband access services will be required. In addition, the programme set out in section 9 and associated annexes to this paper will provide further information on demand for narrowband services as well.

5.2 The type of access

The consultation paper defined two types of access, which can be supported by LLU:

- Physical access, in which the access seeker has direct access to the transmission medium and can decide how to use it within limits defined in physical terms. For copper loops the characteristics of attached equipment would be limited in terms of power spectrum masks, absolute power levels and impedance matching.
- Bitstream access, in which the bitstream offered is defined and the access seeker can only use this bitstream. It is not allowed to add other equipment to implement alternative bitstreams. All the physical management of the medium is handled by the access provider.

During the period since this consultation was held, a particular form of physical access known as *line sharing* has risen in prominence. The FCC has mandated provision of line sharing in the United States through its *Advanced Services Third Report and Order*.[3] The European Commission has invited comments on a high level draft recommendation that implementation of a harmonised form of line sharing be encouraged across EU member states[4] (note this document does not address any operational issues and is a recommendation in principle only).

Line sharing is a form of unbundling in which an access provider continues to provide telephony services over a copper pair, while an access seeker delivers broadband services using higher frequencies on the same pair. A device known as a "splitter" separates the two types of traffic. The local loop - normally including the splitter - remains a part of the access provider's network.

Line sharing has some of the properties of full copper unbundling (e.g. the access seeker has control of the part of the line that they are using) while still having some of the characteristics of bitstream access (e.g. the underlying network remains the property of the access provider).

[3] FCC Report No. CC 99-54, November 1999.
[4] DG Information Society Working Document on unbundled access to the local loop, 9 February 2000.

Views of Respondents

Some respondents argued that physical access is the baseline requirement, but many respondents would like to have both physical access and bitstream available. Forfas supported this view and believed that both types of access should be offered. While it believed that bitstream access is likely to be the cheaper way of providing the customer with conventional services, physical access may be required for more innovative services.

A number of key arguments were put forward by respondents:

- Physical access is the absolute minimum requirement in order to prevent *eircom* having all the first mover advantages in the broadband market.
- Initially physical access should be provided. To mandate only bitstream would stifle innovation and give *eircom* the opportunity to constrain bandwidth.
- Managed bitstream products provide an important complement to physical access, useful at sites where the costs of co-locating are prohibitive.
- The temptation is just to require *eircom* to launch a wholesale bitstream equivalent of any broadband retail service that it decides to offer. This however would be wholly inadequate, as *eircom* would control the speed and geographical range of broadband services development. Given its desire not to cannibalise existing services (e.g. ISDN, leased lines) this is likely to result in little deployment of xDSL services and weak competition in broadband.

Alternative strong views were expressed by some respondents who did not believe that physical access should be required. *eircom* argued that physical access does not add significant additional benefits over bitstream access but that it does significantly add to the technical and operational difficulties of developing and maintaining an LLU service. In particular, *eircom* contended that there would be major difficulties in preventing destructive interference between different xDSL technologies. The wrong mix of such technologies could, it stated, significantly reduce the proportion of loops that can use xDSL technologies to provide broadband access and could damage the quality of service provided to customers.

Bitstream access, on the other hand, would enable *eircom* to optimise the use of its network and to preserve the quality of its existing services. *eircom* believed that that this form of access could have a role in providing a stepping stone at this point in the development of alternative broadband access infrastructure. *eircom* stated that it would trial a bitstream access product that it believed could deliver the benefits of LLU to OLOs.

A number of other arguments were put forward in favour of bitstream over physical access. These can be summarised as follows:

- Bitstream access assists with ensuring flexibility and continuity in network modernisation because the access provider retains exclusive control of network operations.
- Bitstream enables several service providers to operate across a single physical copper connection and thus maximises consumer and competitive benefits.
- Bitstream is less intrusive because it is less likely to raise serious property law issues (based on the need for co-location)

- Physical access could contravene EU competition rules, especially the Access Notice which allows an operator the right to refuse access to facilities where there is an objective justification for doing so.

Most respondents recognise the technical and operational challenges of providing local loop unbundling and support the idea of an industry working party to consider appropriate management strategies. In its response *eircom* stated that participation by OLOs in trials of bitstream access will help to address these challenges. In parallel with these trials *eircom* will conduct an audit of its access network to determine which loops are capable of supporting xDSL services.

Several respondents also pointed out the need to allow an access provider to modernise its network. Two suggestions were made as to how this may be done with physical access:

- If an access provider wishes to upgrade its network in such a way that existing unbundled facilities cannot be continued, it should give at least as much notice to other licensed operators (OLOs) as it gives to itself (with a minimum of 12 months), and an equivalent bitstream presentation should be offered.
- An access provider could serve notice of its intention to modernise its access network and thus offer a migration path from physical access to a managed service or to co-location at a street cabinet or RCU.

Since the provision of LLU on the basis of "line sharing" had been raised, the ODTR sought meetings with those parties who had expressed an interest and were likely to be involved in the actual implementation of line sharing as a form of access. This involved meetings on the one hand with *eircom* and on the other hand with OLOs as a group. No party expressed any strong interest in implementing line sharing as an access method, all preferring to concentrate on the methods already discussed in the consultation paper.

Position of the Director

Commercial Negotiations:
The Director welcomes the initiative of *eircom* to offer trials of a bitstream service open to OLO participation and encourages *eircom* to develop these trials to include shared line access and ultimately full copper unbundling if that is requested by operators. There are certainly indications that broadband access will find an eager retail market.

Statutory Framework:
The Director notes the position put forward by the European Commission in its working paper and draft recommendation that full physical unbundling, i.e. rental of copper pairs to a third party for its exclusive use, is not mandated under the SNA obligations referred to in Section 2 above. This does not of course preclude the introduction of full physical unbundling, insofar as commercial negotiations or legal obligations outside the ONP framework provide a basis for it. However, in the light of this legal interpretation the Director does not consider that she is in a position at this time to require this form of unbundling under existing ONP legislation.

However, the Director considers that the European Commission position does underpin the view that physical unbundling on a line sharing basis is covered by the SNA rules, inasmuch as it amounts to provision of network access but does not involve transfer of exclusive use or control of the relevant network elements. Line sharing was not explicitly discussed within the consultation paper, and initial meetings with operators who might be involved in the implementation of LLU did not provide sufficient information to assess the likely level of demand for it from access seekers. On the face of it, line sharing possesses some of the advantages of full physical unbundling; in particular it would permit access seekers to work to their own timetables and deploy broadband technologies different from those used by the access provider.[5] Moreover, line sharing might reduce the barriers to entry to broadband access provision, even in comparison with full physical unbundling. Operators wishing to enter only the broadband access market would not be obliged to simultaneously enter the telephony access market (or charge their subscribers for a second line). In this context the Director considers that *eircom* is obliged, by virtue of the legislation, to respond to requests for access on a line sharing basis if such requests are made.

eircom is required to act in a non-discriminatory fashion in the provision of services to its own downstream arm and its competitors. Clearly in order to provide a retail broadband access product on the market, *eircom* must first provide an unbundled bitstream product to its own downstream arm. In accordance with the relevant legislation, such products must also be available on a non-discriminatory basis to other eligible operators.

Regulatory Action

In this context the Director has considered what regulatory action should be taken on LLU in Ireland.

First, it is the Director's view that physical access and bitstream access are complementary rather than mutually exclusive. For example, bitstream LLU could be employed by operators at locations where they did not have a high enough density of customers to justify incurring the fixed costs involved in physical access.

The key advantage of physical access is that it can accommodate a wider array of competing technologies. This could facilitate variety and innovation in provision of local access. Line sharing also offers some of these advantages. On the other hand, implementation of bitstream unbundling is likely to present fewer technical problems than physical access, particularly in the control of interference and the handling of faults. Operators will still have to agree on issues such as the levels of service that can be provided. However, in some cases bitstream access may require more complex commercial and regulatory arrangements than physical access. For example, the set of network elements offered by the access provider will be both more extensive and more complex. Establishing cost based prices will probably be more difficult for bitstream services than copper loops.

It is the Director's view therefore that various forms of access should be developed by the industry on the basis of demand and commitment to implement. She believes that the different forms of access are complementary and may suit different business plans and different applications. The choice of method should be made by providers in the market.

[5] Of course, standards would be required to manage issues such as interoperability and interference.

However, in considering appropriate regulatory action, the Director is cognisant of the remit of the legislation as described in Section 2.3.

It is clear that *eircom*, as an operator with SMP, is required to provide Special Network Access. The Director, noting the level of interest in SNA, but also the fact that no negotiations to date have provided any visible evidence that LLU will be introduced shortly, has decided that her Office will facilitate the speedy introduction of bitstream unbundling on a non-discriminatory, cost-oriented basis. At the same time she believes that the issues raised by physical access, both shared line access and full copper unbundling, should be explored with a view to developing a more robust information base to inform any decisions on the introduction of these forms of access. For example, it is essential for interested operators to have access to information about *eircom*'s network in order to determine the extent and nature of access they might require. Equally, *eircom* must have information about the requirements of the various operators before a product can be implemented. The next steps set out in section 9 describe how the Director considers this objective can best be met.

DECISION 5.2

Under the terms of Regulation 20(8) of the European Communities (Voice Telephony and Universal Service) Regulations, 1999, the Director considers that in order to ensure effective competition, operators with SMP in the Fixed Public Telephone Network and Services Market should offer unbundled bitstream access on non-discriminatory, fair and reasonable terms. In particular, *eircom* is required to provide its competitors with the same facilities as those that it provides to itself or to its associated companies, and in the same timescales.

5.3 The method of access

The consultation document listed three types of physical access method:

- co-location on the premises of the access provider, where the access seeker chooses, supplies, installs and operates the equipment needed, and therefore access has to be provided for the staff of the access seeker
- virtual co-location, where the access seeker chooses and supplies the equipment, but installation and operation is carried out by the access provider. The access seeker must ensure that the staff of the access provider are adequately informed and trained to operate the equipment. In some cases the equipment remains under the ownership of the access seeker, in others it is sold or leased (at least nominally) to the access provider
- direct connection, where no additional equipment is needed. In this case, the cable types, connectors and transmission equipment must match the equipment of the access provider. The access provider may offer no choice or a choice of two or three alternatives. The location of the cable connection may be on the premises of the access provider or access seeker, or between the two (called "in-span interconnection"). With copper cable connection and physical access there would be limits to the distance between the premises of the access provider and seeker.

The Director asked for views on the preferred form or forms of access.

Views of Respondents

Respondents recognised the difficulties involved in addressing this issue. Some respondents want access of all forms at all technically feasible points, while others favour only direct connection. The difference between these responses derives primarily from different perspectives on how to solve the difficult issues associated with co-location.

eircom favoured a solution based on direct connection and bitstream access, but did not favour any combination of the proposed methods of access with co-location. *eircom'*s view is that co-location in particular would pose significant operational difficulties in terms of network integrity, accommodation, and training and industrial relations issues. *eircom* also see operational difficulties with virtual co-location and would not be happy for technical and operational reasons with being required to attach equipment chosen by OLOs to *eircom*'s network.

eircom's preferred solution – direct connection and bitstream access – is, in its view, the most workable system, in that it gives *eircom* the flexibility to choose the technology to maximise the utilisation of the network and ensure quality for the customer.

Other respondents felt that co-location must be the preferred form of access to maximise OLO control and wished the ODTR to sponsor template contractual documentation to deal with security and privacy issues that would arise. One respondent felt that virtual co-location might be feasible but only where co-location is genuinely impractical and further believed that direct connection appeared unworkable and would leave the OLO very vulnerable.

In recognising the difficulties involved, it was stated that, with industry co-operation, the problems of co-location, accessing information about customer service functionality, provisioning, fault identification and maintenance can all be solved. Forfas also concurred with the view that, where physical constraints are not a problem, co-location was the appropriate method of access.

One respondent believed that a possible solution to the issue is the establishment of "hotels" - purpose built co-location buildings jointly owned by the operators.

Position of the Director

Co-location was addressed in a different context in Decision Notice D12/99. This decision is suspended pending resolution of a legal challenge, and the views expressed on co-location in this document are without prejudice to the outcome of that case.

The Director is aware of, and has considered, the difficulties involved in the different methods of access. On balance she believes that all forms of access should be offered as the requirements of access seekers will vary and it will be a matter for the access seekers to identify the means that meet their requirements. It is apparent that there are real operational issues to be solved with co-location and virtual co-location and the Director considers that the industry is best placed to work together to find acceptable solutions to the problems of co-location.

In acknowledgement of the complexity and difficulty of co-location issues, the Director proposes a mechanism in section 9 to deal with co-location. In particular, the Director intends to convene a working group of interested parties that will provide a forum for exchange of information both on the part of the access provider (*eircom*) and the access seekers. This will facilitate the access seekers in determining which solution best meets their requirements and will also provide greater certainty as to the demand for the various forms of access.

Position 5.3

The methods of access to be provided shall include co-location, virtual co-location and direct connection, where a demand for any such method is demonstrated and where, on a case by case basis, there are not clear and justifiable reasons for refusing any specific type of access. Such grounds must conform with the legislation, including regulation 20(2) of the European Communities (Voice Telephony and Universal Service) Regulations, 1999.

5.4 The location of access

The consultation paper addressed the issue of the location of access. The copper loop ends at the premises of a remote concentrator or exchange. Within the *eircom* network this would typically be premises occupied formerly by an analogue local exchange. Some of these premises now host digital local exchanges and entrants would probably wish to obtain local interconnection at these sites. However, access seekers may not wish to bring their network to each of the premises that now host only remote concentrators. They may prefer to pay *eircom* to provide transmission between these premises and their point of interconnect at the digital local exchange. This may be the case even if the access seeker co-locates equipment at the premises where the loop ends.

This raises the issue of whether the access provider should be required to provide remote access via leased lines or other links for these purposes and to backhaul bitstream services in some form through the network to a central location.

Views of Respondents

There was general agreement amongst respondents that backhaul is an appropriate facility.

Position of the Director

The Director agrees with the respondents that backhaul should be made available.

Position 5.4

Where requested, remote access via leased lines or other links shall be provided to backhaul bitstream services through the network to a central location.

5.5 Quality and maintenance

The provision of LLU raises the issue of quality and maintenance of the unbundled loops, in particular fault repair. The Director sought views on whether these issues could be appropriately dealt with in Service Level Agreements, or if there were other preferred ways of dealing with the issue.

Views of Respondents

Most respondents recognised that SLAs will be useful in facilitating LLU. Some pointed to a need for contractual penalties to be included. An alternative view was that SLAs are not amenable to regulation:

- SLAs should be left to commercial negotiation, provided that the regulator can ensure there is no anti-competitive behaviour.
- If regulation is imposed it is likely that the whole process will descend into litigious waste as has happened in the US.

It was also suggested that SLAs for LLU services may be difficult to define because of the complexity and uncertainty of spectrum management issues.

Position of the Director

The Director agrees that, in the first instance, development of suitable SLAs is a matter for commercial negotiation. One option would be for the access provider to commit to an umbrella SLA (which may be supplemented in specific circumstances) which is acceptable to the access seekers. The terms of any such SLA should be consistent with the ODTR's consultation report on SLAs (ODTR 99/48). In particular, the Director considers that penalty terms as identified in ODTR 99/48 are appropriate in the context of LLU and should be set at fair and proportionate levels.

Position 5.5

eircom is required to produce appropriate draft SLAs in the context of the Next Steps set out in section 9 and these should be based on Document ODTR 99/48. As set out in the proposed LLU work plan (Annex 2), draft SLAs should be agreed by the industry, with any outstanding issues determined by the Director, by Decision Point 2 at the end of September 2000.

6 Costs and benefits of local loop unbundling

6.1 Enhancing competition

The rationale for local loop unbundling in Ireland is to facilitate further competition, thereby providing additional choice to consumers and the opportunity for new operators to innovate and develop new services. This section of the consultation paper discussed the possible benefits of LLU for competition through decreased costs of access to subscribers.

Views were requested on the potential of LLU to stimulate competition and the extent to which the competitive benefits of local loop unbundling could be achieved through the development of existing cable TV networks, the introduction of fixed wireless access services, and the continued development of mobile telephony. Views were also sought on other options that should be considered as part of the development of the telecommunications sector.

Views of Respondents

Those who support regulated LLU largely answered these questions with assertions. In general, there was little explanation or justification for the positions advanced:

- There is no competition - or even the early prospect of competition - in the provision of broadband access.
- LLU will allow entrants to offer services in more areas than would otherwise be the case.
- Providing new access infrastructure (e.g. by cable TV or fixed wireless access) has timing constraints that are unlikely to fit with the requirement of competition in Ireland.
- Consideration should be given to linking the availability to LLU to OLOs who have or are about to establish their own infrastructure.

A higher level of detail was provided by those respondents who took an alternative view. These respondents believed that while LLU may lower the barriers to entry, it will also lower the barriers to exit, thus encouraging opportunistic competition only so long as market distortions continue. It was further stated that LLU will not necessarily increase the number of players, as it may allow existing players to offer a more complete service proposition, and lead to some industry consolidation. Rather than enhancing competition, the mandatory provision of LLU has the potential to undermine competition from alternative access infrastructure. If the ODTR were to set uneconomically low prices for LLU, then competitive supply is warranted never to arise. This will mean a loss of innovation and market competitiveness across Ireland.

One respondent also considered that the question should not be whether LLU will enhance competition, but whether the lack of regulated LLU gives *eircom* market power in the end-user services market. The relevant question is whether, if *eircom* attempted to raise prices for end-user access while restricting its supply to OLOs of a loop, customers would find an alternative source of acceptable end-user service over the next two years. The respondent argued that this seems likely given the availability of alternatives such as cable telephony, wireless local loop and mobile services.

Position of the Director

The two most important questions are:

- First, will LLU enhance local services competition?
- And second, will it undermine future infrastructure-based competition in local access?

The Director is convinced that LLU has the potential to enhance local competition and it will complement other emerging access technologies (e.g. cable and fixed wireless access). LLU is likely to play an important role in increasing local services competition because the alternative technologies will only gradually become available, will probably not be available nationwide, and will be available only to a limited number of operators.

The Director also believes that there is little danger of LLU damaging the development of competition in access infrastructure. Appropriate LLU pricing will ensure that the availability of LLU will only restrict the development of alternative access infrastructure to the extent that is economically desirable (i.e. where it is in fact more efficient to use existing infrastructure than to build new facilities).

6.2 Impact of unbalanced retail pricing

In the consultation paper the ODTR discussed the possible impact of any unbalanced retail pricing. In particular:

- If line rentals need upward rebalancing (as claimed by *eircom*) then it is argued that this could limit the demand for LLU at least for narrowband telephony applications.
- Whilst geographically averaged retail prices are in operation the ODTR considers that LLU prices should also be geographically-averaged. However this means that LLU prices will be above cost in urban areas and below cost in rural areas. Such price distortions could discourage the development of new rural networks.

Respondents were asked for their views on this analysis and, on the basis of the existing price structure, the market segments that could be reached. The Director was also interested to ascertain how quickly and to what extent would the broadband access market develop.

Views of Respondents

Respondents are generally in favour of tariff rebalancing. Many would like the issue resolved before LLU is implemented, but others point out that LLU can go ahead without rebalancing even if demand is somewhat curtailed as a result.

With regard to geographically averaged prices there is less agreement. The following responses demonstrate the range of opinion:

- The areas where geographic averaging is acute enough to discourage local loop investment are the very areas in which no rational investment in alternative infrastructure would be made anyway.
- De-averaging is probably impractical and would prejudice rural areas.
- Averaged tariffs should be used for both retail prices and LLU rental.
- If social policy considerations drive the need for cross-subsidies then these should be addressed via transparent arrangements rather than through essential network inputs for competitors.

- De-averaging is the right basis to develop LLU prices, and should be accompanied by de-averaging of retail prices as well. There should be a small range of prices (e.g. urban and rural) being the average of the costs in these areas.
- The eventual cost of persisting with averaged prices will be that local access infrastructure will be confined to urban areas.

Position of the Director

In the Telecommunications Tariff Regulation (Modification) Order, 1999 the Director allowed for progressive rebalancing of line rental charges by up to CPI+2% per annum. This mechanism was intended to permit gradual rebalancing while safeguarding affordability in accordance with Regulation 8 of the European Communities (Voice Telephony and Universal Service) Regulations, 1999. Nevertheless, it is possible that a cost oriented LLU charge would exceed the PSTN line rental.

As discussed in Section 5.1, the main use of unbundling is likely to be in the provision of broadband access. Such services are qualitatively different from traditional PSTN, and the prices for broadband access and services should not be constrained to any significant degree by PSTN prices.

Moreover, it is not clear that PSTN line rental in itself forms a relevant retail market for the purposes of applying a margin squeeze test. Insofar as providing access to the customer confers an advantage in selling a range of telecommunications services to that customer, it would appear that the relevant retail market should include the full range of services that customers may purchase through that line. One argument made by OLOs for the importance of full physical unbundling is that without control of the customer they cannot compete on a level playing field. This suggests that there is considerable complementarity between provision of access and other services. If this is the case, it may be inappropriate to test for a margin squeeze by simply comparing PSTN rental and LLU charges. Instead, the relevant test may be to ensure that the access provider's retail business pays the same charge for the line as a LLU customer and is not unfairly cross-subsidised.

This matter will be addressed further in the context of work on the pricing of LLU offerings as described in section 9.

The problem of setting de-averaged LLU prices in the context of averaged retail tariffs is simply that substantial arbitrage opportunities may be created for entrants. Such opportunities might speed the development of competition in the access market, but in the longer term they would be inefficient. The Director is not persuaded at this time of need to move away from the current situation of averaged tariffs. Averaging of retail tariffs is an important mechanism for maintaining the affordability of services, particularly for users in rural and high cost areas and members of vulnerable groups. Thus it is important to retain averaged prices for LLU access.

Position 6.2

Prices of LLU services should be set on a geographically averaged basis.

6.3 Set-up costs and benefits

The consultation document referred to international estimates of LLU costs and sought views of respondents on the likely costs they would incur in respect of the setting-up of LLU. A question was raised as to whether there should be a limit on the forms of LLU that are required, in order to minimise system set-up costs.

Views of Respondents

There was disappointingly little detail in the responses to these questions. Only one respondent offered any cost figures, referring to a study by the consultants Ovum which estimated the total cost of unbundling in Ireland to be $44m for bitstream access and $92m for physical access.

Other relevant responses were as follows:

- There is no reason to suppose that set-up costs will be lower in Ireland than other countries because of its size. These costs are independent of volume.
- In order to manage system set-up costs only one form of LLU should be mandated.

Position of the Director

It is important to understand the system set-up costs of LLU as this provides an upper limit to the risk of implementing LLU - the maximum differential between the costs and benefits. Although further costs are encountered when unbundling specific loops these should always be accompanied by a greater economic benefit (provided LLU is economically priced), so that the total net cost of LLU declines as loops are unbundled.

The Director considers that there is still a degree of uncertainty about the size of setup costs and therefore believes that there is a need for caution in the development of a regulatory framework for LLU. On the one hand, given the relatively small number of operators in Ireland (e.g. compared with the UK), and the relatively minor systems modification required to support LLU (e.g. compared with number portability), the total costs involved may not be exceptionally high. On the other hand, if demand for LLU (and thus the competitive benefit) is not sufficiently large enough, it will not compensate for these set-up costs.

The mechanism proposed by the Director in section 9 to progress this issue was developed with regard to these uncertainties. The approach adopted provides opportunity for all parties to develop and have access to more information about costs and benefits before key investment decisions must be made.

7 Costs and pricing

7.1 Costs to be recovered

This section addressed the nature of the costs that could be borne by an access seeker. Possible cost items were listed:

- Use of the local loop
- Make ready of space in the exchange
- Rental of space in the exchange
- Staff training
- Security for own equipment
- Provision of power and cabling.

The Director considered that not all of these costs should be recovered in the form of unbundled local loop prices, in particular certain costs of training, and tasks undertaken by the access provider to ensure the security of its own equipment.

Views of Respondents

Again there was limited detail in the answer to this question, especially from those who favour regulated local loop unbundling. The general response of this group was that an access seeker should not be made to pay for services which it does not strictly require (such as co-location cages). One respondent also suggested that cost estimates should be derived using a bottom-up approach rather than allowing recovery of all actually incurred costs. Forfas believed that costs should include the capital cost of the line (including maintenance and fault repair), accommodation and related costs, provision of power etc, relevant training costs and what was termed a retail cost (i.e. the cost of providing LLU access to competitors).

Other respondents were more explicit and detailed in their views on which are relevant costs. They argued that:

- All costs incurred from the obligation to offer a specific form of unbundling are relevant.
- Under an economic definition, relevant costs should include a share of the firm's common and joint costs as well as opportunity costs, including the value of the option granted to access seekers through the offer of LLU. This option is created because access seekers are spared the need to make speculative investment, being able instead to rely on investment made by another party. Unless the risk of that investment is reflected in the price (i.e. opportunity costs are included) the access seeker is offered a "free option" which devalues the access provider's business whether or not the option is in fact exercised.
- Opportunity costs are necessarily a part of the economic cost of access to an unbundled facility (which is an economic input), in a way that they are not for interconnection services (an economic output). This is because offering the local loop as an unbundled element necessarily denies its use for another purpose. Thus with LLU at regulated prices, the access provider is denied the chance to receive a normal commercial return on its investment.

Position of the Director

The Director agrees that access seekers should have to pay only for facilities that they request and require. The Director considers it important that the access provider does not charge for excessive make-ready activities. On the other hand, all of the access provider's reasonable costs should be recovered through LLU prices, since these costs are caused by the access seekers' request for LLU and they bring no tangible benefit to the access provider itself.

The Director is not persuaded that a contribution towards opportunity cost should be incorporated in the pricing mechanism. Opportunity cost based approaches such as the efficient component pricing rule have received much attention in academic circles but are not widely used in practice. Similarly, while a theoretical case can be made for compensating the access provider for the "real option" granted to access seekers, methods for measuring the value of such an option are in their infancy and are not well established in regulatory practice.

Recovery of joint and common costs is discussed in Section 7.3 below.

7.2 Price structure

Two possible options were identified in the consultation document on the means available for recovery of the one-off costs of local loop unbundling: shared investment or a fixed price approach.

Views of Respondents

The answers to this question fall along predictable lines. To the access seeker a fixed price is preferable because it provides some certainty over costs. To the access provider the shared investment approach is better so that it does not have to bear all the investment risk. Indeed one respondent goes on to suggest that the shared cost approach is also the preferred approach from the perspective of economic welfare, because the fixed price approach not only increases the risk for the access provider but also commensurately increases the value of the free option granted to access seekers.

Another respondent suggests that the access seeker should make a binding commitment to purchase a certain volume of service. If subsequently leaving the market, the access seeker should return the once-only investment costs of the access provider.

Position of the Director

The Director considers that a fixed price approach is preferable, possessing considerable advantages in certainty and administrative practicality. Access seekers are best placed to assess the future demand for particular types of facilities, so their forecasts should be used in the calculation of the appropriate prices.

In addition, the Director believes that a balancing mechanism should be introduced to ensure that the access provider is compensated for the allowable costs and access seekers have an incentive to provide accurate forecasts. Binding pre-commitments would accomplish these purposes, but unless all the relevant costs are fixed and sunk such a requirement could lead to overcompensation of the incumbent for variations in demand from forecast levels. Further work will be required to develop an appropriate mechanism and this will be undertaken as part of the ODTR work on pricing set out in Section 9.4.

7.3 Pricing methodology

In the consultation paper the ODTR proposed that prices for unbundled local loops should be cost oriented, and that long run incremental costs (LRIC) is an appropriate base from which to start to consider pricing of unbundled local loops.

Views of Respondents:

The key responses of those who support regulated LLU were as follows:

- Tariffs should be based on the costs of an efficient telecommunications company operating in a competitive market.
- Pricing rules based upon forward-looking LRIC should be used in the longer term, but temporary use of historic cost accounting should be considered (as has been proposed in the Netherlands). This would encourage infrastructure investment and deal with unbalanced retail prices.
- The LRIC model provides a good framework but higher cost of capital may be required when considering high bandwidth services rather than the legacy network. This will help meet the primary pricing requirement to ensure that investment incentives continue for both network operators and service providers.

A number of respondents put forward alternative views as follows:

- The same cost standard should be used for access network pricing as for the core network. This means current cost accounting rather than historic cost accounting should be used for asset valuation.
- Consistent use of costing techniques is important to create regulatory certainty, and LRIC gives the right price signals to new entrants, but higher rates of return may be appropriate to reflect higher levels of risk. The weighted average cost of capital (WACC) only gives a lower limit for pricing.
- The cost-based rate must include contributions towards R&D and a reward for uncertainty if it is not to eliminate the incentives for investment.
- The use of best available technology is not the proper yardstick for pricing until that technology is no longer capacity constrained. In a competitive market prices change gradually and with a time lag after new technology is introduced. This should also happen for regulated prices.
- The LRIC model assumes that an incumbent has already recouped its sunk costs. With LLU access to xDSL over copper wires this will not be the case. There would be no historic opportunity to extract any profits and the potential future revenue stream would be undermined. LRIC is not appropriate in this case.
- If a LRIC cost formula were imposed it should be limited in time. The timescale should be that over which it is considered that the local loop constitutes an essential facility.

Position of the Director

The Director considers that the general theme of these comments is that LRIC should form the core of the pricing formula for LLU, in line with the ODTR's proposals. The Director agrees that in general the same cost standard should be applied to the access network as to the core network. This generally means the use of LRIC based on current cost accounting and using the best available technology and efficiency levels. However, the Director also considers that some deviation from this cost standard may be necessary and justified.

At this stage, there are three factors that seem to justify deviation from LRIC (although there may be other factors that come to light during the further work set out in section 9):

- In the case of bitstream access or physical access based on line sharing, the pricing exercise may be made more complicated by the sharing of a given loop between PSTN and broadband services. In this event the principle of non-discrimination may have more relevance to the setting of LLU prices than LRIC estimates. This principle implies that the access provider must not discriminate between its own retail arm and access seekers in setting the charge for LLU access. For example, if *eircom* were to offer a retail broadband service, the charge to OLOs for equivalent LLU access must not exceed the cost allocated to *eircom* retail and passed on in the retail price of the service.
- The application of LRIC is new to the Irish market and it will take time to apply LRIC to access network costs. As a temporary measure to facilitate the speedy rollout of LLU, the Director believes it may be necessary to set interim prices with regard to other relevant information such as appropriate historic costs, current costs, and international benchmarking.
- Strict application of LRIC would lead to under-recovery of joint and common costs. The Director considers that a reasonable allocation of forward looking joint and common costs of an efficient operator should be incorporated in the LRIC estimates.

There were a number of reasons put forward by respondents for deviating from the LRIC cost standard that the Director does not accept. These include:

- Efficient use of modern technology. It is true that supply capacity limitations need to be taken into account when considering the price of modern technology. This requirement can, however, be met whilst continuing to price on the basis of the efficient use of modern technology.
- Lack of balanced retail prices. The concern of some respondents is that they cannot profitably offer retail services if the line rental is below cost but the LLU price is cost-based. This issue is discussed in Section 6.2.

Position 7.3

The Director considers that LRIC forms an appropriate basis for calculation of prices for LLU. However, the Director also notes that there are circumstances that may justify a deviation from the LRIC standard initially and these will be taken into account in any final pricing arrangements.

8 General regulatory issues

8.1 The requirement for regulation

This section considered the need for regulatory involvement given the complexities involved in LLU and sought views on whether there should be a limit on the issues to be covered and the period of such intervention.

Views of Respondents:

A number of respondents expressed the belief that regulatory involvement is essential. One respondent argued that that it would be inconceivable to implement LLU without regulatory oversight because the incumbent has no commercial incentive to do so. Another was of the view that such involvement was essential as agreement between the access provider and the access seeker may otherwise be difficult to achieve.

However, some strong views were also expressed against regulatory involvement. One respondent considered that voice telephony services are already adequately facilitated by the favourable interconnection regime in place in Ireland which will be supplemented by the introduction of number portability and carrier pre-selection. Broadband services for high volume users are also catered for through leased lines and dedicated infrastructure installation. Developments in alternative infrastructure providers will shortly be in a position to service the small volume businesses and residential users.

Regulation, it was stated, is not required because the access provider has a strong incentive to sell unbundled local loops at market-determined prices. Increased usage and innovation of services by the access seeker represent a positive externality that will be enjoyed by the network provider.

To date regulation has focussed on outputs (i.e. services) of the incumbent; regulation of inputs (e.g. the local loop) represents a significant increase in regulatory control. Such regulatory intervention is only justified where there is market failure.

It was believed that the market failure cannot be demonstrated or quantified so as to justify the regulatory mandate of LLU. In broadband services *eircom* has no market position to defend. Consequently the danger of regulatory intervention leading to market distortion is high.

Respondents also addressed the issues that should be covered by any such regulatory involvement.

One respondent held that price regulation should be avoided because it has the potential to damage the development of alternative infrastructure competition by undermining investment decisions, adding costs and reducing network reliability. An access provider would have less incentive to invest in its own network and this could result in the market being locked into dependence on an access network that is not being modernised and upgraded.

Another respondent believed that the key commercial issues should be left to commercial negotiations between the parties and that regulatory involvement should primarily be limited to procedural matters. This respondent considered that regulatory involvement should be time limited to reflect the disruptive nature of LLU.

One respondent agreed with the issues being dealt with by working groups, but felt that ODTR will also have to take key decisions quickly. Another respondent believed that the scope of the issues would probably become clearer as progress is made in the industry working groups, but thought that pricing and quality issues would need to be addressed. This respondent expressed the view, but did not expand on it, that some ex-ante measures should be taken by the Regulator, but that the Regulator should also act quickly in response to genuine complaints from access seekers.

Position of the Director

In order to ensure effective competition in the market, the Director is convinced that some form of regulatory intervention is required if LLU is to be introduced in a satisfactory manner. This is strongly supported by the fact that since the original consultation in March 1999, no commercial negotiations have commenced between any operators on the introduction of LLU.

In line with her functions generally, the Director will ensure that intervention will be appropriate and proportionate and will support the overall achievement of her functions. The approach adopted in section 9 therefore balances the need for intervention with strong encouragement for the players in the market to progress towards the availability of LLU.

8.2 What services should be regulated?

In the consultation document the ODTR sought evidence as to which services regulated LLU should support (PSTN, ISDN, telemetry or xDSL). For xDSL services the ODTR asked for comments on four possible approaches to spectrum management:

1. Defer any decision for, say, two years until there is more knowledge and experience
2. Require access providers who offer higher rate services themselves, to offer physical access with the same or similar equipment, and/or bitstream access based on the same equipment, in a non-discriminatory manner.
3. Set reasonably stringent power spectrum and impedance limits and require physical access to be offered, but with a review of the whole approach after, say, four years.
4. Specify one or more bitstream services to be offered universally with operators free to choose how to implement them.

Views of Respondents

Most respondents believed that the whole range of services will be possible with both physical access and bitstream service. The market should decide on the service offerings and the only concern for regulators should be to ensure that all access methods are available for each possible service.

The controversial issue is the regulation of higher bandwidth access. One respondent argued that regulation of LLU for the provision of broadband services is not required because there are no insurmountable obstacles to another operator establishing its own infrastructure for this purpose. This position has recently been demonstrated in the European Court of Justice with relation to a newspaper distribution network in Austria (the Bronner case).

Others were divided in their preference of regulatory approach. Some respondents considered that the only appropriate restrictions on high-bandwidth services concern network harm. Restrictions should be addressed via power spectrum limits (Option 3), which should be agreed by industry working groups.

Others argued that practical solutions to the problems of integrating and ensuring compatibility of xDSL equipment may be found but will take considerable time and effort. This makes Option 3 difficult at least for the time being. Instead bitstream access trials could be used to provide guidance on choosing between Options 1, 2 and 4.

Position of the Director

The Director will take steps to ensure that any potential problems with radio interference are identified and dealt with appropriately. In the context of the development of physical unbundling in Ireland, whether on a line sharing basis or otherwise, further detailed work on technical compatibility, interference and related issues will be needed. Both of these issues are provided for in the approach adopted in section 9.

8.3 Limitations in existing capacity

A number of capacity-related issues may arise with LLU. The principal question is whether LLU is seen as an opportunity to use spare capacity in the access provider's network or whether it is seen as a central part of the access provider's obligations. In particular, should an access provider be required to allow access only to existing loops or to provide access to new loops. Where the access provider is required to make additional investment to build or replace local loops, how should the investment costs be recouped?

Views of Respondents

The responses on this topic generally contained little detail. One respondent stated that the main point is that the method of recouping investment should be non-discriminatory. Another was of the view that the access provider should be compensated for any additional investment required to accommodate the access seeker, with the caveat that where assets are only partially used for LLU, then the costs should be shared between both the access provider and the access seeker.

A further respondent stated that a local loop audit is necessary to assess the suitability of the existing loops for unbundling and for carrying higher rate service. It would also be necessary to assess the demand for unbundled local loops. Where the supply and demand sides are well matched then this becomes simply a pricing issue.

eircom felt that it should be allowed to recover its costs and make a return on its investment (including an adequate return for risk). In such circumstances the company would have no major objection to developing a workable system for service delivery that would allow for building or replacing of local loop infrastructure. If new investment is required, the access provider should be protected from incurring up-front costs and then obtaining little or no revenue. Additional investments should be recouped in full from the party seeking access.

Position of the Director

The Director considers that the access provider should recover the reasonably and efficiently incurred costs of LLU.

If additional investments are required they should be recovered from the access seekers on a fixed price basis consistent with the process discussed in Section 7.2. It should be noted that the same pricing approach should apply to the access provider if it uses the new facility to support its own downstream businesses.

Position 8.3

The access provider should recover the reasonably and efficiently incurred costs of LLU.

8.4 Which operators should be regulated?

With the development of alternative infrastructure over the coming years, some operators will have their own local loops in certain locations. At present, almost all local loops to residential and small business premises are owned by *eircom*. It is clear therefore that any requirement to unbundle the local loop will have to apply to *eircom*. The case for requiring other operators with local loops to offer LLU will increase over time according as these operators gain coverage and customers.

Views of Respondents

A number of respondents believed that the obligation to provide LLU should apply only to an operator designated as having significant market power (SMP) in the interconnection market. It was noted that applying a requirement on other infrastructure providers at this point in time would be inappropriate and indeed counterproductive to the development of the telecommunications market.

However, another respondent argued that it was not possible at this stage to determine a pattern of dominance in broadband services but that, over time, the competitiveness of various types of broadband transmission will emerge and could be judged on market share, penetration, geographical spread, and penetration in particular geographical areas. This respondent did not understand why the focus of LLU related to copper loops to the exclusion of TV cable network. Cable operators are in a good position to exploit opportunities in broadband services.

It was also held that as the local loop is not a natural monopoly, regulation can only be justified in terms of a bottleneck resource. As such, the same regulation should apply to all operators regardless of market share.

Position of the Director

eircom is obliged to provide SNA by virtue of its designation as an operator with Significant Market Power in the Fixed Telephone Network and Services market. The European Commission is presently reviewing the set of Directives covering regulation of telecommunications, and the conditions governing access to infrastructure may change in the future.

Position 8.4

***eircom*, as an organisation designated as having significant market power in the Fixed Public Telephone Network and Services market, is required to provide SNA in accordance with legislation. LLU as a form of SNA must be provided in accordance with the decisions set out in this Notice. The Director will periodically review this requirement.**

8.5 Provision of information

An essential requirement for any access seeker is the availability of adequate information to allow it to properly plan its use of the unbundled local loops. The consultation document outlined the type of information that may be made available, including the location of premises, local loop lengths per area, the extent of non-copper loops and connection arrangements. The Director considered that this information should be provided by an access provider in the form of a regularly updated standard offer. The consultation document sought views on the suggestion of a standard offer, the nature of the information to be included in such offer and any other initiatives that could be utilised.

Views of Respondents

There was general agreement that there should be a standard offer available to all qualifying operators. Information made available should include prices, technical interfaces, quality and timescales. It should be sufficient so that access seekers can react in a timely and appropriate fashion to customer requests, although not all this information may form part of the standard offer.

Position of the Director

In accordance with Regulation 12(b) of the European Communities (Voice Telephony and Universal Service) Regulations, 1999, *eircom* is obliged to provide SNA information to others under the same conditions and of the same quality as it provides for its own services or those of its subsidiaries or partners. The Director considers that it would be appropriate to meet this obligation by making available a standard non-discriminatory offer of LLU for all potential access seekers. In order that entrants can check the suitability of individual loops for high bit rate services, plan when and where to utilise LLU, and plan how to market this capability to customers, they need to be given detailed information on the availability of LLU in particular locations. There may be good reasons for this information not being included in the standard offer (e.g. it may be subject to frequent change) but it must be made available in a non-discriminatory and transparent manner.

Position 8.5

Access seekers should be provided, on a non-discriminatory basis, with information necessary for them to plan their service offerings. Specification of this information and the processes needed to collect and deliver it are included in the work plans set out in Section 9.

9 Next steps

The Director has considered the best means of advancing the implementation of LLU in Ireland and in particular the development of the standard offer. In general, the Director favours commercial negotiations between the parties as the most appropriate means of developing LLU in Ireland. However, she is fully aware of the lack of developments in this area over the past twelve months and, for whatever reason, this has clearly inhibited the development of LLU. Given the potential benefits to consumers as described earlier in this paper, the Director therefore intends to take a more active role in facilitating the development of LLU in the context of the framework described below.

9.1 ADSL trials

The Director welcomes *eircom's* invitation to OLOs to participate in its ADSL trials and requires that this be initiated without further delay. If the parties feel that ODTR involvement in these trials would be helpful she is prepared to discuss such involvement with them. In any event, the ODTR will work closely with *eircom* to ensure that the potential for radio interference from xDSL is properly assessed.

9.2 LLU Operations Group

The Director considers that a working group should be established to examine operational issues related to LLU. The main initial objective of this group will be to develop and agree the necessary arrangements for bitstream LLU in the first instance. The Director considers that this should be possible in less than 12 months. Insofar as the processes and documentation needed for bitstream unbundling are similar to those that would be required for other forms of unbundling, the group should take a sufficiently general approach to accommodate a variety of models. In addition, exploratory work should be conducted into the desirability and practicality of full physical LLU and line sharing LLU, insofar as access seekers believe there may be future demand for these forms.

At the start of the process, the access seekers should produce a specification of the services required from *eircom* (not necessarily a single solution but whatever menu of options is needed). It may be helpful to produce separate specifications for bitstream and physical LLU, along with an indication of where implementation requirements overlap. This, together with a response from *eircom*, will be used to focus subsequent discussions. To encourage efficient use of time, the ODTR will collect and circulate template documentation on standards, OSS, etc., based on those used in selected other countries or developed by groups such as ETP. The group will consider transposition of such documentation for use in Ireland.

A suggested work plan is shown in Annex 2. Decision points are included at which the Director may determine on outstanding issues. At the second Decision point, which the Director expects will occur in September 2000, the ODTR will review the progress of the forum and the revisit the desirability and practicality of full physical and line sharing LLU. If either of these forms is considered to require additional work, the work programme will be amended appropriately.

eircom will need to complete the service establishment process for its own services before launch and if successful will be able to launch to the public at the same time as the access seekers.

9.3 Methods of Access Group

Co-location, virtual co-location and direct connection have all been identified as potentially desirable methods of access for access seekers wishing to employ LLU. They can also be useful for the provision of other telecommunications services. However, there is a general recognition that implementation of co-location and virtual co-location will require a great deal of detailed work.

In order for all parties to develop a better understanding of scope for employing the various access methods, the implementation work involved and the likely costs, the Director considers that a separate forum should be established. Annex II sets out the suggested work programme for this group. The basic objective will be to develop the full range of options in parallel, with parties exchanging sufficient information for access seekers to understand what choices are available and for the access provider to get a better sense of likely demand. Decision points are built into the process for review of the desirability and practicality of the various options.

The forum will first consider the requirements of access seekers and data from *eircom* on its facilities. The ODTR will collect information from selected other jurisdictions and standards bodies (e.g. the EC Eutelis study) of relevance to the implementation of access methods. The parties will be encouraged to consider these for use in Ireland to ensure that no unnecessary development work is done.

In the later stages of the process, when detailed offerings are being developed and before substantial rollout costs are incurred, access seekers will be invited to provide firmer indications of preferred types and locations of access.

9.4 Development of pricing

In the first instance, proposing cost-oriented prices both for LLU and access methods is a matter for *eircom*. However, as with interconnect pricing the Director plans to take an active part in setting out the appropriate basis for calculation of these prices. Further consultation or discussion within the LLU Operations or Methods of Access groups may be needed. In addition the Director may call on the Industry Advisory Group which is currently working with the ODTR on a bottom up LRIC model.

The ODTR will develop a more detailed work stream on this, including modelling of access costs based on LRIC, the use of current and historic cost information, international benchmarking, and review of *eircom*'s pricing proposals which are required in the context of the work of the two fora already described.

This work stream will require information from the two working groups and in turn will feed back to the working groups at the relevant decision points where operators will require pricing information to enable them to make decisions about the form and extent of LLU and access methods required.

9.5 Conclusion

The Director believes that there is considerable potential benefit in the introduction of LLU in Ireland. She also appreciates that there is a significant amount of work required from all interested parties if progress is to be made and she is anxious to ensure that the costs of that work are outweighed by the benefits.

The three strand approach proposed by the Director is designed to allow a staged approach to the introduction of LLU based on exchange of information that will allow all parties to make considered commercial decisions about the form and extent of LLU they wish to request, and allow *eircom* as the access provider to respond to such reasonable requests. As such, parties will be able to weigh the costs of further work and involvement against the potential benefits at various stages throughout the process.

There are a number of key decision points throughout the process when the access provider and seekers will be required to agree on key issues, or refer these to the Director for determination. The successful completion of the work leading up to these decision points will be critical in that it is this work that will enable all parties to clearly state their requirements and provide the basis for agreement, or in the alternative provide the Director with sufficient information to make decisions. The work required is set out in the work programmes in the annexes to this paper.

Table 1: Summary of Decision Points

LLU Operations	*Date*	*Description*
Decision 1	8/00	Basic service description
Decision 2	9/00	Full service description of bitstream LLU, service establishment arrangement, ordering processes, order handling and SLAs. ODTR to review need for physical LLU.
Decision3	11/00	Prices, terms and conditions
Methods of Access	*Date*	*Description*
Decision1	7/00	Methods of access to be provided
Decision2	9/00	Service description
Decision3	12/00	Pricing, terms and conditions

The Director further considers that the operation of LLU in Ireland should be reviewed within five years after its first introduction, with particular regard to pricing and costing structures. She considers this is an appropriate period having regard to technological advances, the proposed introduction of new legislation at EU level and the general pace of development of the market. The Director reserves the right to review LLU or any aspect thereof before this date.

The Director encourages interested parties to become involved in the *eircom* trials for ADSL services as soon as possible. The Director also invites parties to nominate members to the two for a described in this paper by Friday 28th April 2000. Nominations should be sent to Aileen Canning, ODTR, Abbey Court, Irish Life Centre, Lower Abbey Street, Dublin 1, tel: 804 9600, email canninga@odtr.ie. The ODTR will e-mail terms of reference to all nominated members shortly after 28th April and will set the date for the first meeting of the relevant groups.

The Director looks forward to the active participation of the market players who are interested in availing of LLU. Their co-operation and participation is essential in order to progress the introduction of LLU in Ireland in a timely fashion.

/ENDS

ANNEX 1 -Unbundled local loops in EU Member States (access to 1 copper pair)

	Status of ULL (including monthly rental of unbundled copper pair where available, exclusive of VAT)	**Basis for price of ULL**
Austria	12.4 €/month	Price based on current valuation of assets
Belgium	Consultation	
Denmark	8.23 €/month	Price based on telephone line rental
Finland	5 – 25 €/month	Price based on current valuation of assets
France	Under consideration	
Germany	13 €/month	Price set by Reg TP based on FL LRAIC
Greece		
Ireland	Consultation	
Italy	Proposed by 2000	
Luxembourg		
Netherlands	Less than 15.4 €/month	Phased pricing set by OPTA, moving from historic costs to current costs in 5 years
Portugal		
Spain	Line sharing access can be negotiated	
Sweden	Proposed by 2000	Price proposed to be based on current costs
UK	From July 2001. Price likely to be about 13 €/month	OFTEL will set price based on FL LRAIC

ANNEX 2: LLU Operations Group work programme

Tasks	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01
Access seekers to produce Schedules of Requirements defining the services required. Separate schedules should be set out for bitstream and physical LLU, if both are desired.											
eircom to respond, either accepting the requirements in principle or with a counter proposal.											
eircom to provide all relevant detail regarding local network architecture, information concerning the locations of potential physical access sites and availability of copper pairs in specific parts of the access network.											
ODTR to provide template information to eircom and access seekers to form basis of processes (order handling, billing, service establishment, SLAs, maintenance, etc)											
eircom and access seekers accept or table actual amendments to template documentation											
ODTR to re-issue template documentation to be used by eircom as basis for development of processes below											
Decision Point 1: Access seekers and eircom to agree basic service definition for bitstream LLU or refer to ODTR for determination of disputed issues. Suggested items for inclusion in this document are included at Annex 6.											
eircom to produce order handling processes.											
eircom to develop billing processes.											
eircom to produce service establishment processes including all maintenance processes.											
eircom to produce draft SLAs for order handling and provisioning.											
Decision Point 2: Full service description of bitstream LLU, service establishment arrangement, ordering processes, order handling and SLAs to be agreed by all parties or referred to ODTR for determination of disputed issues. ODTR to review need for physical LLU.											
eircom to produce draft contract for the service											
Access seekers to provide indicative projections as to quantity and location of services they will require.											
eircom to produce draft prices for each service with pricing methodology and supporting information.											
Decision Point 3: Access seekers to either accept prices, terms and conditions or seek determination.											
Firm orders from access seekers for LLU.											
Service establishment testing including all processes.											
Contracts to be agreed.											

ANNEX 3: Methods of Access Group work programme

Tasks	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01
Access seekers to produce Schedule of Requirements defining the services required.											
eircom to provide information on potential co-location sites: in particular the precise locations of the notified operator's relevant sites; including switches, MDFs, concentrators, and remote distribution points such as street cabinets, pedestals and vaults.											
eircom to respond either accepting access seekers' requirements in principle or with a counter proposal.											
Decision Point 1: Access seekers and eircom to agree methods of access to be provided or refer to ODTR for determination of disputed issues.											
eircom to produce full service description for supplying the relevant modes of access, including all component services. Suggested items for inclusion in this document are included at Annex 5, although the exact content will depend upon the methods of access that are requested.											
ODTR to issue template documentation (dependent on form of access) to eircom and access provider to form basis of procedures development.											
eircom and access seekers accept or table actual amendments to template documentation											
ODTR to re-issue template documentation to be used by eircom as basis for development of processes below											
Decision point 2: Parties to agree service description or refer disputed issues to ODTR for determination.											
eircom to produce draft contract for the service.											
Access seekers provide indicative projections as to quantity and location of services they will require.											
eircom to produce draft prices, together with pricing methodology and supporting information.											
Decision point 3: Access seekers to either accept prices, terms and conditions or seek determination.											
Firm orders from access seekers.											
Service establishment testing including all processes.											
Contracts to be agreed.											

ANNEX 4: Service description - LLU

The Director considers that the service description should include, *inter alia*,

- *The options on form of access (full copper/ shared access / bitstream).*
- *Any restrictions on the circumstances under which unbundling will be provided (e.g. new premises or additional lines at existing premises).*
- *Prioritisation in the event that there is already a queue of orders for loops.*
- *Technical characteristics of copper pairs in the local loop; lengths, wire diameters, loading coils and bridged taps; line testing and conditioning procedures. Specifications for DSL equipment, splitters etc, with reference to relevant international standards or recommendations; spectrum limitations and electromagnetic compatibility requirements designed to prevent interference with other systems;*
- *The technical description of the signals to be presented under bitstream access.*
- *Testing to be carried out by the access provider as part of the ordering process or for assessment of new DSL technologies.*
- *Any issues relating to the replacement of the network terminating equipment on the customer's premises and also any rented terminals.*
- *Timescale for transferring a loop.*
- *Timescale for confirming that the order can be met and for specifying the capability of the loop.*
- *Expected service levels, measurement of performance, thresholds below which service is not being met adequately and penalties become payable.*
- *Extent of liability.*

Prices

The prices will be based on the service description. The price list could include the following elements (elements associated with the method of access are set out in Annex 2):

- *Establishment of ordering procedure for access seeker (single charge per network)*
- *Line rental*
- *Test of line prior to handover*
- *Maintenance and testing including fault investigations*
- *Penalties*

Operational and support systems

The Director considers that the ordering procedures would need to cover:

- *The flows of information, including confirmations, and the times allowed for each part of the procedure. We recommend that SDL be used to define these exchanges as this provides unambiguous procedure descriptions*
- *Arrangements for handling problems, i.e. who does what when an activity is missed, or an order cancelled*
- *Precise details of the information to be exchanged at each point. This means form layouts if fax is used and file/email formats if electronic means are used*

- *The procedures may need to cover both manual (e.g. fax based) and electronic processes. Wherever possible the exchanges between the operators should be in electronic form even if they are handled manually by each operator. This would allow the individual operators to integrate the exchanges into their own operational systems whenever it is most convenient to them.*
- *Conditions for access to the notified operator's operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing.*
- *In principle the OSS elements listed should cover access to all loop qualification information, including information on whether a particular loop is capable of supporting advanced services.*
- *Contact with the customer – division of responsibilities between the operators.*

Fault Handling Procedures

The fault handling procedures would need to cover:

- *Procedures if the lines become saturated and quality drops due to high levels of interference.*
- *Communications between fault report receiving centres.*
- *Responsibilities and arrangements for testing with timescales.*
- *Means for access seeker to request repairs and payment arrangements.*
- *Parameters for quality measurements.*

Procedures are also needed for information exchange and frequency of update (e.g. on lines and their lengths per concentrator site, fault statistics).

ANNEX 5: Service description - Co-location and other methods of access

- *The options on method of access (co-location / virtual co-location / in-span interconnection)*
- *Information on co-location sites: in particular the precise locations of the notified operator's relevant sites; including switches, MDFs, concentrators, and remote distribution points such as street cabinets, pedestals and vaults. Specification of the Web site(s) where the updated list of locations is published. Availability of alternatives when physical co-location. is not available.*
- *Co-location options at the sites listed: the types of co-location available (e.g., shared, caged/cageless, physical, or virtual); rules for subleasing of co-location space.*
- *Services to be provided under co-location (e.g. secure access to building, access to washrooms, power, lighting, heating, air-conditioning, cleaning).*
- *Services to be provided under virtual co-location (e.g. operation of equipment, testing, availability of staff for training).*
- *The options for connection at a distant location.*
- *Timescales for setting up unbundling at a switch/concentrator site.*
- *Equipment characteristics: restrictions, if any, on equipment that can be collocated. The interface types used for each method of connection.*
- *Security Issues: measures put in place by notified operators to ensure the security of their locations; conditions for access by the staff of competitive operators in order to identify and repair service problems.*
- *Safety Standards: (In principle safety standards used by the incumbent and its affiliates should be deemed adequate for competitive operators' equipment).*
- *Inspections: conditions for competitive operators and NRAs to inspect the locations at which physical co-location is available, or sites where co-location has been refused on grounds of lack of capacity.*

Prices

The prices will be based on the service description. The price list could include the following elements:

- *Establishment of ordering procedure for access seeker (single charge per network).*
- *Set-up charge per site for physical access with different charges for co-location and copper cable access. (charge should not include cost of bringing buildings up to normal current standard).*
- *Set-up charge per site for bitstream access.*
- *Set-up charge per interconnect point for bitstream access.*
- *Space rental for co-location (to include electricity etc).*
- *Maintenance and testing including fault investigations.*
- *Penalties.*