



Response to Consultation & Further Consultation & Draft Decision

**Response to Consultation Document No. 10/70
and a further consultation and draft decision on
the price control obligation in the market for
wholesale terminating segments of leased lines**

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All responses to the further consultation should be clearly marked:- “Reference: Submission re ComReg 11/32” as indicated above, and sent by post, facsimile, e-mail or on-line at www.comreg.ie (current consultations), to arrive on or before **3 June 2011**, to:

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Please note ComReg will publish all respondents submissions with the Response to this Consultation, subject to the provisions of ComReg’s guidelines on the treatment of confidential information set out in ComReg Document No. 05/24

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1 Executive Summary

- 1.1 The Commission for Communications Regulation (“ComReg”) is the regulator for the electronic communications sector in Ireland. One of ComReg’s statutory functions is the regulation of leased lines in the market for wholesale terminating segment of leased lines.
- 1.2 The term “leased lines” refers to fixed, permanent telecommunications connections providing symmetric¹ capacity between two points. A leased line is permanent, in that capacity is available between the two fixed points. A wholesale leased line may be used as an input to the provision of a retail leased line or may be used as an input to provide other retail services, such as fixed and mobile voice services, or Virtual Private Networks (“VPNs”). A retail leased line is typically used by business customers to connect office sites or to access the internet.
- 1.3 In ComReg Document No. 08/103 (Decision No. D06/08²) Eircom Limited (“Eircom”) was designated as having significant market power (“SMP”) in the market for wholesale terminating segments of leased lines. The market for wholesale terminating segments of leased lines consists of wholesale leased lines (“WLLs”), Private Partial Circuits (“PPCs”) and Ethernet technology. As a result of the designation of SMP on Eircom, a number of obligations were imposed on Eircom including access, non-discrimination, transparency, price control and cost accounting as well as the obligation of accounting separation.
- 1.4 On 10 September 2010 ComReg published Consultation Document No. 10/70³. The consultation included a further specification of the price control obligation on the appropriate costing methodology and pricing approach relating to the products and services in the market for wholesale terminating segment of leased lines.
- 1.5 The consultation also included amendments and a draft decision regarding the transparency obligation and the access obligation in the market for wholesale terminating segments of leased line. On 22 March 2011 ComReg published a separate decision on the amendments to the transparency and access obligations in ComReg Document No 11/22⁴ (ComReg Decision No D02/11).
- 1.6 This document now sets out a response to consultation and draft decision on the costing methodology, the cost modelling approach and the pricing approach in the market for wholesale terminating segments of leased lines. This document also includes a further consultation and draft decision on the draft charges for WLL, PPC and Ethernet products as well as the details of the pre-defined ex-ante “Margin Squeeze”⁵ test between certain regulated wholesale services to ensure that an

¹ ComReg is of the view that a leased line should be characterised by broad rather than absolute symmetry, in the sense that upstream and downstream capacities should not necessarily be equal, but should be broadly equivalent.

² ComReg Document No. 08/103 (Decision No. D06/08) Decision Notice and Decision Instrument: Market Analysis – Leased Line Market Review; 22 December 2008.

³ ComReg Document No. 10/70: Further specification of the price control obligation, the transparency obligation and the access obligation in relation to the market for wholesale terminating segments of leased lines; dated 10 September 2010.

⁴ Response to Consultation and Decision: Amendments to the transparency obligation and the access obligation in the market for wholesale terminating segments of leased lines; dated 22 March 2011.

⁵ “Margin Squeeze” in this context shall mean the setting of a price floor ensuring an appropriate economic space as between any wholesale products, current or future, in the market for terminating segments of wholesale leased lines.

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appropriate economic space is maintained and to facilitate efficient infrastructure investment from other operators.

1.7 While the price control obligation in the market for wholesale terminating segment of leased lines applies to both rental products and ancillary⁶ products/services this consultation addresses the costing and pricing approach for the rental products only. For the ancillary products/services, Eircom are still obliged to comply with the cost orientation obligation to ensure that the charges are cost oriented and recovers the efficiently incurred costs and a regulated rate of return, this continues to be the case and ComReg will keep this under review.

1.8 In summary, the main conclusions from ComReg Document No 10/70 are set out below under a number of headings.

- **Costing methodology approach:**

1.9 ComReg concludes that a bottom-up (“BU”) long-run average incremental costs (“LRAIC”) plus (referred to throughout this document as ‘BU-LRAIC plus’) model is the appropriate model to determine the costs relating to PPCs, NGN Ethernet and current generation Ethernet leased lines.

1.10 The costs relating to WLLs will be based on an appropriate economic space assessment between WLLs and PPCs on the basis of a similarly efficient operator (“SEO”) test. The current WLL charges in the market will be set as the maximum price ceiling charges while the economic space between WLLs and PPCs will be specified on the basis of the SEO test which will determine the appropriate minimum price floors under which the incumbent cannot sell services without the risk of imposing a Margin Squeeze. This is further addressed below. In essence, Eircom shall not charge above the maximum price ceiling levels or below the minimum price floors.

- **Pricing methodology:**

1.11 ComReg concludes that the charges for the legacy leased line products i.e. WLLs and PPCs will continue to be based on a national average pricing approach.

1.12 The charges for wholesale NGN Ethernet leased line products will be based on geographic de-averaging, whereby the prices reflect the costs of the geographic regions i.e. high density regions and medium density regions for core network charges and urban, provincial and rural for access network charges. In order to prevent foreclosing future investment in the medium density areas of Ireland, a high density pricing approach will be adopted, on a case by case basis, in some medium density regions where there is sufficient demand. This approach should ensure that any significant existing or future direct investment which requires significant bandwidth is not materially disadvantaged through a de-averaged pricing approach to the detriment of end users. Eircom launched this pricing approach in 2010 and to date no issues have arisen.

- **Ex-ante Margin Squeeze test:**

1.13 Eircom shall also ensure that there is an appropriate economic space between the relative pricing of regulated wholesale products. The Margin Squeeze test will be

⁶ Ancillary charges include connection charges, disconnection charges, fault charges, etc.

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technologically neutral in that it will apply between the current wholesale products in the market for wholesale terminating segments of leased lines and also to any future variants of these products or services in the relevant market. Similar to the assessment of the appropriate economic space based on the Margin Squeeze test between WLL's and PPC's, the Margin Squeeze between other related wholesale products, for example Ethernet, will be based on a SEO approach. ComReg has concluded that a 'LRAIC plus' approach is the appropriate costing standard to apply.

- **Ex-post margin squeeze principles:**

1.14 In ComReg Document No 10/70 ComReg set out a number of principles, which would allow Eircom to assess any likely margin (price) squeeze between the prices for the wholesale legacy leased lines products against the prices for the corresponding legacy services at a retail level. ComReg also clarified that the margin squeeze test between wholesale and retail products would only be assessed by ComReg in the event of a competition case, on an ex-post basis. ComReg concludes that the margin (price) squeeze test between the market for wholesale terminating segments of leased lines and the associated retail market will be based on an Equally Efficient Operator ("EEO") cost base with a LRAIC plus cost standard. This has been discussed in Section 8 of this document.

1.15 On the basis of the principles consulted on in ComReg Document No 10/70, the submissions received from respondents and ComReg's conclusions on the main principles, this document now includes a consultation on the maximum draft charges for WLLs, PPCs and NGN Ethernet. ComReg is also consulting on a further specification of the Margin Squeeze test to assess the appropriate economic space between wholesale products in the market for wholesale terminating segments of leased lines. A summary of the main points now being consulted on in this document are set out below.

- **Consultation on draft maximum charges:**

1.16 During the past number of months an extensive cost modelling exercise was undertaken by ComReg with the assistance of its consultants, TERA. Given the conclusions set out above regarding the costing methodology and the pricing approach for the products and services in the market for wholesale terminating segments of leased lines, ComReg has now determined the draft maximum prices for WLLs, PPCs and Ethernet products and services which ensure that Eircom are in compliance with its obligations. The draft maximum prices are discussed in Section 6 and these are referred to in Appendix A. ComReg is not proposing any material changes to the prices in the existing network price list as published by Eircom, given that there have been recent reductions to PPC core conveyance prices of approximately 16% over the past eighteen months and PPC fibre access price reductions⁷ which has brought these prices in line with the price control obligations. In addition, NGN Ethernet prices were launched in 2010 on foot of a cost modelling exercise carried out by ComReg at that time. ComReg now believes that the current maximum prices in the market are in line with the principles set out

⁷ PPC fibre access price reductions, effective 1 July 2011
http://www.comreg.ie/_fileupload/publications/ComReg1126.pdf

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in this document. The proposed price floors for WLLs will not be published but will be monitored separately by ComReg for potential or actual Margin Squeeze.

- **Consultation on a further specification of ex-ante Margin Squeeze test:**

1.17 Given the conclusions on the principles of the Margin Squeeze test to assess the appropriate economic space between related wholesale products, as set out in Section 3 of this document, ComReg is now further specifying the Margin Squeeze test between the wholesale regulated products in the market for wholesale terminating segments of leased lines. The consultation is contained in Section 7 of this document.

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2 Introduction

Overview

- 2.1 In ComReg Document No 10/70 ComReg published a consultation on a further specification of the price control obligation in the market for wholesale terminating segments of leased lines. The consultation included an assessment of the appropriate costing methodology and pricing approach for products and services in the market for wholesale terminating segments of leased lines.
- 2.2 The consultation also included proposed amendments and a draft decision on the transparency obligation and the access obligation in the market for wholesale terminating segments of leased lines. On 22 March 2011 ComReg published a final decision on the transparency and access obligation in ComReg Document No 11/22 (ComReg Decision No D02/11).
- 2.3 This document now sets out the following:
 - A response to consultation and draft decision on the appropriate principles regarding the costing methodology, the cost modelling approach and the pricing approach in relation to the price control obligation in the market for wholesale terminating segments of leased lines. ComReg has set out the conclusions on these principles in Sections 3, 4 and 5 of this document.
 - A consultation and draft decision on the draft maximum prices for WLLs, PPCs and NGN Ethernet leased line products. The costing and pricing principles determined in Sections 3, 4 and 5 are used as the basis for determining these draft charges. The consultation on the draft maximum charges is set out in Section 6 of this document.
 - A consultation and draft decision further specifying the Margin Squeeze test between the wholesale products in the market for wholesale terminating segments of leased lines, including WLLs and PPCs. The principles determined in Section 3 are used as the basis for determining the appropriate ex-ante Margin Squeeze test. The consultation further specifying the Margin Squeeze test between the wholesale products in the relevant market is set out in Section 7.
 - A response to consultation and ComReg's conclusions on the principles for any potential or future margin (price) squeeze between the prices of wholesale products in the market for wholesale terminating segments of leased lines and its associated retail price. ComReg will only intervene in this regard on an ex-post basis. Please refer to Section 8 of this document for further details.

Regulatory Background

- 2.4 On 22 December 2008, ComReg issued ComReg Document No. 08/103 (Decision No D06/08) on the leased lines market analysis. ComReg Decision No D06/08 concluded that the market for wholesale terminating segments of leased lines was not tending towards competition in the near future and that Eircom was designated as having SMP in this market and as such susceptible to *ex-ante* regulation.
- 2.5 As a result of ComReg's market analysis and its finding of SMP on Eircom in the

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market for wholesale terminating segment of leased lines, a number of obligations were imposed on Eircom including access, non-discrimination, transparency, price control and cost accounting and the obligation of accounting separation.

- 2.6 In ComReg Decision No D06/08, ComReg also set out that the market for the minimum set of retail leased lines (bandwidths up to and including 2 Mb/s) and the market for wholesale trunk segments of leased lines were sufficiently competitive and therefore not subject to regulation. ComReg also determined that certain routes between defined urban centres of 155 Mb/s (also referred to as STM 1) and above were also competitive. ComReg specified that everything outside of the trunk market is considered to be part of the market for wholesale terminating segments of leased lines, including the main points of handover. Those circuits which facilitate routes which run between urban centres and which are of a capacity less than 155 Mb/s also fall into this market.
- 2.7 The market for wholesale terminating segment of leased lines consists of legacy WLLs, PPCs and Ethernet technology. WLLs involve purchasing a full end-to-end leased line from Eircom, while the use of PPCs allows an OAO to combine elements of their own network infrastructure with parts of Eircom's network. Ethernet technology facilitates the delivery of larger leased line circuits i.e. above 10 Mb/s and up to 1,000 Mb/s at lower costs than legacy technologies.
- 2.8 The price control obligation explicitly set out that PPC products should be cost oriented and that such costs should be calculated using a forward looking long run incremental costs ("FL-LRIC") or an alternative pricing model, if ComReg decided, following a further consultation. ComReg Decision No D06/08 also set out that Eircom had an obligation not to cause a margin squeeze.
- 2.9 While the price control obligation and the cost orientation obligation applies to both rental products and ancillary products/services in the market for wholesale terminating segment of leased lines, this consultation relates solely to the costing methodology, cost modelling approach and pricing approach for the rental products only. However, Eircom continue to be obliged to ensure compliance with its cost orientation obligation regarding the charges for ancillary products and services.
- 2.10 In ComReg Document No 10/70 ComReg considered whether WLLs above 10Mb/s generally should be subject to a differentiated price control. ComReg now concludes that the costing methodology and pricing approach for WLLs relates to all WLLs generally within the market for wholesale terminating segments of leased lines. Those WLLs between the urban centres and less than STM1 generally are also part of the market for the wholesale terminating segments of leased lines and therefore the costing methodology and the pricing approach determined for WLLs as part of this consultation process also relates to these.

Regulatory Objectives of the Price Control obligation

- 2.11 The regulatory objectives in relation to the price control obligation were set out in ComReg Document No. 08/63 and in ComReg Decision No D06/08 in relation to the market for the wholesale terminating segment of leased lines.
- 2.12 In summary, the objectives of a price control obligation are to promote competition by ensuring that the SMP designated operator does not charge excessive prices for

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wholesale inputs. In addition, it is necessary to promote efficient infrastructure investment and encourage operators on the ladder of investment.

2.13 With regard to the Margin Squeeze test, ComReg has ensured consistency in its approach with respect to the non-eviction principle and the application of an appropriate economic space, in line with the approach applied in some other EU countries, albeit in a somewhat different context. In 2007⁸ and 2009⁹, ERG, in its Common Position papers, supports the concept of an appropriate economic space between wholesale products. ARCEP, in its leased lines market analysis of 2006¹⁰ and 2010¹¹, set out its approach regarding the application of the non-eviction principle, which ensures that wholesale tariffs set by France Telecom do not evict operators that have deployed their own infrastructure. Likewise IBPT, in Belgium, endorsed the non-eviction principle, in its Decision¹² on margin squeeze tests for Ethernet products, to ensure that the proposed prices set by Belgacom do not evict alternative operators. Please refer to Sections 3 and 7 for further details of ComReg's approach.

Purpose of this Response to Consultation and Further Consultation and Draft Decision

2.14 The purpose of this response to consultation and further consultation and draft decision are as follows:

- To conclude on the appropriate costing methodology, cost modelling approach and pricing approach for products and services in the market for wholesale terminating segment of leased lines;
- To conclude on the appropriate principles for the Margin Squeeze test to assess the economic space between the relevant wholesale products in the market for wholesale terminating segment of leased lines;
- To conclude on a set of guidelines for any future potential (or actual) margin squeeze test between the market for wholesale terminating segments of leased lines and the retail leased lines market where ComReg will only intervene on an ex-post basis;
- To consult with industry on the draft rental maximum charges in relation to the products/services in the market for wholesale terminating segments of leased lines;

⁸ European Regulator's Group ("ERG") in Common Position 07 (53), Report on BEST PRACTICES ON REGULATORY REGIMES IN WHOLESALE UNBUNDLED ACCESS AND BITSTREAM ACCESS. Sections 3.1 and 3.2.

⁹ European Regulator's Group ("ERG") in Common Position 09 (21), Report on price consistency in upstream broadband markets supporting the concept of an appropriate economic space between two wholesale products, namely LLU and Bitstream.

¹⁰ ARCEP Decision 06-0592 of 26 September 2006, page 117, IV.2.6.1.
http://www.arcep.fr/fileadmin/uploads/tx_gsavis/06-0592.pdf

¹¹ ARCEP Decision 10-0402 of 8 April 2010, page 117, IV.2.6.1 http://www.arcep.fr/uploads/tx_gsavis/10-0402.pdf

¹² IBPT: Décision du 8 avril 2009 concernant le test de ciseaux tarifaires des lignes louées Ethernet
<http://www.ibpt.be/ShowDoc.aspx?objectID=3057&lang=fr>

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- To consult on a further specification of the Margin Squeeze test to assess the appropriate economic space between the relevant wholesale products in the market for wholesale terminating segments of leased lines, including WLLs and PPCs.

2.15 ComReg received six responses to Consultation Document No. 10/70. These are set out below.

	<u>Response to ComReg Document No. 10/70</u>
1.	Eircom
2.	BT Communications Ireland Limited (“BT”)
3.	Magnet Networks Limited (“Magnet”)
4.	E-net
5.	ALTO (Alternative Operators in the Communications Market)
6.	Industrial Development Authority (“IDA”) Ireland

2.16 **Structure of this document**

2.17 **Section 3** of this document contains ComReg’s conclusions regarding the most appropriate costing methodology to adopt in the market for wholesale terminating segment of leased lines.

2.18 **Section 4** of this document sets out ComReg’s conclusions regarding the cost modelling approach. This includes the model inputs, engineering rules and model assumptions for the capital costs, the operating costs and the demand requirements.

2.19 **Section 5** of this document sets out ComReg’s conclusions on the most appropriate pricing approach to adopt in terms of setting charges for products and services in the market for wholesale terminating segments of leased lines.

2.20 **Section 6** of this document contains a consultation on the draft maximum charges for WLLs, PPCs and NGN Ethernet leased lines products and services in the market for wholesale terminating segments of leased lines. The draft charges are referred to in Appendix A.

2.21 **Section 7** of this document contains a consultation further specifying the ex-ante Margin Squeeze test between regulated wholesale products in the market for wholesale terminating segments of leased lines.

2.22 **Section 8** of this document concludes on the principles (or guidelines) for a margin (price) squeeze test between the wholesale products in the relevant leased lines market and the associated retail products, which will be assessed by ComReg on an ex-post basis, in the event of an investigation/case under competition law.

2.23 **Section 9** of this document contains the draft Decision Instrument regarding the proposed changes and/or further specification of the price control obligation in the market for wholesale terminating segments of leased lines.

2.24 **Section 10** of this document contains the regulatory impact assessment (“RIA”) which sets out the main options considered by ComReg and the likely impact on the various stakeholders of the proposals made.

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3 Leased Lines Costing Methodology

Overview

- 3.1 The aim of this section is to set out the most appropriate costing methodology to use to ensure compliance with the price control obligation for products, services and associated facilities in the market for wholesale terminating segment of leased lines.
- 3.2 In ComReg Document No 10/70 ComReg consulted on the various costing methodologies available to it in order to determine the costs and charges for leased line products and services in the market for wholesale terminating segments of leased lines. While the price control obligation in the market for wholesale terminating segment of leased lines applies to both rental products and ancillary products/services this consultation process addresses the costing and pricing approach for the rental products only. For the ancillary products/services, Eircom are obliged to comply with the cost orientation obligation to ensure that the charges are cost oriented and that it recovers the efficiently incurred costs and a regulated rate of return.
- 3.3 The price control obligations imposed on Eircom should ensure that the SMP operator, Eircom, does not charge excessive prices. The Margin Squeeze test should mitigate against a margin or a price squeeze between the prices of wholesale products in the market for wholesale terminating segment of leased lines. This ensures the promotion of efficient infrastructure investment and encourages operators on the ladder of investment.
- 3.4 The relevant objectives which must be considered when applying remedies are set out in Section 12 of the Act and are as follows:
 - To promote competition;
 - To contribute to the development of the internal market; and
 - To promote the interests of users within the Community.
- 3.5 ComReg is of the view that competition would be best served by encouraging OAOs to use PPCs rather than traditional WLLs where possible, as this involves a greater efficient investment in infrastructure by operators, and a lesser reliance on reselling Eircom's product. The conclusions set out by ComReg below in terms of the price control measures are largely based on this objective.
- 3.6 As part of this review ComReg considered whether WLLs above 10Mb/s generally should be subject to a differentiated price control. ComReg is of the view that the costing methodology and pricing approach for WLLs relates to all WLLs generally within the market for wholesale terminating segments of leased lines. It should also be clear that WLLs between the urban centres and less than STM1 generally are part of the market for the wholesale terminating segments of leased lines and therefore the costing methodology and the pricing approach set out below for WLLs also relates to these.
- 3.7 The sub sections below summarises ComReg's proposals in Consultation Document No 10/70, the main issues raised by respondents and ComReg's

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conclusions regarding the most appropriate costing methodology for determining the rental costs and charges for products and services in the market for wholesale terminating segments of leased lines.

3.8 The main points are discussed below under the following headings:

1. Costing methodology principles
2. Costing methodology approach for products and services in market for wholesale terminating segments of leased lines
3. Margin Squeeze principles for an assessment of the appropriate economic space between wholesale products and services.

1. Costing methodology principles:

Consultation proposal

3.9 In ComReg Document No 10/70, ComReg set out a number of relevant options available to it in order to determine an appropriate costing methodology for determining the costs and charges for products and services in the market for wholesale terminating segments of leased lines. While the full details of each option is set out in ComReg Document No 10/70, these methodologies can be summarised as follows:

- Historic costs or current costs
- LRAIC or fully distributed costs (“FDC”)
- Top down (“TD”) model, bottom-up (“BU”) model or hybrid model.

- **Historic costs or current costs:**

3.10 As set out in ComReg Document No 10/70, a key regulatory decision to consider in determining wholesale regulated charges is the cost base to adopt, i.e. historic costs or their current cost equivalents. In deciding the relevant cost base, ComReg stated that the promotion of competition and the interests of end-users were paramount while also ensuring the incumbent recovers efficiently incurred costs plus the appropriate rate of return.

3.11 In considering the most appropriate cost base to adopt in this context, ComReg believed that it was important to take account of the need to incentivise investment while at the same time accounting for the cost of modern equivalent assets (“MEA”). ComReg was of the preliminary view that given the objective of promotion of wholesale competition, the current cost approach is the most relevant cost base to determine the WLL charges at hand. Given that the telecommunications industry is driven by technological improvements and change, there are many types of technologically driven equipment where costs are considerably lower under current costs than under the historic cost basis. ComReg was of the preliminary view that unlike the historic cost approach, the current cost approach sends the correct “build/buy signal” to industry and encourages infrastructure investment, while allowing operators to compare their possible investment decisions.

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3.12 In addition, ComReg was of the preliminary view that a wholesale charge calculated solely on the basis of historical costs would not give the appropriate signals for operators to reduce costs and would not give alternative operators a relevant reference point against which they can compare their possible investment decisions. In addition, one of the main issues with the historical cost accounts (“HCAs”) is the lack of granularity of the data contained within them. Hence, ComReg was of the preliminary view that the current cost approach was the most relevant cost base to determine the wholesale leased line charges.

- **LRAIC or fully distributed costs (“FDC”):**

3.13 Another key regulatory decision to consider in determining wholesale regulated charges is the cost accounting approach to adopt. In ComReg Document No 10/70 ComReg considered that the ‘LRAIC’ methodology, the ‘LRAIC plus’ cost accounting methodology and the fully distributed cost (“FDC”) methodology (also known as fully allocated costs) were relevant in this regard. ComReg was of the preliminary view that a ‘LRAIC plus’ was the preferred cost accounting methodology for the setting of wholesale leased line prices in Ireland combined with a BU cost model.

3.14 This cost accounting methodology includes all of the average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned, plus an apportionment of joint and common costs. ‘LRAIC plus’ includes appropriate amounts of variable, fixed and common costs, which is the calculus faced by any operator when deciding to enter or expand. ‘LRAIC plus’, compared to ‘LRAIC’ includes a mark up to allow recovery of fixed and common costs typically using an equi-proportionate mark up (“EPMU”). ComReg proposed that this approach should be used as the basis for setting charges in the market for wholesale terminating segment of leased lines as it mirrors the price that would prevail in a competitive market.

3.15 ComReg also believed that consideration should be given to the question of whether top down FDC historical cost data is more relevant for those parts of the access network where densities and demand are lower. ComReg’s main regulatory objective should be to incentivise infrastructure investment on the basis of BU-LRAIC plus costs.

- **Top down (“TD”) model, bottom-up (“BU”) model or hybrid model:**

3.16 ComReg was also of the preliminary view that a BU model was likely to be more compatible with the use of current costs as the relevant cost base. Given that BU models do not depend as heavily as TD models on complex accounting data, BU models better reflect the choices of a hypothetical, forward-looking efficient operator from both a technical and an operational point of view, as network legacy cost issues are less of a problem than in a TD context. For the same reasons, they are easier to develop and maintain. ComReg also believed that the implementation of a BU model was very much synonymous to the theoretical concept of developing a network for an efficient new entrant operator and this modelling approach provided the appropriate “Build/Buy” signal to the market. This option was therefore more consistent with the regulatory objectives of encouraging infrastructure investment than the TD option was.

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3.17 ComReg also proposed that the results of the BU model should be compared with Eircom's TD cost accounting information and engineering rules where material and where available.

Main issues raised by respondents:

- 3.18 Generally, all of the respondents agreed that a 'LRAIC plus' approach on the basis of a BU model, was the most appropriate costing methodology to use for determining the cost oriented wholesale charges for the products, service and associated facilities in the market for wholesale terminating segments of leased lines.
- 3.19 BT and ALTO raised the point regarding the treatment of common costs, and submitted that ComReg should verify in detail the systems, allocations and valuations that Eircom apply. To clarify this point, ComReg, with the assistance of its consultants, have considered the appropriate level of common costs for the purposes of determining the relevant costs to be included as part of the cost modelling exercise. These common costs are derived directly from Eircom's regulatory accounting system and follow the audited allocation and valuation rules of this system. Given the confidential and sensitive nature of the costing data used in this context the details of these costs cannot be made publicly available, however analysis was carried out before including costs in the relevant cost model.
- 3.20 In response to ALTO's point that a LRIC approach is the best approach to model long run costs with specific reference to the European Commission endorsement of the LRIC approach, ComReg would like to highlight that the European Commission recommendation is on the regulatory treatment of fixed and mobile termination rates in the EU. The European Commission recommendation is endorsing a pure LRIC approach based on the relevant incremental costs (i.e. avoidable costs) of the wholesale call termination service. However, ComReg is of the view that this pure LRIC approach is not relevant in the context of determining the appropriate costing methodology for the products, service and associated facilities in the market for wholesale terminating segment of leased lines as Eircom provides end to end services, in the context of mobile termination this relates to the provision of one element of the end to end interconnect. ComReg believes that if the "pure" LRIC approach was used for the wholesale set of leased lines then this would make the recovery of costs that are excluded in this methodology (such as trenches) very difficult to achieve.
- 3.21 Eircom generally agreed with the proposed costing methodology. However, Eircom stated that very significant difficulties will arise in establishing the cost increments of the terminating segments of leased lines in a context where the definition of trunk and terminating segments is not, in fact, based on a boundary established by reference to the topology of Eircom's (or even OAOs) network but by reference to services provided within given bandwidth ranges and on specific defined network routes. Eircom believed this could be a problem as there are no clear logical rules that can be followed for the purposes of allocating common costs between regulated and unregulated services.
- 3.22 ComReg is of the view that this does not have any impact in the cost modelling exercise for wholesale terminating segments of leased lines but may have an impact on the pricing of trunk elements. The following points are relevant in this context:

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- Both trunk and terminating segments are supported by the core network;
- The core network modelled costs must reflect the economies of scale of provision of both trunk and terminating segments;
- Allocations are mainly based on the capacity used by all services (regulated and unregulated); and
- The cost model is used solely for the purposes of setting the charges for products and services in the wholesale terminating segment of leased lines and not for the trunk segment.

3.23 Eircom also stated that it would be disproportionate to model wholesale Ethernet access ("WEA") products. ComReg has given further consideration to the consultation responses and the fact that there is currently no take-up of this service. While ComReg believes that in principle a BU-LRAIC plus model is appropriate for determining the relevant costs and charges for a WEA service, it also considers that it may be disproportionate to further consider the WEA product in the context of the cost modelling exercise as the product is unlikely to be taken up or required by OAOs going forward. However, this will be kept under review and if demand changes ComReg will ensure the relevant obligations are adhered to. This is further discussed in Section 4 and in Section 6 of this document.

ComReg's Conclusion:

- 3.24 Following analysis of all responses ComReg has concluded that 'LRAIC plus', combined with a BU cost model, is the preferred general approach for the costing methodology for determining the costs and charges for the products and services in the market for wholesale terminating segments of leased lines.
- 3.25 ComReg concludes that the BU- LRAIC plus approach will be used as the general basis for determining charges in the market for wholesale terminating segment of leased lines. This approach should be reflective of the prices that would prevail in a competitive market and it should send the right "build/buy" signals to new entrants. This costing methodology includes all of the average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned, plus an appropriate apportionment of joint and common costs.

2. Costing methodology approach for products and services in the market for wholesale terminating segments of leased lines:

Consultation Proposal:

- 3.26 In ComReg Document No 10/70, ComReg discussed the proposed costing methodology for each of the main products and services in the market for wholesale terminating segments of leased lines. While the full details are set out in ComReg Document No 10/70, a summary of the proposals are set out below.
- 3.27 These are discussed under the following sub-headings:
- PPCs;
 - Wholesale NGN Ethernet leased lines;

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- Wholesale Ethernet Access (“WEA”) leased lines; and
- WLLs.
- **PPCs:**

3.28 In ComReg Document No 10/70, ComReg was of the preliminary view that the remedy of cost orientation should continue to apply to PPCs on the basis of a ‘LRAIC plus’ cost approach through the development of a BU model.

- **Wholesale NGN Ethernet leased lines:**

3.29 In ComReg Document No 10/70 ComReg was of the preliminary view that the cost oriented charges for wholesale NGN Ethernet leased lines should be based on a ‘LRAIC plus’ approach on the basis of a BU model. ComReg also proposed that the approach would be based on a national network build with roll-out to the main aggregation nodes in the main towns/cities throughout the country. In addition, ComReg suggested that the model inputs and assumptions in relation to wholesale NGN Ethernet leased line products and services should be based largely on Eircom’s costing information and engineering rules.

- **Wholesale Ethernet Access (“WEA”) leased lines:**

3.30 As set out in ComReg Document No 10/70, WEA leased lines are similar to PPCs, but are partially delivered using Ethernet technology over Eircom’s legacy core transmission network. Similar to the modelling approach for PPCs and wholesale NGN Ethernet leased lines, it is proposed to use a ‘LRAIC plus’ approach on the basis of a BU model.

- **WLLs:**

3.31 In ComReg Document No 10/70 ComReg outlined that the current WLL charges were previously set on the basis of retail minus price control.

3.32 The price control in the market for wholesale terminating segments of leased lines is currently designed to allow development of a framework that promotes efficient infrastructure investment and encourages OAOs to climb the ladder of investment, for example through the mandated PPC product. This should therefore facilitate effective and sustainable competition.

3.33 ComReg was of the preliminary view that the costing methodology for WLLs should ensure the recovery of a reasonable level of costs while consideration is given to the appropriate economic space between PPCs and WLLs. The purpose of an appropriate economic space between the respective pricing of wholesale products is to promote efficient infrastructure competition and sustainable competition and thus to ensure that there is consistent pricing between wholesale products and that there is no price squeeze to the detriment of end-users.

3.34 ComReg also believed that the costs of WLLs should be estimated using the PPCs costs as their starting point while taking into account the cost elements specific to WLLs, which a typical OAO would incur to be in a position to compete. These were:

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- WLL wholesale network costs; and
- WLL wholesale specific costs.

3.35 In ComReg Document No 10/70 ComReg also considered whether WLLs above 10Mb/s generally should be subject to a differentiated price control. ComReg was of the preliminary view that the approach set out in terms of the costing methodology and pricing approach for WLLs should relate to all WLLs generally in the market for wholesale terminating segments of leased lines. It was also noted that WLLs between the urban centres and less than STM1, generally are part of the market for the wholesale terminating segments of leased lines and therefore the proposals set out in terms of the costing methodology and the pricing approach for WLLs would also relate to these.

Main issues raised by respondents:

3.36 All of the respondents broadly agreed with ComReg, except for Eircom.

3.37 BT and ALTO raised the point that in areas where OAOs are not interconnected with Eircom and are unlikely to do so in the future, the only viable alternative to purchasing PPCs is purchasing WLLs. ComReg is of the view that given that WLLs and PPCs are both based on a nationally averaged pricing approach where both products have the same pricing structure (with a price per km component), the calculation of the economic space will necessarily be the same across the country. ComReg also believes that an OAO with reasonable scale could avail of PPCs in the majority of areas across Ireland, especially because there is no distance limit (i.e. between the OAO point of presence and the end-user) associated with the PPC product. In the assessment of the appropriate economic space, ComReg does not consider that the OAO is connected to all eircom sites but to a reasonable number of sites. This has been further considered in Section 7.

3.38 Eircom submitted that the absence of retail regulation is entirely inadequate to justify the move to cost-based pricing for WLLs and refers to wholesale broadband access (“WBA”) in this context. In addition, Eircom also highlighted the point that the continuing decrease in the trend for the purchase of WLLs by OAOs, shows that the current pricing mechanism has ensured the existence of an adequate margin between WLLs and PPCs, such that OAOs have been encouraged to build out and expand their core networks and purchase PPCs rather than WLLs. Eircom also stated that it did not believe that the concept of “economic space” was useful in understanding the relationship between WLLs and PPCs. Eircom also added that it would be entirely inappropriate to seek to base the price for WLLs on some notional “wholesale network costs” and “wholesale specific costs” and that ComReg cannot lawfully do so. Given the issues raised by Eircom, ComReg has given further consideration to the costing approach for WLLs. If ComReg were to impose a pure cost orientation obligation on WLLs this could lead to a significant anomaly in certain cases where the cost of a WLL is cheaper than a PPC, which would undermine the principle of network investment and be contrary to ComReg’s objectives. Please refer to Section 6 for further discussion and ComReg’s preliminary views on setting the legacy WLL charges.

3.39 Eircom also raised the point that encouraging infrastructure based competition would mean ensuring that OAOs roll-out their network (using LLU or their own fibre or other cables) to the customer premises wherever justified, rather than purchasing

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PPCs. With regards to LLU, ComReg is of the view that even if this is true in theory, it is not feasible in practice:

- LLU is not available for fibre, while PPC fibre exists.
- LLU deployment appears to be mainly driven by the broadband market rather than the leased lines market.
- PPCs are effectively the last rung of the ladder of investment in rural areas, whereas LLU may not be achievable in the medium term.

3.40 As a consequence, ComReg believes that it is still important to encourage PPC infrastructure investment.

3.41 Eircom also stated that any decrease in the current price for WLLs could act as a very serious disincentive to investment in infrastructure-based competition by sending the wrong buy/build signal to OAOs. As stated above, ComReg has given further consideration to the costing approach for WLLs. This is now addressed in Section 6 of this document.

ComReg's Conclusion:

3.42 ComReg has concluded that a 'BU-LRAIC plus' cost model is the appropriate methodology for determining the cost oriented charges for PPCs, WEA and NGN Ethernet products in the market for wholesale terminating segments of leased lines.

3.43 For WLLs, ComReg has reconsidered its original proposal and this is now further discussed and considered in Section 6 of this document.

3.44 In relation to the price control for WLLs above 10Mb/s, ComReg concludes that the general approach set out in terms of the costing methodology and pricing approach for WLLs relates to all WLLs generally in the market for wholesale terminating segments of leased lines. It was also noted that WLLs between the urban centres and less than STM1 generally, are part of the market for the wholesale terminating segments of leased lines and therefore the costing methodology and the pricing approach for WLLs will also relate to these.

3. Margin Squeeze principles for an assessment of the appropriate economic space between wholesale products and services:

Consultation Proposal:

3.45 In ComReg Document No 10/70, ComReg set out its preliminary views on the principles for assessing the appropriate economic space between WLLs and PPCs (also referred to as the Margin Squeeze test).

3.46 ComReg also stated that those principles would apply to any future assessment of the appropriate economic space between any of the wholesale products including NGN Ethernet leased lines products within the market for wholesale terminating segment of the leased lines. In essence, this test will apply to all current products and services in the market but also to any future variant of these products or services in the market for wholesale terminating segments of leased lines.

3.47 The principles were discussed under the following areas:

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- Appropriate operator cost base
 - Appropriate operator volume base
 - Appropriate cost standard
 - Appropriate model type
 - Product-by-product or portfolio basis.
-
- **Appropriate operator cost base:**

3.48 In ComReg Document No 10/70, ComReg considered the following options with regard to the relevant operator cost base to use:

- a) Reasonably efficient operator (“REO”) i.e. using the costs of an alternative operator.
- b) Equally efficient operator (“EEO”) costs.
- c) Similarly efficient operator (“SEO”) costs.

3.49 ComReg was of the preliminary view that the SEO approach was the most appropriate operator cost base to use in the context of assessing the appropriate economic space between WLLs and PPCs given that competition is developing in the market. ComReg believed that this approach should send the appropriate investment signals to new entrants which should encourage infrastructure investment and encourage OAOs to climb the ladder of investment.

3.50 In addition, ComReg was also of the preliminary view that the SEO approach was relevant in assessing the appropriate economic space between any of the wholesale products in the market for wholesale terminating segments of leased lines i.e. any future assessment of the appropriate economic space between the wholesale NGN Ethernet leased line products.

3.51 In ComReg Document No 10/70 ComReg set out that the REO approach was not appropriate for the assessment given the general issue regarding the robustness of data from OAOs. However, ComReg was of the view it was more prudent to compare the relevant costs with OAO data, where available.

- **Appropriate operator volume base:**

3.52 In ComReg Document No 10/70, ComReg was of the preliminary view that the relevant volumes should be based on one of the following market share options:

- An operator with a 10% market share;
- An operator with a 15% market share; or
- An operator with a 25% market share.

3.53 ComReg was of the preliminary view that an adjustment for economies of scale should be carried out to determine the WLL charges. Given the different volume base between Eircom and a typical new entrant ComReg was of the preliminary view

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that the relevant volume base should be based on an operator with a market share of 25%. However, ComReg welcomed the views of industry in this regard.

- **Appropriate cost standard:**

3.54 In ComReg Document No 10/70 ComReg set out the appropriate cost standard options. These options included the following:

- Average Variable Cost (“AVC”)
- Average Avoidable Cost (“AAC”)
- LRAIC
- ‘LRAIC plus’
- Average Total Cost (“ATC”).

3.55 In ComReg Document No 10/70 ComReg was of the view that AVC and AAC cost standards were not appropriate given that these approaches did not take account of a significant portion of fixed costs or common costs. ComReg set out that the ‘LRAIC plus’ approach was a forward looking approach which allowed an operator to recover all of its efficiently incurred costs, including an apportionment of joint and common costs. In addition, ComReg believed that this was the calculus faced by any operator when deciding to enter or expand. The ATC approach is based on all of the relevant historical costs but with no adjustments for efficiencies.

3.56 ComReg was of the preliminary view that the ‘LRAIC plus’ cost standard was the relevant approach to determine the WLL network costs and WLL specific costs, given that this approach allowed any operator to recover all of its efficiently incurred costs including a mark-up for joint and common costs. ComReg highlighted that this is the calculus faced by any operator when deciding to enter or expand.

3.57 In addition, ComReg was also of the preliminary view that the ‘LRAIC plus’ cost standard was relevant in assessing the appropriate economic space between both the current products and services and any future variants of these products and services in the market for wholesale terminating segment of leased lines.

- **Appropriate model type:**

3.58 In ComReg Document No 10/70, ComReg set out that there was two model options:

- (a) discounted cashflow (“DCF”) model (also known as a dynamic model); or
- (b) static model.

3.59 In summary, a static model is an analysis over one period, generally an accounting year, a DCF (or dynamic) model estimates all future cash flows of the offer under consideration and discounts them to arrive at their present value.

3.60 ComReg was of the preliminary view that a static model was the preferred approach in the context of determining WLL costs. ComReg explained that this approach ensured that the actual operating costs of an alternative operator were taken into account for the particular year under review. ComReg proposed that the adjustment

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for economies of scale should be based on an alternative operator with a proposed 25% market share and ComReg welcomed the views of industry in this regard. ComReg believed that the static approach also ensured consistency with the “replicability” principle so that the offer under consideration can be replicated by an efficient alternative operator.

3.61 In terms of any future assessment of the appropriate economic space between any of the wholesale NGN Ethernet leased line products in the market for wholesale terminating segment of leased lines, ComReg believed that consideration of a dynamic approach may be more appropriate in the future given the likely need to forecast the demand for mobile broadband and the impact that this may have on the recovery of costs over the next few years.

- **Product-by-product or portfolio basis:**

3.62 In ComReg Document No 10/70 ComReg explained that an assessment of the appropriate economic space can be conducted either on the single leased line product offered by the SMP operator or on leased line products as a whole i.e. a portfolio of leased line products.

3.63 ComReg pointed out that there was one main advantage of assessing the appropriate economic space on every single product: the “replicability” principle was satisfied at the most disaggregated level, giving the alternative operators the freedom not to reproduce the portfolio of the SMP operator in order to compete.

3.64 In ComReg Document No 10/70, ComReg was of the preliminary view that a product-by-product basis appeared to be the most appropriate approach for now given that the market was not competitive to advocate the portfolio approach. However, given the evolution to Ethernet technology over the coming years ComReg believed that it may be necessary to further assess the options available on a case by case basis in the future.

Main issues raised by respondents:

3.65 E-net and Magnet highlighted some reservations about the use of an SEO cost base. E-net believed that basing an economic space assessment on Eircom's data could lead to information asymmetries for the purposes of estimating wholesale costs. Magnet believed that the market was not sufficiently diverse to utilize any other costing methodology aside from the REO methodology. In addition, Magnet stated that the REO approach prevents leveraging of economies of scale in costs which may occur if the SEO approach is used. Magnet cited a European Commission recommendation¹³ with respect to next generation access (“NGA”) which promotes the use of a REO test.

3.66 ComReg would like to clarify that the SEO test proposed is in fact the costs as determined in the BU model when efficiencies are taken into account. While information has been obtained from Eircom as a starting point a number of adjustments, including efficiency adjustments, have been made to the model so that the costs reflect that of an efficient alternative operator. One of the main reasons for

¹³ COMMISSION RECOMMENDATION of 20 September 2010 on regulated access to Next Generation Access Networks (NGA). Ref: 2010/572/EU.

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not opting for the REO approach is the fact that the quality and robustness of OAO data is not sufficient to definitely compute REO costs whereas the BU model is fully transparent for ComReg and industry. However, as stated in ComReg Document No 10/70, the costs can be compared with relevant OAO cost data, where available. In addition, ComReg also notes that Magnet's reference to the European Commission's recommendation on NGA, relates to the test applied between retail and wholesale NGA products. However, the current Margin Squeeze test relates to the appropriate economic space assessment between products and services within the market for wholesale terminating segments of leased lines.

- 3.67 BT and ALTO believed that not only should the economic space assessment be based on a product by product basis, it should also be extended to a bundle or a basket of products, particularly if non-regulated, or other regulated, facilities are bundled into the package. As stated by ComReg in the consultation, the product-by-product basis appears to be reasonable for now but given the evolution of Ethernet technology over the coming years, ComReg may further assess the options available on a case by case basis in the future.
- 3.68 Eircom disagreed with ComReg's approach for the issues set out above in relation to the costing approach for WLLs. This was addressed by ComReg as part of the previous subsection above.
- 3.69 Magnet believed that the cost base should be based on a REO model and the volumes should be based on a 10% OAO market share. ComReg has already discussed the point on the REO approach above. In relation to Magnet's point on a 10% market share, ComReg remains of the view that the proposal of 25% is still reasonable on the basis of evidence from recent market analysis (ComReg Document No 08/63). That analysis highlighted that on an OAO's own network, which would most likely resemble the trunk segment of the leased lines market, ESBT had 32.5% and BT had 22.5% of the trunk segment.
- 3.70 E-net stated that there was a need for ComReg to be able to take account of technology changes from legacy to NGN Ethernet. Therefore, any future assessments of the appropriate economic space between wholesale products in the market for wholesale terminating segments of leased lines should be undertaken on a product-by-product basis.
- 3.71 Eircom believed that it was not clear what ComReg meant by the "*other related wholesale products i.e. wholesale NGN Ethernet leased lines products in the market for wholesale terminating segment of leased lines*". Eircom noted that their obligation to continue to provide WLLs does not include an obligation to provide Ethernet based end-to-end circuits on a wholesale basis.
- 3.72 To clarify, ComReg is of the view that the principles set out for the Margin Squeeze test to assess the appropriate economic space between WLLs and PPCs should also be used between any of the other wholesale products and services in the market. This would include both current products and services in the market and any future variants of these products and services introduced in the future. Therefore, the Margin Squeeze test would be technologically neutral to the products and services in the market for wholesale terminating segments of leased lines. With regard to Eircom's point that there is no obligation on it to provide Ethernet based WLLs, ComReg would like to clarify that it is not currently mandating any such offering.

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However, should an operator make a reasonable request or raise a dispute to ComReg in this regard that ComReg would be required to consider any such request.

ComReg's Conclusion:

3.73 The principles set out below will apply in relation to the Margin Squeeze test to assess the appropriate economic space between WLL and PPCs products. In addition, ComReg concludes that the same principles will be applied in relation to the Margin Squeeze test to assess the appropriate economic space between any of the current wholesale products and services or between any future variant of the products and services in the market for wholesale terminating segments of leased lines as currently defined. The Margin Squeeze test will be based on the following principles:

- Cost base: SEO
- Operator market share: 25%
- Cost standard: 'LRAIC plus'
- Model: Static model
- Product by product (this concept is further discussed in Section 7).

3.74 A further specification of the Margin Squeeze test between the wholesale products in the market for wholesale terminating segments of leased lines, including WLLs and PPCs (or equivalents), is further discussed in Section 7 of this document.

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4 Leased Lines Cost Modelling Approach

Overview

- 4.1 The aim of this section is to set out the main cost model inputs (capital and operating costs), the engineering rules and the assumptions used in the BU-LRAIC plus cost model.
- 4.2 The cost modelling approach aims to ensure that the appropriate level of costs are determined in the BU-LRAIC plus model so that Eircom does not over or under recover its efficiently incurred costs in the provision of its leased lines services in the market for wholesale terminating segment of leased lines.
- 4.3 In ComReg Document No 10/70 ComReg set out a detailed background on the infrastructure used to provide the current generation WLLs and PPCs and its views in relation to the provision of future Ethernet products and services over next generation infrastructure. The full details are set out in Section 4 of ComReg Document No 10/70.
- 4.4 As set out in ComReg Document No 10/70, TERA were engaged by ComReg to develop a cost model to determine the appropriate costs and rental charges for legacy WLLs and PPCs and wholesale NGN Ethernet leased line products. In addition, a number of data requests were submitted to Eircom in order to obtain capital cost information, operating cost information and demand requirements relating to both the legacy network and the NGN Ethernet network. The data requests also included the engineering rules currently applied by Eircom in the deployment of its legacy network and its NGN network. A number of interactive workshops were held with Eircom over the last year. These workshops allowed ComReg to understand the data provided by Eircom as well as the engineering rules applied by them. In addition, ComReg held a number of interviews with the OAOs in order to understand the current leased lines services purchased and provided by them as well as the related costs thereof. A number of site visits were also undertaken by ComReg of the Eircom exchanges so as to allow ComReg to understand how the current legacy network is deployed and to understand how the NGN network will be deployed in Ireland.
- 4.5 Set out below are the main areas included in the cost modelling approach for the legacy network product set and the NGN network product set for the leased lines in the market for wholesale terminating segment of leased lines, which ComReg consulted on in ComReg Document No 10/70. The sub sections below summarises ComReg's proposals in Consultation Document No 10/70, the main issues raised by respondents and ComReg's conclusions regarding the cost modelling approach.
- 4.6 The main points are discussed below under the following headings:
 1. Modelling approach for leased lines access network;
 2. Modelling approach for leased lines core network;
 3. Modelling approach for leased lines NGN core network;
 4. Modelling approach for WEA product;
 5. Modelling approach for common areas between leased lines core and access network;

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6. Duration and review of price control.

1. Modelling approach for leased lines access network:

Consultation Proposal:

(a) Possible modelling approaches for the leased lines access network:

- 4.7 ComReg was of the preliminary view that there were three possible approaches for modelling the access network for leased lines;
- Modelling of a pure copper access network;
 - Modelling of a mix of a copper access network and a fibre access network; or
 - Modelling of a pure fibre access network.
- 4.8 Given that the predominant technology in the access network is currently copper with a very limited amount of fibre access lines deployed for high speed leased lines, ComReg was of the preliminary view that even if the number of fibre access active lines were to increase, it would not represent a significant number of lines in the medium to long-term i.e. over the next 5 to 10 years.
- 4.9 ComReg was of the preliminary view that the model previously built for the purposes of determining the monthly rental charge for LLU (ComReg Document No. 10/10 (Decision No. D01/10)) was also appropriate in the current context as the LLU model provided for the cost of all copper pairs, including those used for leased lines. Therefore, the main principles adopted within the LLU access model were also relevant in the context of the leased lines model. However, there were a number of principles specific to the provision of leased lines which are discussed below.

(b) Location of fibre access leased lines:

- 4.10 As set out in ComReg Document No 10/70, Eircom provided ComReg with data in relation to the current fibre access leased lines located in its Main Distribution Frame (“MDF”) sites. While the number of access fibre leased lines currently in Eircom’s network varies between Eircom’s MDF sites, the majority of the fibre access leased lines are in the larger MDFs. It was proposed that the model would deploy the fibre access leased lines to reflect the location of where they are currently located in Eircom’s network.
- 4.11 ComReg was of the preliminary view that it was also necessary to assess the likely location of any new access fibre leased lines going forward. ComReg believed that in some cases fibre access leased lines would replace the current copper leased lines. As a result ComReg proposed to account for this in the model by taking account of the current ratio of fibre access leased lines to the total leased lines (copper and fibre) at the current MDFs.
- 4.12 Further to the assessment of the current location of the fibre access lines in Eircom’s network, it was also necessary to see if the fibre access lines were located inside a housing area as opposed to isolated houses. Based on the analysis carried out by ComReg in relation to the location of the fibre access lines it appeared that the large

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majority of fibre access leased lines were inside the housing areas (urban areas)¹⁴. ComReg therefore proposed to assume that all access fibre leased lines were located inside the housing areas in the model.

(c) Fibre access volumes:

4.13 As set out in ComReg Document No 10/70, Eircom proposed that in addition to expected growth of fixed broadband, that capacity for backhaul to MNOs should be considered as part of the forward looking cost modelling approach for traffic on the NGN core network. ComReg was of the preliminary view that these volumes should be reflected in the cost model in order to account for the NGN investment and to ultimately determine appropriate unit costs over the short to medium term.

4.14 ComReg was of the preliminary view that an additional point worth consideration is the fact that volumes may increase given that operators can obtain higher bandwidth services at a lower cost over a NGN network. ComReg believed that this should be reflected in the model for the core network to ensure that forward looking unit costs and prices are reflective of current and future market condition.

4.15 ComReg was also of the preliminary view that the number of access fibre lines would increase slightly over the next three years. Based on information provided by Eircom, which was reviewed by ComReg and TERA, it was proposed that the access fibre lines would increase annually by approximately 3.3% during the proposed price control period.

(d) Civil works:

4.16 As set out in ComReg Document No 10/70, ComReg was of the preliminary view that where fibre access leased lines are deployed, the trench will have to accommodate both copper cables and fibre cables.

4.17 ComReg was of the preliminary view that there were two types of fibre deployment to the copper network already in place.

- In some parts of the network there are enough spare bores in the trench deployed in the copper network to accommodate fibre cable; and
- In some parts of the network there are not enough spare bores in the trench deployed in the copper network to accommodate fibre cable.

4.18 ComReg proposed to consider the spare capacity of the bores in the trench for fibre access and would adopt the most appropriate way depending on the capacity of the bores for the particular part of the network being modelled.

(e) Allocation of civil works costs between fibre access and copper access network:

4.19 In ComReg Document No 10/70, ComReg set out three options available in terms of allocation of civil works costs between access fibre and access copper. These options are discussed in detail in the consultation document but in summary the options were as follows:

- Option 1: Incremental Costs

¹⁴ This is predominantly urban areas where fibre is deployed. "Housing areas" is a concept used in the LLU Pricing Decision, ComReg Document No 10/10 (Decision No. D01/10).

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- Option 2: Allocation based on the cable surface
- Option 3: Allocation based on the number of cables.

4.20 ComReg was of the preliminary view that the cross sectional approach (option 2) was the most pragmatic and balanced approach and was reflective of the current dimensioning rules in Eircom's network. ComReg believed that the cost driver for the ducts and the trenches is the section of cable that needs to be laid in the ground and not the number of cables: if the section of the cables that need to be laid is too large then other ducts may be required. On the contrary, if it is necessary to lay a significant number of cables down, it will not necessarily mean that many ducts are required as it will depend on the section of all these cables. This means that option 3 is less reflective of the cost drivers and is therefore less relevant from an economic point of view.

4.21 ComReg also stated that option 1 (incremental costs) may prevent double counting of costs in the copper network. However, this option may lead to lower prices given that a significant amount of the civil works costs are not accounted for. This option may also lead to the eviction of competitors from the market for those operators who have in recent years invested in their network or for those who intend investing in the future. Hence, this option may dis-incentivise further investment by other operators.

(f) Operating Costs:

4.22 As set out in ComReg Document No 10/70, the appropriate level of operating costs for the access network was determined by ComReg as part of the LLU pricing decision of 2010. These costs were determined on the basis of a BU-LRAIC model and the model enabled ComReg to calculate a level of operating costs per line for each MDF area depending on the level of the line fault index ("LFI").

4.23 ComReg was of the preliminary view that fibre cables are less susceptible to the same level of faults as copper cables. The LFI in the LLU pricing decision was based on all copper lines rather than fibre lines. However, given that fibre cables would be based in less rural areas and it would be assumed that rural areas may have a higher instance of faults where overhead infrastructure is more prevalent. ComReg believed that a lower level of LFI may be more appropriate in the context of leased lines. Similar to the proposal in relation to the consultation on the appropriate price control for the WBA market¹⁵, ComReg proposed that an assumed fault rate of 5% (average faults per number of lines in the year) may be more appropriate in relation to the fibre access lines in the context of leased lines

Main issues raised by respondents:

4.24 Eircom broadly agreed with ComReg's proposals but raised a number of issues.

4.25 Eircom believed that it would be necessary to consider the possible requirement to have a number of local loops at each termination point as both bandwidth and the simplex communication process used often requires more than one local loop at terminal points on each leased line. ComReg would like to clarify that the model deploys a minimum of 12 pairs per cable. Therefore, there is more than one local loop modelled at each termination point.

¹⁵ ComReg Document No. 10/56: Wholesale Broadband Access: Consultation and Draft Decision on appropriate price control; dated 15 July 2010.

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- 4.26 Eircom also highlighted some concerns with ComReg's assumption that all access fibre leased lines are located within "housing areas" in the model. Eircom believed that there is evidence of deployment of access fibres to isolated dwellings. Eircom believed that as access fibres to isolated dwellings will have different unit costs than access fibres in housing areas, the model should reflect the actual distribution of access fibres between housing areas and isolated dwellings to ensure an appropriate level of cost recovery. ComReg is of the view that given that there is a fibre access price per meter this allows for the calculation of the incremental costs of fibre above the standard distance (of 0.5kms). Therefore, the fact that fibre access is priced on a per km basis ensures that for long lines such as lines reaching isolated dwelling the charges paid by OAOs will be higher than for lines located inside housing areas. Eircom also stated that the modelling exercise should also recognise the effect of the replacement of existing copper services by fibre access leased lines will have on the unit costs of both services. ComReg is of the view that the model recognises these replacement costs as the model includes both fibre and copper at the same time.
- 4.27 Eircom have reservations in relation to sharing of duct costs across cables based on the cross sectional area of duct space consumed by each cable type. Eircom noted that ComReg recognised that, in some parts of the network, there will not be enough spare bores in trench deployed in the copper network to accommodate fibre cable and in such circumstances, Eircom believed that additional civil works will need to be undertaken. As a consequence Eircom would favour using option 3 (i.e. allocation based on the number of cables), as this recognises that the need to deploy additional cables is the key reason for considering additional investment in a duct network. ComReg is of the view that the cross sectional approach (option 2) is the most pragmatic and balanced approach and is reflective of the current dimensioning rules in Eircom's network. ComReg believes that the cost driver for ducts and trenches is the section of cable that needs to be laid in the ground and not the number of cables. ComReg believes that if the section of the cables to be laid is too large then other ducts may be required, therefore recognising the need for investments where additional civil works are required.
- 4.28 While BT and ALTO generally agreed with the proposals, they both noted some concerns with Option 2 on civil works, which is based on every cable taking a cost based on the cross sectional area. They both believed that this option would overvalue Eircom's costs. BT and ALTO believed that there is an additional forth option of a "blended" solution. They believed that a cable is a cable irrespective of whether it contains fibre or copper and that the more obvious solution would be to develop a blended approach that takes into account the quantity of incremental installations together with cases where new capacity has to be installed. To clarify the approach in the model, ComReg is applying a blended/hybrid approach which takes into account the incremental costs, which can sometimes include digging larger trenches if the number of ducts available is not sufficient. ComReg is therefore of the view that the cross sectional area is important for allocating additional trench/duct should additional capacity be required. Also, ComReg believes that the incremental approach should be rejected due to the risk of eviction of alternative infrastructure.
- 4.29 BT and Magnet raised some concerns with respect to the LFI. They believed the basis of the 5% fault index was not clear from the consultation. In addition, they added that the LFI should assume no faults and that Eircom should be required to

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prove the value based on actual occurrences. In the LLU project, the LFI was at 8%. Given that fibres are mainly underground ComReg is of the view that a lower LFI of 5% appears more appropriate and reasonable. ComReg believes that an assumption of 0% fault occurrence is not realistic since a cable could be damaged at any stage, for example, due to road works and faults occurring as a result. It should be noted that a change in the LFI in this case would have a low impact in terms of overall prices, as fibre access prices are mainly based on capital costs (due to low economies of scale of fibre cable, operating costs already benefit from economies of scale as staff are both working on fibre and copper networks).

4.30 Eircom also believed that the fault incidence on access fibre cables is likely to differ from core fibre cables. ComReg believes that it is difficult to determine the exact level of fault incidence for fibre, compared with copper, in the absence of robust data with respect to fibre only fault levels.

4.31 Magnet did not agree with the inclusion of mobile broadband backhaul volumes as backhaul is a commercial offering. To clarify this point, ComReg is aware that the mobile broadband backhaul is subject to competitive commercial bids and ComReg has recognised this in determining its model inputs. While Eircom's forecasts have been used as a starting point, ComReg has made downward adjustments to the mobile broadband backhaul volumes and the related capacity requirements in the model to reflect this concern, however developments in this regard will be kept under review for any significant changes which could have a material impact on the conclusions reached in the modelling exercise.

ComReg's Conclusion:

4.32 The main conclusions on the modelling approach for the leased lines access network are as follows:

- The model previously built for the purposes of determining the monthly rental charge for LLU (ComReg Document No. 10/10 (Decision No. D01/10)) is appropriate in the context of the current model, as the LLU model provided for the cost of all copper pairs, including those used for leased lines.
- The model deploys the fibre access leased lines to reflect the location of where they are currently located in Eircom's network. ComReg assumes that all access fibre leased lines are located inside the housing areas (urban areas) in the model.
- Capacity for backhaul to MNOs is considered as part of the forward looking cost modelling approach for traffic on the NGN core network. The input for mobile broadband backhaul volumes and capacity requirements are based on Eircom's forecasts as a starting point and which have been adjusted downwards in the model. In addition, the model assumes that access fibre lines will increase annually by approximately 3.3% during the price control period.
- Consideration has been given to the spare capacity of the bores in the trench for fibre access and the model adopts the most appropriate way depending on the capacity of the bores for the particular part of the network being modelled.

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- For the allocation of civil works costs between fibre access and copper access network, the cross sectional approach (option 2) is the most pragmatic and balanced approach and is reflective of the current dimensioning rules in Eircom's network.
- The appropriate level of operating costs for the access network is based on the LLU pricing decision. The LFI is set at 5% to reflect the fact that fibre lines are less susceptible to faults compared with copper lines.

2. Modelling approach for leased lines core network:

Consultation Proposal:

(a) Proposed modelling approaches for the leased lines legacy core network:

4.33 ComReg was of the preliminary view that there were three possible approaches for modelling the core network for leased lines:

- Modelling a pure legacy core network;
- Modelling a legacy core network with some NGN deployment; or
- Modelling a full NGN core network.

4.34 ComReg was of the preliminary view that the provision of legacy PPCs and WLLs should be based on a pure legacy core network model whereas the provision of Ethernet technology should be modelled on a full NGN core network. ComReg was considered that the core network model for leased lines should be implemented using a 'scorched node' approach, which, to the extent practicable and relevant, reflected Eircom's actual network topology.

4.35 As already set out in ComReg Document No 10/70, the legacy core network for leased lines includes two main elements, a switching layer and a SDH transmission layer. The switching layer of the legacy core network consists of two hierarchical levels:

- A SDH/ PDH edge node for the connection of the access network; and
- A SDH/PDH core node for the interconnection of edge nodes.

4.36 These nodes are completely (100%) dedicated to the leased lines network. These nodes can be used differently according to the topology of the leased line end users.

4.37 The transmission network in the legacy core network consists of three different layers:

- The higher layer, consisting of SDH meshed links;
- The lower layer, consisting of SDH rings; and
- The regional layer, consisting of SDH rings.

4.38 All of these transmission links are shared between the different services i.e. voice, broadband and leased lines.

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(b) Traffic volumes on core legacy network:

4.39 In ComReg Document No 10/70, ComReg proposed to take the current level of traffic on Eircom's core legacy network and continue to use these traffic volumes as a basis for the traffic on the legacy core network.

(c) Allocation of legacy core network costs:

4.40 ComReg was of the preliminary view that the switching costs of the legacy core network should be calculated based on the total costs of the node, the traffic solely for leased lines and the associated routing factors.

4.41 ComReg proposed that for each level of the transmission layer, it would be possible to calculate the SDH transmission costs in terms of usage per service and the length of the network i.e. €/kbps/km. It was proposed that the transmission costs would be shared between the different services which use the transmission layer, i.e. voice, broadband and leased lines. For each service, the busy-hour demand, which is used to dimension the network, should be calculated. For voice services, the busy hour traffic would be calculated using typical engineering rules (for example on the basis of a call blocking probability). For broadband services, the busy hour traffic would be calculated using the average bandwidth requirement per broadband line at the busiest hour of the year. For leased lines, the busy hour traffic would be the speed of existing leased lines for uncontended leased lines and the speed multiplied by the contention ratio for contended leased lines. The total busy hour traffic would assist in determining the transmission equipment required at the different levels of the network and the total cost associated with it. The cost of the SDH transmission network will then be allocated to the different services (voice, broadband, leased lines) based on the busy hour traffic of each service at the different levels of the network (capacity based allocation).

(d) Operating costs:

4.42 In ComReg Document No 10/70, ComReg proposed to use the operating cost data from Eircom as a starting point. However, a number of adjustments would be deemed necessary to reflect current market costs and the engineering rules of an efficient operator.

Main issues raised by respondents:

4.43 Eircom generally agreed with ComReg. Eircom recognised that the modelling approach proposed to calculate SDH transmission costs for each level of the transmission layer in terms of usage per service and the length of the network. Eircom believed that while this approach appeared to recognise that €/kbps/km costs will differ depending on which level of the transmission layer the circuit is carried on, it is also necessary to recognise that the cost per kbps/km will not be linear in terms of the various circuit speeds carried within each transmission layer. While ComReg agrees with Eircom, it is worth highlighting that Eircom's comments are related to the application of price/cost gradients which are already taken into account and applied in the model.

4.44 Eircom did not believe that its top-down OPEX data would need to be significantly adjusted as it is an efficient network. It referred to Paragraph 4.28 of the consultation which stated that "*a number of adjustments are deemed necessary to reflect current market costs and the engineering rules of an efficient operator*". While ComReg has

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used Eircom's top-down operating cost information as a starting point within the model, engagement and discussions have taken place between ComReg and Eircom to ensure that only relevant and efficient operating cost data has been included in the model.

- 4.45 BT and ALTO fully agreed with ComReg's proposal to allocate the costs by usage of resource (cost causation principle), but they believed that a simpler and more correct approach would be to obtain the allocation of resource profile from Eircom for their legacy SDH. ComReg is of the view that the proposal from BT and ALTO is not in line with the principle of bottom-up modelling. ComReg believes that the aim of a bottom-up model in this context is to replicate what Eircom's capacity usage is likely to be for each service.
- 4.46 BT and ALTO did not believe that the busy hour approach was valid for an SDH technology platform, but acknowledged it could be appropriate in an Ethernet network. E-net generally agreed, but had some reservations in terms of using busy-hour data to model SDH transmission costs, given the dedicated nature of SDH-based services. Magnet disagreed with the busy hour approach to dimensioning traffic on the legacy core network and believed that a 95 percentile approach was more appropriate as it was an industry used standard.
- 4.47 ComReg believes that the approach used in the model is generally in line with what OAOs views above. The capacity in terms of STM-1 at the different levels of the network is determined in the model for voice, broadband and leased lines separately. In other words, dedicated circuits of fixed capacity are modelled up across the SDH network for individual services. Subsequently, common network costs are allocated to these services based on the capacity used by each service, at each level of the network. These capacities have been determined on the basis of the traffic of each service at busy hour.

ComReg's Conclusion:

- 4.48 The main conclusions on the modelling approach for the leased lines core network are as follows:
- The provision of legacy PPCs and WLLs is based on a pure legacy core network model whereas the provision of Ethernet technology is based on a full NGN core network model.
 - The traffic volumes are based on the current level of traffic on Eircom's core legacy network.
 - The switching costs of the legacy core network are calculated based on the total costs of the node, the traffic solely for leased lines and the associated routing factors. The transmission costs are shared between the different services which use the transmission layer, i.e. voice, broadband and leased lines. For each service, the busy-hour demand, which is used to dimension the network, is calculated. The cost of the SDH transmission network is then to be allocated to the different services (voice, broadband, leased lines) based on the busy hour traffic of each service at the different levels of the network (capacity based allocation).

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- The operating cost data is based on Eircom's operating costs, as a starting point. However, a number of adjustments have been made to reflect the costs of an efficient operator.

3. Modelling approach for leased lines NGN core network:

Consultation Proposal:

(a) Proposed modelling approaches for the leased lines NGN core network:

4.49 ComReg was of the preliminary view that there were three possible approaches for modelling the core network for leased lines:

- Modelling a pure legacy core network;
- Modelling a legacy core network with some NGN deployment; or
- Modelling a full NGN core network.

4.50 As identified earlier, ComReg was of the preliminary view that as Eircom was currently deploying NGN technology the modelling approach for the core network should to some extent reflect it.

4.51 In this regard, ComReg considered the following points with regard to NGN:

- The nodes (exchange sites, aggregation nodes, IP Edge nodes, core nodes) remain at the same locations as they are currently;
- Same regions as Eircom's NGN network;
- Same systems as Eircom's wavelength division multiplexing ("WDM") network.

(b) Traffic volumes on the NGN core network:

4.52 As a starting point, ComReg proposed to take the current level of traffic on Eircom's core legacy network and to use these traffic volumes as a basis for the traffic on the NGN core network. Eircom provided data in relation to the two extremity exchange sites of the link, the commercial speed of the link and the contention rate.

4.53 Eircom proposed that in addition to expected fixed broadband that capacity for backhaul to MNOs should be considered as part of the forward looking cost modelling approach for traffic on the NGN core network. ComReg was of the preliminary view that these volumes should be reflected in the cost model in order to account for the NGN investment and to ultimately determine appropriate unit costs.

4.54 ComReg also proposed that the volume of traffic generated by leased lines will increase slightly over the next three years with an annual increase of approximately 3.3% during the proposed price control period. This data was based on forecasted information from Eircom which has been reviewed by ComReg and TERA.

(c) Capacity requirements for voice traffic on the NGN core network:

4.55 ComReg also assessed the capacity requirement of the voice traffic in a SDH network. ComReg was of the preliminary view that the voice services will for now remain on the legacy network and the costs of the legacy network will be allocated between the various services on it i.e. voice, broadband and legacy leased lines.

(d) Allocation of NGN core network costs:

4.56 ComReg proposed that the model would calculate the cost of the different parts of

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the NGN core network for each of the services that used it. This would include the cost relating to the following:

- The costs of nodes and WDM equipment relating to both leased lines and broadband services; and
- The cost of trenches and fibre relating to leased lines, broadband and voice services.

4.57 ComReg proposed to allocate NGN core network costs to the different services; leased lines, broadband and voice based on the dimensioning capacity i.e. the peak traffic. In the case of traffic related products, the resulting annual demand was converted to busy-hour demand, which is used to dimension the network. The busy-hour demand grows with the evolution of usage towards more bandwidth intensive services. Eircom provided their forecasts of average bandwidth requirement per broadband line at the busiest hour of the year. This forecasted level of busy-hour demand is considered in the model. The peak traffic rate has also been considered as part of the WBA pricing review to ensure consistency of approach between this review and the WBA price control review.

(e) Operating costs:

4.58 In ComReg Document No 10/70, ComReg set out that ComReg and Eircom were currently assessing the appropriate level of operating costs relevant to an NGN core network. ComReg was of the preliminary view that while the level of operating costs for an NGN network may be higher initially, it would reduce overtime and the operating costs of a NGN network should be lower than the operating costs levels of the core legacy network.

Main issues raised by respondents:

4.59 BT and ALTO generally agreed but pointed out that Eircom have been publishing the locations of the core and other NGN nodes over the past few months hence the ComReg model should consider these rather than using the PPC legacy network as a proxy. To clarify this point, ComReg can confirm that this has been considered in the model as follows:

- For the legacy network, the current legacy nodes have been considered;
- For the NGN, the current and planned NGN nodes have both been considered.

4.60 In addition, BT and ALTO would also expect mobile operator backhaul, particularly over core networks to be subject to competitive supply rather than automatically using the Eircom core platform, hence all the mobile traffic should not be factored into the eircom platform costs. BT and ALTO agreed that the trend is for increasing bandwidth. E-net also believed that ComReg should give close consideration to mobile operator backhaul traffic volumes in the model, given that it is not at all clear to what extent (if any) such traffic will be carried over Eircom's network. Magnet also raised the point about Eircom's presumption of winning mobile backhaul contracts and stated that these volumes should be discounted.

4.61 ComReg is aware that the mobile broadband backhaul is subject to competitive commercial bids and ComReg has recognised this in determining its model inputs. While Eircom's forecasted mobile backhaul volumes and related capacity

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requirements have been used as a starting point in the model, downward adjustments have been made to these inputs to address this concern.

- 4.62 Eircom agreed that consistency should be maintained between the WBA price control review and the leased line pricing review. However, Eircom stated that in Paragraph 4.76 of ComReg Consultation Document 10/70, ComReg appears to indicate that the NGN model will calculate the costs of the nodes and WDM equipment, only in relation to both leased lines and broadband services, while calculating the costs of trenches and fibre on the basis of these services plus voice. Eircom believed that this appeared to be inconsistent as voice services would also use the node and WDM equipment and so should also be included in determining the appropriate level of these costs. To clarify the point, ComReg notes that the migration of voice services to NGN is not included in the Wholesale NGN Ethernet product roadmap¹⁶ and therefore was not considered by ComReg during the three year price control period. ComReg notes that the question of voice services being provided over NGN was discussed with Eircom in 2010. ComReg believes that voice services will use separate WDM equipment and nodes compared with broadband and leased lines services over NGN but it will use the same trenches, ducts and fibre cables.
- 4.63 BT and ALTO remained of the view that ‘busy hour’ calculation should not apply to low level transmission networks such as the physical fibre layer, the dense wavelength division multiplexing (“DWDM”) and the SDH layers, as capacity is allocated and dedicated at these layers. However, ComReg disagrees with BT and ALTO with respect to the busy hour approach, as:
- For SDH, this is not relevant in a NGN network, i.e. there is no SDH.
 - For fibre, the busy hour approach is not used, except at the end to complete the capacity based allocation.
 - For DWDM, the busy hour approach is relevant to determine the level of traffic and thus the requirement of the DWDM network, given that broadband and leased lines will share the same DWDM equipment.
- 4.64 BT and ALTO agreed that NGN core busy hour traffic can be modelled but it is important to consider the following: a) the volume of traffic, b) the assigned traffic type, and c) the network quality of service parameters. To clarify this point, ComReg can confirm that the points raised by BT and ALTO with respect to volume of traffic, assigned traffic types and service parameters, where necessary, have been considered in the model.
- 4.65 Magnet generally agreed but submitted that the allocation of NGN should be the 95th percentile. ComReg would like to point out that the model currently can only calculate traffic at peak hour. ComReg is of the view that calculating traffic based on the 95th percentile would be much more complex with no obvious variation in results to the current approach adopted in the model.

¹⁶ This is a reference to terminology used in the Leased Lines Forum.

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ComReg's Conclusions:

4.66 The main conclusions on the modelling approach for the NGN core leased lines network are as follows:

- The model reflects the current level of traffic on Eircom's core legacy network and this level of traffic is used as a basis for the traffic on the NGN core network. The capacity and volumes for backhaul to MNOs is also considered as part of the forward looking cost modelling approach for traffic on the NGN core network. This is based on Eircom's forecasts which have been adjusted downwards. The volume of traffic generated by leased lines is assumed to increase slightly over the next three years with an annual increase of approximately 3.3% during the price control period.
- Voice services will currently remain on the legacy network and the costs of the legacy network are allocated between the various services on it, i.e. voice, broadband and legacy leased lines.
- The model calculates the cost of the different parts of the NGN core network for each of the services that use it, i.e. leased lines, broadband and voice. In the case of traffic related products, the resulting annual demand is converted to busy-hour demand, which is used to dimension the network. Eircom's forecasted level of busy-hour demand is considered in the model. The principle of using a peak traffic rate has also been considered as part of the WBA pricing review to ensure consistency of approach between this review and the WBA price control review.
- The operating costs are based on costing data provided by Eircom and adjusted by ComReg to reflect the fact that NGN network costs will be higher initially, but will reduce overtime as the operating costs of a NGN network will be lower than the operating costs levels of the core legacy network.

4. Modelling approach for WEA product:

Consultation Proposal:

4.67 In ComReg Document No 10/70 ComReg set out that as this is a legacy Ethernet product consideration should be given to the type of core technology to be employed, which is either:

- A legacy core network, using Martis switching layer and SDH transmission layer, which also incorporates Ethernet service units ("ESUs"). This would be consistent with the proposed approach for PPCs; or
- A NGN core network, using IP switching layer. This would be consistent with modern equivalent assets ("MEA") principles and a signal to promote (less than 10Mb/s) services over NGN.

4.68 ComReg was of the preliminary view that in order to be consistent with the MEA concept and the approach proposed for wholesale NGN Ethernet leased lines (discussed below), the WEA product should be based on an NGN core network model.

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Main issues raised by respondents:

- 4.69 BT and ALTO agreed with ComReg's approach but requested ComReg to clarify that WEA used the NGN core network modelling approach. Magnet disagreed as it believed that since the launch of wholesale Ethernet interconnection link ("WEIL") and wholesale symmetrical Ethernet access ("WSEA"), WEA has become a legacy product.
- 4.70 ComReg wishes to clarify a number of points regarding the proposed modelling approach for the WEA product. At the consultation stage ComReg understood that it was likely that Eircom would be launching a copper based NGN Ethernet product during the period of this review. A copper based NGN Ethernet product would have constituted a direct replacement for the WEA product. From a forward looking perspective and a MEA perspective, ComReg initially proposed to model the WEA product using the NGN core network as the MEA, due to an impending introduction of a copper based NGN Ethernet product. However, the roll-out of a copper based NGN Ethernet product is currently not part of Eircom's current product roadmap; therefore ComReg believes that an alternative modelling approach is relevant for the current WEA product. However, given that there is currently no demand for this product, no further cost modelling of this product is deemed necessary at this stage.
- 4.71 ComReg is currently of the view that the WEA product is not based on the NGN network but on the legacy network. Considering the fact that Eircom's current pricing structure mirrors the legacy PPC pricing structure, ComReg is of the view that, in principle, the modelling approach for this product should be based on the legacy network.
- 4.72 However, ComReg remains of the view that any future wholesale copper based NGN Ethernet offers should be modelled on the basis of NGN costs.

ComReg's Conclusion:

- 4.73 In principle, the modelling approach for the WEA product should be based on that of a legacy core network model. However, given that there is currently no take-up of WEA services from Eircom, ComReg believes that in line with the principle of proportionality that no further cost modelling is deemed necessary at this point. This is further discussed in Section 6 of this document.

5. Modelling approach for common areas between leased lines core and access network:

Consultation Proposal:

(a) Tilted annuities and price trends:

- 4.74 In ComReg Document No 10/70, ComReg set out some background information on the objective and application of tilted annuities and their importance in building regulatory cost models. Please refer to Section 4 of the consultation document for further details on this.
- 4.75 In summary, ComReg considered three options/concepts which were deemed relevant in determining the appropriate payment terms, as outlined below:

- **Option 1** assumes that revenues are realised the same time as investments are

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made.

- **Option 2** assumes that revenues are realised approximately 6 months after the investments are made. This was the approach taken by ComReg in its LLU pricing decision (ComReg Document No. 10/10) earlier this year.
- **Option 3** assumes that revenues are realised approximately 12 months after the investments are made.

4.76 ComReg was of the preliminary view that the payment of contractors' invoices, the operational launch of the network and the generation of revenues, generally occur at approximately the same time. However, in order to be conservative, ComReg considered a six month time lag between the out payments of the investment and revenue generation would strike a reasonable balance between assuming simultaneous recovery and recovery in periods in excess of one year or more.

4.77 Similar to the formula applied in the context of LLU (ComReg Document No 10/10 (Decision No D01/10), ComReg proposed to use the annuity formula set out below. This formula assumes that revenues are realised approximately 6 months after the investments are made.

$$A_1 = I \times \frac{1}{\sqrt{1+w}} \times \frac{w-P}{1 - \left(\frac{1+P}{1+w}\right)^N}$$

Note:

- *A₁*, the annual charge in year one (used for price calculation)
- *I*, the investment value of the asset
- *w*, the cost of capital (parameter)
- *P*, the annual change in the price of an asset
- *N*, the useful life of the asset.

4.78 In order to implement the tilted annuities, it was also necessary for ComReg to consider the future price trends for the relevant leased line assets on both the core and access networks. For the access network, ComReg proposed to use the price trends from the LLU access model for trench costs and duct costs. These price trends were based on long-term trends over a 12 year period. The details of the price trends in this regard are set out in ComReg Document No. 10/10, (Decision No. D01/10). The price trends applied in the context of the access network for leased lines ensure that a consistent approach is applied in relation to trench and duct. In relation to those assets relevant to fibre access, ComReg proposed to assess the changes in asset prices over a shorter period i.e. over a period of approximately 3 years for the optical distribution frame ("ODF"). In terms of the network terminating unit ("NTU") ComReg proposed to use the assumptions provided by Eircom.

(b) Asset Lives:

4.79 ComReg was of the preliminary view that the asset lives for those assets relevant to the provision of products and services in the market for wholesale terminating segment of leased lines across the access and core network should be consistent with

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ComReg Document No. 09/65¹⁷ (Decision No. D03/09).

(c) Allocation of common assets between the core and access networks:

4.80 ComReg considered that there were two types of assets which were common assets between the core and access network. These were as follows:

- 1) Ducts, chambers and trenches; and
- 2) Fibre cables.

4.81 The ducts, chambers and trenches are shared between the access copper network, the access fibre network and core network. On the other hand, fibre cables are shared between core network and access fibre network. ComReg has taken into consideration the fact that common assets are shared between the core and access network as part of the modelling exercise.

(d) Allocation of civil works costs between the core and access networks:

4.82 In line with the approach adopted for the LLU price decision, ComReg proposed that the allocation of civil works costs between the access and core model were allocated on the basis of 50% of trench and chamber between core and access, where there is a core network presence.

(e) Allocation of fibre cable costs between the core and access networks:

4.83 In ComReg Document No 10/70, ComReg set out that fibre cables can be shared between the access and core network. Therefore, ComReg was of the preliminary view that the cost of fibre should be allocated between the access and core networks. ComReg was of the preliminary view that consideration should be given to the length of the fibre cables that are shared with the core network. Similar to the allocation of trench costs between the access and core network, ComReg proposed to allocate the fibre cable costs 50:50 between the core and access networks. This allocation approach is consistent with that used in the LLU model.

Main issues raised by respondents:

4.84 Eircom agreed but stated the payment terms need to include a time lag between the outpayments of the investment and the revenue generation for the services sold on the network. Eircom believed that this is particularly the case as ComReg appears to recognise that the network needs to be scaled to meet future volume increases and that a level of instability and uncertainty exists in terms of volume demands. Eircom believed that in such circumstances, the 12 month gap outlined under Option 3 seems the most conservative of the proposed options as the required level of revenue generation is likely to take years rather than months to achieve. ComReg, while developing the legacy leased lines BU core model, accepted that a higher payment term should be included for the specific case of legacy equipment. ComReg has reflected this point in the model.

4.85 E-net stated that it would be desirable to refine the 50:50 split of fibre cable and duct costs proposed to weight the costs taking account of fibre count used for different purposes. E-net cited as an example a scenario where a single fibre pair is used for core network in a duct that had several 96-fibre cables in it, where all the other fibres

¹⁷ Response to Consultation Document No. 09/11: Review of the regulatory asset lives of Eircom Ltd., 11 August 2009.

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are used for access, splitting the costs 50:50, E-net believed, was likely to have the effect of overstating core costs and understating access costs. Magnet also disagreed with the split of fibre cable between core and access, where Magnet did not agree with the 50:50 split and stated that a 65% core and 35% access is likely to be more accurate as there is likely to be more fibre in the core than the access network, as it is still mainly a copper based network.

4.86 In order to address the concerns raised above, ComReg notes that the allocation of civil works and fibre links costs between core and access is made only for trenches (and fibres) that are used by both access and core. When a trench (and a fibre) supports both core and access services, then the costs of the trench (or of the fibre) are shared on a 50:50 basis. This is also consistent with the approach taken by ComReg in modelling the cost of the copper access network in ComReg Decision D01/10. For fibre costs, it should be noted that this approach is more conservative and provides more stability in the context of the number of fibre cables in the access network constantly increasing.

ComReg's Conclusion:

4.87 The main conclusions for modelling the common areas between the access and core networks, in the context of leased lines, are as follows:

- In line with the LLU pricing decision (ComReg Document No 10/10 (Decision No D01/10), the annuity formula used in the model assumes that revenues are realised approximately 6 months after the investments are made.

$$A_1 = I \times \frac{1}{\sqrt{1+w}} \times \frac{w-P}{1 - \left(\frac{1+P}{1+w}\right)^N}$$

Note:

- A_1 , the annual charge in year one (used for price calculation)
- I , the investment value of the asset
- w , the cost of capital (parameter)¹⁸
- P , the annual change in the price of an asset
- N , the useful life of the asset.
- For the access network, the price trends from the LLU access model for trench costs and duct costs will be used in the model. These price trends are based on long-term trends over a 12 year period. In relation to those assets relevant to fibre access, the changes in asset prices over a shorter period i.e. over a period of approximately 3 years for the optical distribution frame (“ODF”) has been taken into account. In terms of the network terminating unit (“NTU”) the assumptions provided by Eircom have been used in the model. An assessment of prices over the short term is more appropriate for equipment type assets. With regard to the network assets relevant to the provision of leased lines

¹⁸ The payment term, in the LLU pricing decision, P , was set at .,5 (6 months) and in the legacy leased lines model, following model review with eircom, this has been set at $0.5 - 0.375 = 0.125$ to reflect the fact that the time between the investment is made and the equipments are installed is longer than for LLU of about 4,5 months.

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services over the core network, the same approach as that set out above in relation to the NTU and the ODF has been adopted in the model.

- The asset lives for those assets relevant to the provision of products and services in the market for wholesale terminating segment of leased lines across the access and core network are consistent with ComReg Document No. 09/65 (Decision No D03/09).
- In the model, the ducts, chambers and trenches are shared between the access copper network, the access fibre network and core network. On the other hand, fibre cables are shared between core network and access fibre network.
- In line with the LLU cost model, ComReg has allocated civil works costs between the access and core model on the basis of 50% of trench and chamber between core and access, where there is a core network presence.
- The cost of fibre is allocated between the access and core networks. The fibre cable costs are allocated 50:50 between the core and access networks.

6. Duration and review of price control:

Consultation Proposal:

4.88 In ComReg Document No 10/70, ComReg was of the preliminary view that the maximum prices should be set for at least one year in the first instance at which point the maximum prices would be reviewed to see if a change is required. Following this review and depending on whether it is necessary to carry out any future changes to the maximum price(s), ComReg proposed that the maximum prices would be set for a period of at least two years.

4.89 ComReg was of the view that a multi-year maximum price(s) was not suitable given the early stage of migration to NGN and the level of instability and uncertainty in terms of volume demands and the costs directly related to NGN. In addition, ComReg also believed that given Eircom's proposal to set wholesale NGN Ethernet leased line charges on the basis of geographic de-averaging, it may be necessary to ensure that Eircom's revenues recover its total efficiently incurred costs and that the risk of over-or-under recovery is minimised.

Main issues raised by respondents:

4.90 Eircom believed that the wholesale prices at launch should stay in place for at least two years so that there is a substantial indication as to the trend of volumes and unit costs. Eircom also believed that a review at the end of the first of these two years will provide early indications of any potential problems at launch. Magnet believed that a two year review was the best option. However, Magnet also added that there has to be a commitment to start the review process at between 14 to 18 months into the two year period.

4.91 BT and ALTO disagreed with ComReg on the basis that business customer contracts are normally longer than one year in duration and that a one year price review brings uncertainty to the market, as prices will be seen as unstable and the OAOs will have to absorb any price increases. BT and ALTO therefore considered that a minimum of two years should be set for the price control period.

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- 4.92 ComReg has given further consideration to the price control period based on the concerns raised by respondents. While ComReg's initial proposal was based on the requirement to review and monitor the model inputs after a relatively short period of time, given the level of uncertainty regarding NGN inputs, ComReg does recognise the importance of providing longer term certainty to the marketplace. ComReg agrees that the price control period should provide as much price certainty as possible over a reasonable period of time. Taking these views into account and the fact that ComReg has also now completed the cost modelling work on bitstream, ComReg now believes that a three year price control period should be put in place to give operators the market certainty and the price certainty that is required.
- 4.93 However, on a yearly basis ComReg will carry out an internal review of the main model inputs, in aggregate, to ensure that there are no material changes, especially in relation to the model inputs for NGN. Where material changes are noted as part of that review ComReg believes that intervention may be deemed appropriate. In addition, ComReg will also keep abreast of developments in the industry and will where necessary discuss these with Industry to ensure the price control is kept up to date. This may be particularly relevant given the migration to NGN over the next number of years. ComReg is of the view that exceptional or material circumstances should be determined on a case by case basis by ComReg, where the main assumptions / parameters to be considered are:
- A. Further roll-out of the NGN core network
 - B. Capacity restrictions on the NGN core network for real times classes of service
 - C. Dimensioning assumptions of mobile broadband backhaul traffic
 - D. Dimensioning assumptions of DSL and backhaul traffic
 - E. Changes in the in-situ install base of leased lines (i.e. shifts from lower to higher circuit speeds)
 - F. A review of OPEX
 - G. Issues raised by industry.

- 4.94 ComReg believes that the impact of changes to the main assumptions identified above will be considered in aggregate. As a result of the annual review and where exceptional/material changes are identified, in aggregate, ComReg will discuss any material issues with Industry. Where the changes identified are material, Eircom may then be required to revise its prices.

ComReg's Conclusion:

- 4.95 The price control period will be for three years. ComReg will carry out an internal yearly review of the main aggregated model inputs to assess any material changes, especially the model inputs for NGN. As part of this annual review ComReg will ensure it is kept up to date on industry developments through the ComReg industry forum or if and where issues are raised by OAOs. Where material issues arise, ComReg will discuss these with Industry either as part of the Leased Lines forum or by another means, as deemed appropriate. Depending on the outcome of this annual review, and if material changes are identified, Eircom may be required to revise its maximum charges as a result. ComReg does not expect such changes to be necessary

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however; where such changes are required ComReg will ensure adequate notice is provided to all stakeholders, depending on the change(s) to be made.

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5 Leased Lines Pricing Approach

Overview:

- 5.1 This section discusses the most appropriate pricing option to adopt in order to determine the maximum charges for WLL, PPCs and NGN Ethernet in the market for wholesale terminating segment of leased lines.
- 5.2 The subsections below include the consultation proposal from ComReg Document No 10/70, the main issues raised by respondents and ComReg's conclusions on the main points.
- 5.3 The main points listed below are discussed further under two main headings:
 1. Pricing approach for legacy leased line products and services
 2. Pricing approach for NGN Ethernet leased lines products and services.

1. Pricing approach for legacy leased line products and services:

Consultation Proposal:

- 5.4 In ComReg Document No 10/70, ComReg was of the preliminary view that the current pricing methodology of nationally averaged prices for the legacy WLLs and PPC products should remain in place, going forward. These products were priced on a nationally averaged basis for a number of years and the pricing approach was well established and understood by industry. In addition, there is currently a large in-situ base of WLLs and PPCs in Ireland. ComReg believed that there was currently no need to change the pricing approach over the timeframe of this review as changes to this pricing approach may be unduly disruptive. ComReg welcomed industry's views in this regard.

Main issues raised by respondents:

- 5.5 No issues were raised by respondents based on ComReg's proposal. All respondents agreed that the pricing approach for legacy WLL and PPC products should continue on the basis of nationally averaged prices.

ComReg's Conclusion:

- 5.6 The pricing approach for legacy WLL and PPC products will continue on the basis of nationally averaged prices.

2. Pricing approach for NGN Ethernet leased line products and services:

- 5.7 In Section 5 of ComReg Document No 10/70, ComReg set out some background information regarding Eircom's deployment of NGN Ethernet equipment and the launch of some of its wholesale NGN Ethernet products in April 2010. The proposed pricing submitted by Eircom for NGN Ethernet was based on a nationally de-averaged pricing model, where the main drivers of the prices are determined by geographic area and capacity (in Mb/s). This proposed pricing approach is the subject of this section of the document.
- 5.8 This subsection is discussed below under a number of headings as follows:
 - A. Price differentiation between best efforts and real time services

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- B. Price differentiation by geographic area
- C. Gradients
- D. Compliance with the cost orientation obligation
- E. Avoidance of anticompetitive practices.

A. Price differentiation between best efforts and real time services:

Consultation Proposal:

- 5.9 As set out in ComReg Document No 10/70, Eircom proposed to differentiate between its wholesale Ethernet leased line products on the basis of the quality of service of conveyance. Eircom identified two types of services in this regard:
- Best efforts
 - Real time.
- 5.10 In summary, real-time traffic requires end-to-end dedicated bandwidth which is reserved for the use of each real-time customer connection. A best efforts connection can share resources with other connections thereby achieving greater cost savings, but maximum bandwidth is not always guaranteed.
- 5.11 In addition, Eircom also proposed to provide a traffic based class of service. This would allow an operator or customer to better tailor the mix of real time and best efforts traffic required for specific products or service, or efficient delivery of a combination of products and services.
- 5.12 ComReg was of the preliminary view that given the importance of delivery of real-time traffic, it was reasonable that the transmission of real time traffic warrants an additional associated cost compared with best effort traffic.

Main issues raised by respondents:

- 5.13 BT believed that the pricing of expedite forward (“EF”) and assured forward (“AF”) should reflect the fact that the two are inextricably linked and EF (to have any meaning) must incur a price premium. BT believed that the blending should be reviewed against actuals. BT believed that the additional costs of establishing and maintaining more than one class of service within a network should be recovered equally between the classes and that it cannot be reasonably argued that either class incurs the cost of having more than one class. “Best effort” traffic is characterised as subject to a network planning ratio of 5:1. BT believed that the costing of “Best Effort” service should be a function of the forecast loading of the network and not (as is now the case) pretending that the network will be perfectly loaded at exactly the maximum allowed by the planning ratio and so taking only 20% of the cost of assured bandwidth.
- 5.14 ALTO agreed in general that Expedited traffic should attract a small premium hence a blending of the AF and the EF should be built into the model.
- 5.15 Magnet agreed, but believed this question was somewhat confusing. Magnet noted that Eircom offers three types of traffic conveyance, real time, best effort and assured. Thus, Magnet believed that Eircom have pitched assured traffic conveyance

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in between the other two, however, assured traffic will be sufficient to convey both TV and voice.

5.16 In response to the issues raised above there is a need to clarify the services concerned. There are in fact three classes of service with respect to core conveyance on Eircom's NGN network. These include:

- a) AF
- b) EF
- c) The best effort class.

5.17 In ComReg Document No 10/70, the "real time" class of service encompasses the two first classes of service. ComReg would like to further clarify that the "real time" classes of service and therefore the AF traffic prices and the EF traffic prices are based on a blend of the Assured and Expedited traffic. ComReg agrees with BT and ALTO that expedited traffic should bear a price premium. ComReg believes that there should be a projected 50:50 split between ET and AF traffic.

5.18 With respect to the dimensioning of "best effort" traffic" ComReg believes that, today, Eircom's engineers must assume when dimensioning the network that the best effort traffic will use, at peak hour, 20% of its "commercial" speed. ComReg is of the view that it is unreasonable to expect Eircom's engineers to know in advance the exact load on the network for best effort traffic. ComReg believes that Eircom would have difficulties in determining the forecast loading of the modelled network since the modelled network does not reflect the current loading of Eircom's NGN network. Instead the model is a forward looking view, assuming all current leased lines are migrated to the NGN network (as explained in Section 4.71 of ComReg Document No 10/70). ComReg remains of the view that this approach is more scientific and forward looking than a forecast loading of the network, as suggested by BT. ComReg believes that using a different planning ratio could generate instability since with the progressive filling of the NGN core network, the planning ratio is going to evolve and therefore prices will also.

ComReg's Conclusion:

5.19 There are three classes of service with respect to core conveyance on Eircom's NGN network. These include:

- a) The assured traffic class
- b) The expedited traffic class
- c) The best effort class.

5.20 Given the importance of delivery of real-time traffic, it is reasonable that the transmission of real time traffic warrants an additional associated cost compared with best effort traffic. In saying that, the EF and AF prices are based on a blend of the EF and AF traffic, as set out above.

B. Price differentiation by geographic area:

Consultation Proposal:

5.21 As set out in ComReg Document No 10/70, geographic de-averaging is a method of determining charges or prices based on geographic regions. In general, the rationale

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for geographic de-averaging is to bring charges closer to their actual economic costs. De-averaged prices can be determined by density and distance.

5.22 In the context of the current review this dealt specifically with the geographic element of the pricing structure, which refers specifically to the *WEIL*, *WSEA Physical* and *WSEA Logical*. In ComReg Document No 10/70, ComReg set out that the proposed product differentiation was based on seven pricing options for this dimension depending on the geographical location of customers and of the handover nodes (same NGN node, same Region handover and different Region handover) and on the density of the area where the nodes are located, as shown in the diagram below.

Figure 1: Eircom's proposed pricing options relating to Eircom's published pricing tables for the wholesale NGN Ethernet leased line products

		Location of WEIL		
		Same NGN node (same agg. node)	Same Region Handover (same agg. region)	Different Regions (diff. agg. regions)
Location of WSEA	High density	<p>①</p> <p>Table 3</p> <p>no circuit based class of service</p>	<p>③</p> <p>Table 4</p>	<p>⑤</p> <p>Table 6</p> <p>(High Density to High Density)</p>
	Medium density	<p>②</p> <p>Table 3</p> <p>no circuit based class of service</p>	<p>④</p> <p>Table 5</p>	<p>⑥</p> <p>Table 7</p> <p>(Medium Density to High Density)</p> <p>⑦</p> <p>Table 8</p> <p>(Medium Density to Medium Density)</p>

5.23 As set out in ComReg Document No 10/70, ComReg also believed that this proposed price structure was adequate to take account not only of the density but also the distance, even if at an aggregate level. Eircom had also proposed to apply a gradient to the cost structure in order to determine the wholesale NGN Ethernet leased lines charges for high and medium density areas.

5.24 ComReg believed that a concern with the approach on de-averaged pricing proposed by Eircom related to the fact that more rural regions will be more expensive than the urban regions due to economies of scale. As a consequence of this, some existing or potential future key business areas in regions across the country may consider moving or relocating in urban regions to avail of lower Ethernet prices. High density regions have a lower unit cost per Mb/s than medium density regions and therefore the associated pricing for high density regions is lower. In order to mitigate against this risk in medium density regions of Ireland, ComReg was of the preliminary view that the 'high density' pricing approach should be applied to those medium density regions where there is an increased demand in a region, currently recognised as a medium density region which would lead to a lower unit cost per Mb close to or equivalent to that of a high density region. This may drive the re-designation of an aggregation node from medium to high density. It is envisaged that the node categorisation will be somewhat dynamic over time, as demand in regions change, impacting economies of scale and unit costs per Mb. Therefore, it is likely that the categorisation of aggregation nodes, into medium and high density, will be somewhat

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organic over time, whether it be as a result of foreign direct investment initiatives or changes in demands. ComReg believed that there may be a number of options to consider in terms of determining demand requirements for specific medium density regions. ComReg was of the preliminary view that the options include the following:

- Option 1: Bandwidth requirements;
- Option 2: Footprint requirements; or
- Option 3: Determined on a case by case basis by ComReg.

5.25 ComReg believed that demand requirements should be determined on a case by case basis and that any re-categorisation of aggregation nodes would be notified through the formal LLRO notification procedures.

5.26 ComReg was of the preliminary view that product differentiation by capacity and differentiation by geography appeared reasonable for *WEIL*, *WSEA Physical* and *WSEA Logical* but only if the principles of cost orientation and the avoidance of anti-competitive practices are adhered to.

Main issues raised by respondents:

5.27 BT disagreed with the de-averaged pricing approach for NGN Ethernet and stated that the leased lines market in Ireland has worked well on a national pricing basis and it considered that this should be extended to Eircom's wholesale Ethernet solutions. BT also believed that a single pricing approach (density) would encourage infrastructure investment from other operators in what are currently high and medium density areas, and confer lower prices into the low density areas.

5.28 As set out in ComReg Document No 10/70, prices set in this manner will more closely reflect underlying costs and should set more accurate price signals. In particular, all operators should face the correct signals as to whether it is better to rent or buy capacity. For example, because there would be no cross subsidy from urban areas based on Eircom's prices an alternative operator may be more likely to build its own infrastructure in some less densely populated areas than otherwise would have been the case. Conversely, in cities Eircom's prices will be lower than otherwise which should improve the competitiveness of services in these areas. As a result, this should help improve the competitiveness of Irish cities internationally. Under a national averaged pricing approach as competition develops in cities it is likely that, since they would by definition be above cost, Eircom would increasingly be unable to compete in these areas thereby eroding the profitability in urban areas required to subsidize rural pricing which would not recover the full costs under a nationally averaged pricing approach.

5.29 Eircom believed that demand for services in medium density areas should be determined jointly by ComReg and Eircom on a case-by-case basis. Eircom believed that the unit cost of conveying Ethernet packets across the Eircom NGN depends on a number of local factors that include – but are not limited to – bandwidth demand and footprint. Eircom believed that the level of complexity requires a case-by-case analysis of any proposals to re-classify nodes or regions due to step changes to demand. Eircom believed that this will involve re-visiting the cost modelling for the Eircom NGN to introduce changes to the component volumes, with a possible consequent change in the investment required. Eircom stated that the previous joint approach used to set initial prices will be appropriate again. ComReg agrees with Eircom's point that reclassification of NGN nodes and regions would have to be

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assessed on a case by case basis and may involve revisiting the NGN core model and updating it to reflect component volumes and changes in investment. The overall objective of the NGN aggregation node and extended node categorisation is to ensure that the associated charges lead to overall cost recovery.

- 5.30 E-net believed that while ComReg’s proposal to ensure that medium density areas could be reclassified as high density is a welcome one, E-net had concerns that it would be significant enough to ensure that rural and less-developed urban areas are not disadvantaged vis-à-vis urban centres. E-net noted that the MANs programme was specifically designed to deal with a lack of advanced broadband infrastructure within the regions and procuring competitively priced backhaul has been an ongoing issue for E-net, in particular where it comes to connecting MANs located in more remote areas. E-net would therefore be concerned if pricing principles based on density considerations were to drive an even greater wedge between less developed regions of the country and urban centres in terms of the price of leased line services. ComReg has considered this issue as part of the consultation process. While all cases will need to be assessed on a case-by-case basis ComReg believes that its approach is a balanced one while ensuring that Eircom meets its other regulatory obligations.
- 5.31 In addition, ComReg believes that it is reasonable to assume that geographic density occurs where industries are present in a particular location. ComReg also agrees with respondents’ views that industry is a driver in the provision of leased lines, as a residential customer is not a leased lines user. ComReg also agrees that geographic density and industrial locations are interlinked and that a large industry or industries in a low density population area could still generate demand for high capacity leased lines and thus be considered for high density pricing.
- 5.32 IDA Ireland noted, in its response, that it has established business parks in the key Gateway and Hub towns, in line with the national special strategy (“NSS”). The IDA believed that there was strong merit for defining these Gateway and Hubs as high density areas to assist in attracting sustainable investment and supporting regional development. In addition, the IDA also have established a number of land banks which in some cases are located close to but perhaps not within the boundary of the high density areas, as defined in the consultation process.
- 5.33 Examples of specific strategic sites are identified on the IDAs website¹⁹.
- 5.34 The IDA would be supportive of a mechanism whereby the above sites can avail of the proposed discounted high density regions pricing structure given their role as a provider of investment, exports, jobs and innovation in the economy.
- 5.35 In addition, the IDA recognised that in exceptional circumstances some of their clients may be located in a privately owned business park, or on their own property, which is not located in the high density regions pricing structure. Where these clients rely significantly on telecoms infrastructure and cost models to support their business, the IDA would support a mechanism which facilitates these enterprises availing of the high density regions pricing structure.

¹⁹ <http://www.idaireland.com/locations/strategic-sites/>

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ComReg's Conclusion:

- 5.36 Product differentiation by capacity and differentiation by geography is reasonable for setting prices for NGN Ethernet products, including *WEIL*, *WSEA Physical* and *WSEA Logical*.
- 5.37 ComReg concludes that demand requirements will be determined on a case by case basis and that any re-categorisation of aggregation nodes and extended reach nodes will be notified through the formal LLRO notification procedures.
- 5.38 ComReg is of the view that demand is likely to be mainly driven by two scenarios:
- 1) Step changes in demand and organic growth in demand over time. These changes in demand are likely to be driven by increases in capacity requirements by the in-situ install base of end users and this will lead to migrations from legacy leased line products to NGN Ethernet products.
 - 2) New end users as a result of innovation and strategic investments. This is likely to be as a result of foreign direct investment which will increase capacity requirements and drive an increase in NGN Ethernet products.
- 5.39 ComReg believes that the classification of NGN aggregation nodes and extended reach nodes will be on the basis of that modelled in the BU LRAIC plus NGN core model. The costs of the NGN core are based on the inclusion of a defined number of NGN aggregation nodes and extended reach nodes. In addition, the proposed NGN Ethernet core conveyances prices are set on the basis of ensuring overall cost recovery.
- 5.40 As stated in Section 4 of this document on the price control period, ComReg will undertake an annual review of the BU NGN core model which will incorporate a review of NGN node roll-out and categorisation, and extend to a review of NGN core conveyance regions. Any changes identified, will be considered in aggregate with a review of other key assumptions and parameters. Any categorisation updates, as a result of the annual review, will be communicated to industry and any changes will be reflected in the WSEA /WEIL categorisation list in line with the LLRO notification procedures.
- 5.41 ComReg is also conscious that the NGN node roll-out is ongoing and demand is evolving. ComReg also acknowledges the IDAs support for a mechanism which would recognise the merits of reclassifying strategic sites as high density areas, which the IDA believes would assist in attracting sustainable investment and supporting regional development.
- 5.42 Any application, by industry or other agencies (such as the IDA), to request the re-categorisation of an NGN aggregation node or extended reach node from medium to high density must be submitted to ComReg. Any submission should clearly identify the basis of the demand that would support such an application. ComReg reserves the right to assess on a case by case basis changes to NGN aggregation nodes, and extended reach nodes, categorisation. ComReg will update industry on any proposed changes to NGN node, or extended reach node, categorisation through the Leased Line forum, with any updates reflected in the WEIL / WSEA categorisation list in line with the LLRO notification procedures. ComReg will also respond to the applicant with an assessment of any application raised and preliminary views on whether the application was deemed reasonable or otherwise. ComReg believes that

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a time period of at least one month from receipt of the application is reasonable for it to carry out such an assessment and to respond to the applicant concerned.

C. Gradients:

Consultation Proposal:

- 5.43 As set out in ComReg Document No 10/70, a gradient refers to the degree of a slope; in the telecoms environment it can be used in two different contexts. In the first context, gradients are algebraic tools aimed at producing a set of prices from a common base. A classic example of gradients is the distinction between weekly peak and off-peak, and weekend prices for (both wholesale and retail) termination charges. To the average termination charge, generally obtained as the result of a cost model that does not factor in time of the day and day of the week, a gradient is applied to obtain week and weekend prices, and within the week prices between peak and off peak prices.
- 5.44 In the context of setting wholesale NGN Ethernet leased lines charges, the gradient, is usually measured with reference to the cost of a base unit, generally 1 Mb/s (this is called the pivot). The overall charges for the product increase by capacity (measured in Mb/s) but the charges of each 1Mb/s unit diminishes with capacity. In other words, the charges increase with the size of the connection, but less than proportionally. The gradient measures the extent of this proportionality.
- 5.45 In ComReg Document No 10/70, ComReg discussed the following areas in relation to gradients:
- How and when should a gradient be used
 - Why should a gradient be used
 - Are gradients applied in other countries.
- 5.46 Please refer to ComReg Document No 10/70 for a further discussion on the above points.
- 5.47 In ComReg Document No 10/70, ComReg was of the preliminary view that it is reasonable to apply a gradient in order to determine the charges for leased line products within the market for wholesale terminating segment of leased lines so long as Eircom comply with its other obligations, including its cost orientation obligation and its obligation not to create a margin (price) squeeze.
- 5.48 The current charges for the legacy products, WLLs and PPCs, are based on gradients. Gradients are also applied in other jurisdictions including France, the Netherlands and Belgium.

Main issues raised by respondents:

- 5.49 The majority of operators agreed with ComReg's proposals regarding gradients.
- 5.50 BT agreed with the concept of gradients however, BT considered that the gradient provided by Eircom was excessive. BT's concerns with the application of the gradient are further discussed in Section 7.

ComReg's Conclusion:

- 5.51 ComReg concludes that it is reasonable to apply a gradient in order to determine the charges for leased line products within the market for wholesale terminating segment of leased lines, so long as Eircom comply with its other obligations, including its cost

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orientation obligation and its obligation not to create a margin (price) squeeze. The application of gradients is further discussed in Section 7 of this document.

D. Cost orientation and recovery of costs:

Consultation Proposal:

- 5.52 In ComReg Document No 10/70, ComReg was of the preliminary view that the principle of cost orientation should be applied at a high level of aggregation, i.e. the price structure to be adopted should ensure that total wholesale revenues recover the total costs. Specifically, given the different assets involved in the provision of the different parts of the leased lines products, this condition should separately be applied to *WEIL*, *WSEA physical* and *WSEA logical*.
- 5.53 The availability of a BU-LRAIC plus model provides ComReg with a very useful tool to assess, given volumes, an efficient level of total costs to be recovered. As set out in Section 4, the model takes account of the fact that the total costs will be allocated to other increments (on top of leased lines as a whole), so that over- or under-recovery of costs from other Eircom products can consistently be avoided. As set out earlier in the document, the cost standard is BU-LRAIC plus, which is in line with ComReg's main regulatory objective, i.e. to provide incentives to invest in infrastructure.
- 5.54 With regard to the total revenues, ComReg believed that this should be assessed on the basis of Eircom's current price structure and product volumes, appropriately categorised by capacity and geography.
- 5.55 ComReg also believed that in setting any maximum prices it would also be necessary to ensure that there was appropriate economic space between its wholesale products, that the principle of 'replicability' was adhered to and that there was no margin (price) squeeze between its wholesale and retail products. In addition, in setting any maximum prices it would also be necessary that the prices did not give rise to eviction of OAOs who had already invested in network build.

Main issues raised by respondents:

- 5.56 BT and ALTO disagreed on the basis that they believed a key aim is that costs incurred by Eircom in the core and network management systems should not be inappropriately loaded into the access parts of the network. BT and ALTO were of the view that a high level of aggregation carries the risk that costs will be shifted by Eircom from the core and management features to the access network. ComReg wishes to confirm that access network costs are recovered by WSEA physical prices while core network costs are covered by WSEA logical prices.
- 5.57 E-net disagreed and stated that while oversight at a high level of aggregation provides a useful starting point to confirm whether or not Eircom is complying with its regulatory obligations, a greater level of scrutiny was required. E-net suggested that scrutiny involving increased granularity of costs and how these apply to particular NGN Ethernet leased line products will be necessary, at least in the short-to-medium term, for ComReg to have sufficient confidence that Eircom is fully compliant with all relevant obligations. ComReg would like to point out that a significant modelling exercise has been carried out to determine the costs and to calculate the maximum prices of each regulated element of NGN Ethernet products.

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ComReg's Conclusion:

5.58 While ComReg notes the concerns raised by operators, it should be noted that a significant modelling exercise has been carried out to ensure these concerns do not materialise. There is also a requirement on Eircom to maintain appropriate Separated Accounts, including underlying documentation which supports the allocation methods applied to the costs, be it core or access to ensure appropriate allocation of costs. The BU-LRAIC plus model will also provide an independent assessment of these allocation rules to ensure prices are reflective of cost causation principle. Further, at a macro level, the principle of cost orientation will be monitored at a high level of aggregation by ComReg, i.e. the price structure adopted should ensure that total wholesale revenues recover the total costs.

E. Avoidance of anti-competitive practices:

Consultation Proposal:

5.59 In ComReg Document No 10/70, ComReg discussed the fact that one of ComReg's regulatory objectives was to ensure that Eircom did not engage in anti-competitive practices by means of price setting. Anti-competitive price setting practices could mean setting "relatively high" charges in the non-competitive segments of the market (at the moment the low bandwidth circuits) and "relatively low" charges in the segments of the market which potentially could tend towards being more competitive (10 Mb/s and above).

5.60 One point considered by ComReg in this regard was whether an OAO, given its own volumes, and most importantly its own customer base, would be able to replicate Eircom's price structure, and in particular its "relatively low" charges for higher bandwidth products. The underlying assumption of this hypothetical exercise was that OAOs cannot move their customer base from the "relatively cheap" high bandwidth customers towards the "relatively profitable" low bandwidth customers. Hence, by multiplying Eircom's wholesale charges by the product volumes of different alternative operators, it may be possible to determine total revenue which could be compared with the total cost of the alternative operator.

5.61 Since the concepts discussed in Section 3 of this document and the objectives to be achieved (namely providing incentives for OAOs to climb the ladder of investment) were similar, ComReg believes that Section 3 is relevant for analysis on the options available for the most appropriate cost base, cost standard, model type, hypothetical operator market share and product analysis. ComReg is of the view that the principles set out in section 3 in relation to the Margin Squeeze test to assess the appropriate economic space between any of the current or future variants of wholesale products in the market for wholesale terminating segment of leased lines is relevant in terms of adhering to the avoidance of anti-competitive practices.

ComReg's conclusion:

5.62 While no specific question was included in the consultation on this point, one of ComReg's main regulatory objectives is to ensure that Eircom do not engage in anti-competitive practices by means of price setting.

5.63 While Section 3 of this document discusses the principles for assessing the Margin Squeeze to ensure that there is an appropriate economic space between the products and services in the market for wholesale terminating segments of leased lines,

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Section 7 of this document sets out the application of this assessment. ComReg believes that the application of the Margin Squeeze test between the products and services in the market should ensure that the prices set are not anti-competitive.

6 Consultation on proposed Leased Line Annual Rental Charges

Introduction

- 6.1 Sections 3, 4 and 5 set out ComReg's conclusions on the principles regarding the costing methodology, the cost modelling inputs and the pricing approach. This section now seeks the views of interested parties regarding the draft annual rental maximum charges for products in the market for wholesale terminating segments of leased lines, which have been determined as a result of the application of the various principles concluded on in earlier sections of this document.
- 6.2 Since publication of ComReg Document No 10/70 and the submission and analysis of a number of operator responses to that consultation, ComReg has carried out an extensive cost modelling exercise in order to determine the relevant and appropriate maximum charges for WLLs, PPCs and NGN Ethernet. Two distinct models have been developed in this regard, one model relating to the core network, namely a legacy core model, and a second model on the NGN network, namely the NGN core model. ComReg believes that the draft maximum charges determined as a result of the extensive cost modelling exercise ensures that Eircom is in compliance with its obligations.
- 6.3 Set out below are the details of the proposed approach used in arriving at the proposed annual rental maximum charges. The proposed maximum charges are referred to in Appendix A. ComReg is not proposing any material changes to the prices in the existing network price list as published by Eircom, given that there have been recent reductions to PPC prices of approximately 15% over the past eighteen months which has brought these prices in line with the price control obligations. In addition, NGN Ethernet prices were launched in 2010 on foot of a cost modelling exercise carried out by ComReg at that time. ComReg now believes that the current maximum prices in the market are in line with the principles set out in this document.
- 6.4 This section discusses each of the relevant products in the market for wholesale terminating segments of leased lines:
1. WLLs
 2. NGN Ethernet
 3. PPCs
- 6.5 ComReg does not propose to publish prices for WEA products, as ComReg does not believe it is proportionate to do so. ComReg understands that no WEA uncontended services have been sold by Eircom Wholesale so far, indicating that there is no demand for this product. ComReg, however, does, reiterate that if products are sold in the future, they must be sold at cost oriented prices.
- 6.6 In summary, PPCs and NGN Ethernet prices will be based on the outputs of the BU LRAIC plus cost modelling exercise(s). ComReg has reconsidered its initial proposal regarding the approach for setting WLL charges and its preliminary views are outlined below. Each product is discussed in detail below.

1. WLLs

- 6.7 Following on from Section 3, ComReg is of the preliminary view that the current

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WLL charges as published in Eircom's network price list should now be set as the maximum price ceiling for WLLs. The main objective of the price control remedy in the market for wholesale terminating segments of leased lines is to allow for the development of a framework that promotes efficient infrastructure investment and encourages OAOs to climb the ladder of investment, for example through the mandated PPC product. This should therefore facilitate effective and sustainable competition. As ComReg highlighted in ComReg Consultation Document No. 10/70, the importance of WLLs in the Irish market has decreased steadily over the last number of years as a result of take up of PPCs. ComReg is conscious that the current WLL prices are based on a historic retail minus basis, where there is no longer an obligation to provide a minimum set of retail leased lines. However, on the basis of proportionality ComReg is of the preliminary view that the maximum WLL prices should be set on the basis of the current published prices, which will not distort the current in-situ customer base and will set the right signals for infrastructure investment.

- 6.8 In section 7, ComReg is further specifying the Margin Squeeze test to ensure that there is a sufficient margin between WLLs and PPCs, and to determine the minimum price floors for WLLs. While ComReg is of the preliminary view that the current WLLs should be set as a maximum price ceiling, the existence of a minimum price floor offers Eircom the opportunity to lower WLL prices, as long as it does not lead to an under-recovery of costs.

ComReg's preliminary view:

- 6.9 ComReg is of the preliminary view that the current legacy WLL charges, per Eircom's network price list, should be set as the maximum price ceiling charges for WLLs. These charges are referred to in Appendix A of this document.
- 6.10 ComReg is also of the preliminary view that the minimum price floors for WLLs (further specified in Section 7) will allow Eircom the opportunity to offer lower WLL prices, so long as it does not lead to an under-recovery of costs. In addition, ComReg is of the preliminary view that the minimum price floors for WLLs should not be published, but will be monitored by ComReg.

2. PPCs

- 6.11 In Section 5, ComReg concluded that PPC prices will continue to be based on a national averaged pricing approach and there will be no differentiation in PPC prices in terms of geographical location. ComReg is of the preliminary view that the pricing structure of PPC should also continue, where the current pricing structure has the following elements:

- PPC transport (interconnect) links ("TLs")²⁰
- PPC end user links ("EULs"), where an EUL is made up of:
 - Local access - an EUL local ends²¹
 - Core conveyance which is made up of EUL main link access ("MLA") and EUL main link distance ("MLD") elements²².

²⁰ PPC TLs is the **point of handover** to the OAO, between the OAO designated aggregation node and the OAO network.

²¹ PPC EUL local access is the **access** element from the MDF/ODF in the nearest serving Eircom Martis node to a NTU in the end-users premises.

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- 6.12 ComReg proposes that PPC interconnection rental maximum charges will continue to be based on the current PPC TL pricing structure, which will continue to be delivered using customer sited handover (“CSH”) or in span handover (“ISH”) based on interconnection speeds of STM1, STM4 or STM16.
- 6.13 ComReg proposes that PPC EUL local access prices should continue to be based on copper and fibre access charges depending on the speed of the service.
- 6.14 ComReg also proposes that PPC core conveyance should continue to be made up of a non-distance dependent PPC EUL MLA charge and the distance dependent PPC EUL MLD charge.
- 6.15 ComReg also proposes that the same pricing structure be retained for the WEA uncontended product. ComReg believes that the current WEA product is based on a PPC, with incremental Ethernet equipment added.

- **PPC interconnect links**

ComReg’s preliminary view:

- 6.16 ComReg is of the preliminary view that the maximum charges for the PPC interconnection links, as published in Eircom’s network price list, should remain in place. ComReg will keep these maximum charges under review. Eircom should ensure that these maximum charges are in compliance with its cost orientation obligations.

- **PPC Local access**

- 6.17 PPC local access connects the end users premises to the nearest serving Eircom exchange. PPC local access prices are distant dependant; where up to the first 1.5 kilometres is recovered through the standard annual rental price and there is an incremental charge per 100 metres thereafter²³. ComReg believes that PPC local end prices will continue to be based on copper and fibre access charges depending on the speed of the service. In general this can be summarised as follows:
- a) ComReg proposes that PPC local access will continue to be delivered over copper pairs for circuit speeds ranging from 64Kb/s to 1Mb/s.
 - b) ComReg proposes that PPC local access will continue to be delivered over a mix of copper pairs and fibre pairs for circuit speeds ranging from 1Mb/s to 2Mb/s. Therefore, there is a calculation carried out to determine average copper / fibre prices based on the % mixture of copper pairs and fibre pairs used to deliver PPCs greater than 1Mb/s.
 - c) ComReg proposes that PPC local access will continue to be delivered over fibre pairs for circuit speeds greater than 2Mb/s. This applies to 34Mb/s, 45Mb/s and 155Mb/s PPC EULs.

²² PPC EUL MLA and MLD is the **conveyance** element between the OAO designated Eircom Martis node and the Eircom Martis node connection to the end user.

²³ Except for circuit speeds up to 1Mb/s, which is based on the standard annual charge only.

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a) PPC local end prices – 64Kb/s to 1Mb/s

6.18 ComReg proposes that PPC local access copper access prices are based on the cost of the local loop plus the annualised costs of the network terminating unit (“NTU”) on the customer premises. The cost of the local loop is determined as an output of ComReg’s model (“LLU model”) built for the purposes of determining LLU and SLU monthly rental charges (ComReg Document No. 10/10). The LLU model determines the nationally averaged cost of a local loop in Ireland. ComReg proposes that the nationally averaged cost of a local loop should be adjusted to reflect the exchanges in Ireland where leased lines services are delivered. PPC local ends are delivered primarily using two copper pairs; however, there are PPC local ends delivered over one copper pair. An analysis of the in-situ base of PPC local ends up to 1Mb/s was completed to determine the ratio of PPC local ends delivered over two copper pairs versus one copper. The adjusted local loop input price for leased lines is then multiplied by the ratio of copper pairs required to determine the total cost of the local loop to be included. ComReg proposes that the annualised cost of an NTU to provide copper access should be added.

ComReg’s preliminary view:

6.19 ComReg is of the preliminary view that the maximum price for PPC local; access circuit speeds of 64Kb/s to 1Mb/s should be calculated as follows:

The annualised cost of copper pairs + annualised NTU costs.

6.20 ComReg is of the preliminary view that the maximum PPC local access circuits between 64kb/s and 1 Mb/s are in line with ComReg’s conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. These maximum charges also ensure that Eircom are in compliance with its cost orientation obligations.

6.21 The proposed maximum prices for PPC local access circuit speeds of 64Kb/s to 1Mb/s are referred to in Appendix A.

b) PPC local access – 1Mb/s to 2Mb/s

6.22 PPC local access between 1Mb/s and 2Mb/s are delivered using a combination of delivery over copper pairs and over fibre pairs. An analysis of the in-situ base of PPC local ends between 1Mb/s and 2Mb/s was carried out and the percentage of copper pairs versus fibre pair delivery was determined.

6.23 The copper access price inputs are as set out above, i.e. the annual cost of copper pairs plus the annualised NTU costs. The fibre access input price is based on the bottom up modelled annual costs of fibre access plus the annualised SDH transmission costs.

6.24 The price calculated relates to the first 1.5 kilometres and there is an incremental cost per 100 metres thereafter based on the same mix of copper and fibre.

ComReg’s preliminary view:

6.25 ComReg is of the preliminary view that the maximum prices for PPC local access circuit speeds between 1Mb/s and 2Mb/s should be calculated as follows:

*(Annualised cost of Copper access * % copper pairs delivery) + (Annualised cost of Fibre access * % fibre pairs delivery)*

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- 6.26 Once Eircom update its prices in line with the formula above, ComReg is of the preliminary view that the maximum PPC local access circuits between 1 Mb and 2Mb/s will be in line with ComReg’s conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. These maximum charges also ensure that Eircom are in compliance with its cost orientation obligations.
- 6.27 The proposed maximum prices for PPC local access circuit speeds of between 1 Mb and 2 Mb/s are referred to in Appendix A and Eircom has agreed to update these prices in its Eircom Network price list to ensure consistency with the formula above, shortly.

c) PPC local access – 34Mb/s to 155Mb/s

- 6.28 ComReg proposes that PPC local access prices for circuit speeds, ranging from 34Mb/s, are based on the cost of fibre access pairs plus SDH transmission costs as the implied fibre optic access costs to connect from the customers’ premises to the nearest serving Eircom exchange.
- 6.29 For the purposes of the NGN Ethernet model, ComReg has modelled the costs of fibre access. This is discussed in Section 4. The proposed prices for NGN Ethernet fibre access were developed on the basis of a nationally de-averaged pricing approach based on urban, regional and rural geographical areas.

Figure 2: NGN Ethernet fibre access prices – annual prices for the first 500m

Urban	Provincial	Rural
€2,100	€2,162	€3,187

- 6.30 In Section 5, ComReg concluded that a nationally averaged pricing approach will continue for PPC products. In this regard, ComReg believes that there are now two options to consider:
- a) Take the rural input price, less the cost of NGN Ethernet NTU, as the national averaged price. This creates an incentive to move from PPCs to NGN Ethernet. It is also likely to be more reflective of the forward looking nationally blended price of PPC fibre access as PPCs migrate to NGN Ethernet, which is likely to occur in greater volumes in more densely populated areas.
 - b) Calculate a weighted average price of urban, provincial and rural, less the cost of NGN Ethernet NTU, as the nationally averaged input price. This is reflective of the current distribution of fibre access lines nationally, but is not likely to be reflective of the forward looking nationally blended price of PPC fibre access as PPCs migrate to NGN, which is likely to occur in greater volumes in more densely populated areas.
- 6.31 ComReg is of the preliminary view that by using the rural NGN Ethernet fibre access price as an input to PPC local end fibre access ensures compliance with the cost orientation obligation and is forward looking as migration towards NGN will probably occur first in more densely populated areas. For the provision of PPCs, it is necessary for Eircom to install SDH equipment on the access part of the network,

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both at the customer premises and the customer exchange. By using the SDH equipment, a circuit can be created on the fibre link between the customer premises and the customer exchange. The SDH equipment required for the provision of fibre access is dedicated to each customer and not shared among several customers. ComReg believes that this SDH equipment is incremental for the provision of fibre access and therefore must be incorporated into the price of PPC EUL local ends. It should be noted that NGN Ethernet fibre access prices already include fibre NTU costs and that these costs must be removed from the NGN Ethernet fibre access prices in order to compute PPC EUL fibre prices.

- 6.32 The price calculated relates to the first 1.5 kilometres and there is an incremental cost per 100 metres thereafter.

ComReg's preliminary view:

- 6.33 ComReg is of the preliminary view that the maximum prices for PPC local access circuit speeds between 34Mb/s and 45Mb/s should be calculated as follows:

The annualised cost of fibre pairs + annualised SDH equipment costs

- 6.34 ComReg is of the preliminary view that the maximum PPC local access circuits between 34Mb/s and 45Mb/s are in line with ComReg's conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. These maximum charges also ensure that Eircom are in compliance with its cost orientation obligations.

- 6.35 The proposed maximum prices for PPC local access circuit speeds of between 34 Mb/s and 45 Mb/s are referred to in Appendix A.

Q. 1. Do you agree with ComReg's proposed approach to determining PPC fibre access prices? Please provide reasons for your response.

• PPC core conveyance pricing

- 6.36 In Section 3, ComReg concluded that PPC prices shall be based on a BU LRAIC plus model of the legacy core network. An analysis was carried out comparing the modelled costs of the legacy core model and the target prices required to ensure cost recovery. The results of this cost recovery analysis demonstrated that the current PPC core conveyance prices are in line with modelled costs and therefore ensure that there is overall cost recovery in the legacy core network.

- 6.37 ComReg is of the preliminary view that PPC core conveyance should continue to be made up of a non-distance dependent MLA charges and a distance dependent MLD charge. PPC MLAs recover the non-distance costs which are primarily made up of leased lines node costs, SDH transmission equipment costs and WDM multiplexing costs. PPC MLD charges primarily recover trench and fibre costs.

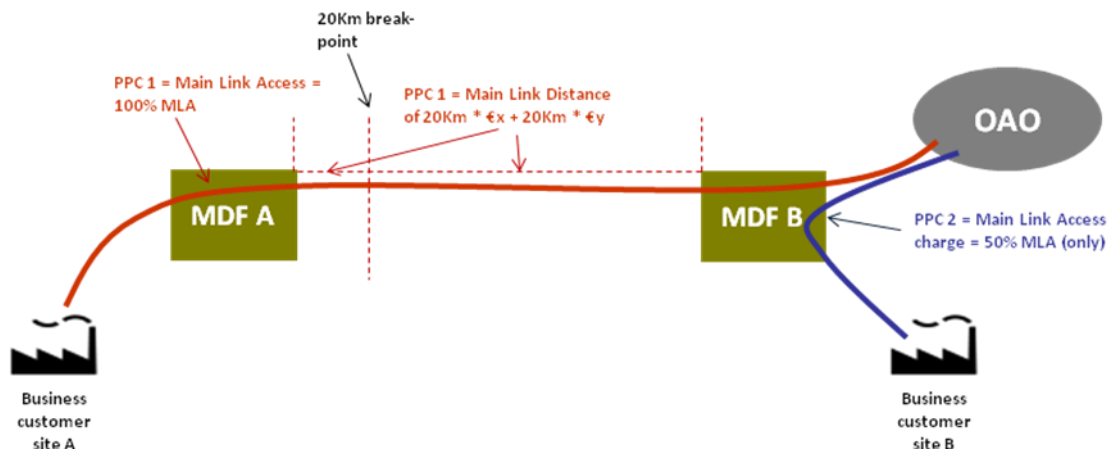
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Figure 3: Illustration of current PPC core conveyance pricing

Examples of the current pricing structure for PPC core conveyance:

* PPC 1 is connecting from MDF A where the end user is located to MDF B where the OAO is interconnected

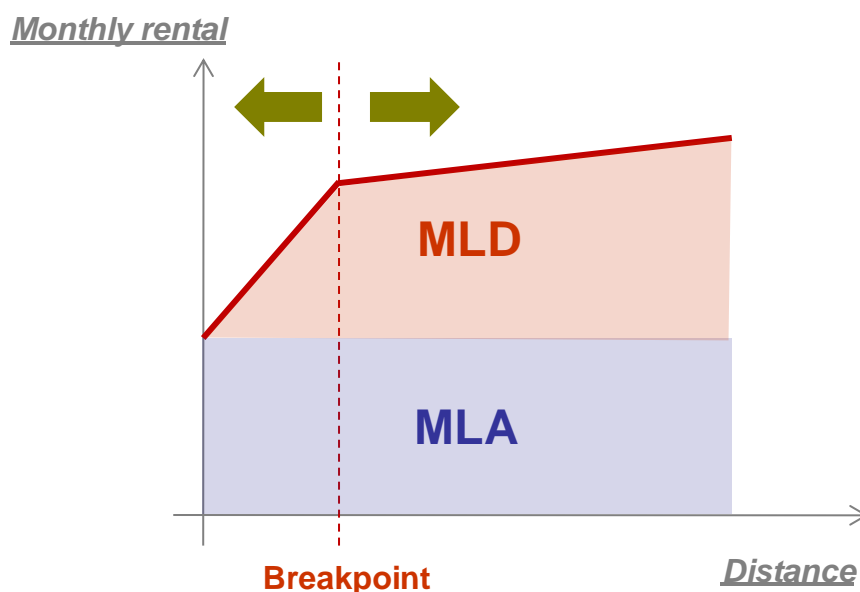
* PPC 2 is connecting across MDF B only, as the end user and the OAOs point of interconnection is the same MDF.



- 6.38 ComReg is of the preliminary view that the current pricing structure should continue whereby 50% of the MLA is charged when an OAO end user and the OAO point of interconnection is served from the same Eircom exchange. ComReg believes that this provides incentives to deploy capillary networks up to existing Eircom exchanges which incentivises infrastructure-based competition.
- 6.39 Where an OAO end user and the OAO point of interconnection is served from different serving Eircom exchanges, then ComReg is of the preliminary view that 100% of the MLA charge is applicable plus the respective distance dependent MLD charge.
- 6.40 Up until now, the current MLD pricing structure had a break-point at 20km, where there is a differentiation between the charges per km either side of this breakpoint. The left hand side of the break-point (price below the breakpoint) represents a higher unit costs because when the distance between the OAO point of presence and the serving Eircom exchange is low, this means that the PPC link is using parts of the network that are closer to the exchanges. These parts of the core network are therefore very capillar in order to connect exchanges and concentrate a low level of traffic, resulting in low economies of scale and high unit costs. On the contrary, when the distance between the OAO point of presence and the customer exchange is above the break-point, this means that the PPC link is using parts of the core network that are further to exchanges and that in aggregate means a lot of traffic resulting in high economies of scale and low unit costs.

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Figure 4: Illustration of PPC MLD break-point



6.41 As part of the cost modelling exercise and the review of the leased line charges, ComReg noted an anomaly with respect to the break-point for MLD between PPCs and WLLs. The break-point for WLLs is 30km, while the break-point for PPCs is 20km. However, Eircom has agreed to change the breakpoint for PPCs so that the breakpoint is now consistent with WLLs at 30km. ComReg believes that by increasing the break-point for PPCs MLDs to 30km, that this will address the anomaly between PPCs and WLLs and also create a greater incentive for OAOs to move to infrastructure investment because it will create incentives to buy PPCs for OAOs which have a very capillary network. Indeed, increasing the breakpoint for PPCs and leaving the price after the breakpoint as it is leads to a decrease in the price before the breakpoint.

6.42 While a sensitivity analysis was carried out by ComReg on the change to the breakpoint for PPCs, there is no material impact on OAOs currently using PPCs, by changing the MLD break point from 20km to 30km. However, Eircom has agreed to update the relevant PPC charges, in the Eircom network price list, to account for this anomaly, shortly.

ComReg's preliminary view:

6.43 ComReg is of the preliminary view that the current pricing structure for PPCs core conveyance should be maintained and that the PPC MLD break-point should be at 30km.

6.44 Once updated for the change in breakpoint to 30km, ComReg is of the preliminary view that the maximum PPC core conveyance charges, will be in line with ComReg's conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. These maximum charges also ensure that Eircom are in compliance with its cost orientation obligations.

6.45 The maximum prices for PPC core conveyance are referred to in Appendix A.

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3. NGN Ethernet

6.46 As outlined in ComReg Document No 10/70, there are three main elements to the NGN Ethernet pricing:

- A. Wholesale Ethernet Interconnection Link (“WEIL”)²⁴
- B. Wholesale Symmetrical Ethernet Access Physical (“WSEA Physical”)²⁵
- C. Wholesale Symmetrical Ethernet Access Logical (“WSEA Logical”)²⁶.

6.47 Eircom’s proposed wholesale NGN Ethernet leased lines prices are set out in Eircom’s network price list²⁷.

6.48 In summary, these are as follows:

	WEIL	WSEA Physical	WSEA Logical
Geographic area	<u>Urban, Provincial & Rural</u>	<u>Urban, Provincial & Rural</u>	<u>High Density & Medium Density categorised into specific geographical regions and combinations thereof</u>
Speed	1,000 Mb/s and 10,000Mb/s	1,000 Mb/s	10 Mb/s to 1,000 Mb/s

6.49 ComReg concluded in Section 5 that the pricing approach for Eircom's wholesale NGN Ethernet leased lines is a nationally de-averaged pricing approach. To ensure that Eircom’s pricing approach does not create anti-competitive effects and is consumer friendly, ComReg has carried out an assessment to ensure that the pricing approach is in line with ComReg’s objectives as set out in the Communications Regulation (Amendment) Act 2007.

6.50 This sub-section of the document contains a further consultation on the application of the pricing principles in order to determine the draft prices associated with NGN Ethernet.

6.51 Each of the NGN Ethernet products is discussed below.

A. WEILs

6.52 The WEIL is the point of handover to the OAO, between the OAO designated aggregation node and the OAO network. There is also a WEIL product available where the point of handover is between the OAO designated edge node and the OAO network, where this product is referred to as edge node handover (“ENH”).

²⁴ WEIL is the point of handover to the OAO, between the OAO designated aggregation node and the OAO network.

²⁵ WSEA physical is the **access** element from the ODF in the nearest aggregation Eircom node to the NTU in the end-users premises.

²⁶ WSEA logical is the **conveyance** element between the OAO designated aggregation node and the aggregation node connection to the end user.

²⁷ Network price list v4.0– refer to service schedule 013 and service schedule 014

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Figure 5: Summary of WEIL offers

Point of aggregation	Handover option	Circuit speed
Designated NGN aggregation node	CSH	1,000Mb/s
	ISH	1,000Mb/s
	IBH	1,000Mb/s and 10,000Mb/s
Designated NGN edge node	CSH	10,000Mb/s

6.53 WEILs are offered based on circuit speeds of 1,000Mb/s and 10,000Mb/s.

6.54 WEILs, where the point of handover is to the OAO designated aggregation node, are offered based on a number of handover options:

- Customer sited handover (“CSH”)
- In span handover (“ISH”)
- In building handover (“IBH”)

6.55 CSH involves providing a dedicated fibre access between the OAO designated aggregation node and the OAO network located in the OAOs premises. ComReg therefore, proposes that CSH prices should incorporate the costs of the fibre access network plus the node costs associated. ISH involves providing a dedicated fibre access between the OAO designated aggregation node and the OAO network located at a chamber close to the OAO designated aggregation node. The ISH option utilises less of the fibre access network than CSH, therefore ComReg proposes that ISH prices should incorporate some costs of the fibre access network plus the associated node costs. IBH involves providing a dedicated fibre across the OAO designated aggregation node as the OAO is co-located in the Eircom aggregation node. ComReg proposes that IBH prices should be based primarily on the node costs associated, which incorporates the fibre across the exchange.

6.56 As highlighted above ENH is delivered where the point of handover is between the OAO designated edge node and the OAO network. The current ENH product is delivered based on circuit speeds of 10,000Mb/s and delivered as a CSH. Due to the design of Eircom’s NGN core network, the ENH product effectively involves building a dedicated aggregation node on the OAOs premises. Building a dedicated aggregation node on an OAO premises involves significant associated equipment costs. It is proposed that these costs of a dedicated aggregation node be recovered over a period of 3 or 5 years, in addition to the dedicated fibre related costs.

ComReg’s preliminary view:

6.57 ComReg is of the preliminary view that the maximum WEIL charges, as referred to in Appendix A, are in line with ComReg’s conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. These maximum charges also ensure that Eircom are in compliance with its cost orientation obligations.

B. WSEA physical

6.58 The WSEA physical element of NGN Ethernet is delivered over fibre pairs. In Section 4 of this document, ComReg set out its view on the cost modelling approach for the fibre access network.

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6.59 As set out in Section 5, NGN Ethernet product prices will be based on a nationally de-averaged pricing approach. ComReg remains of the view that geography and capacity are important drivers of cost in the fibre access network. ComReg proposes that WSEA physical prices should be based on the following geographical criteria:

- Urban
- Provincial
- Rural

6.60 ComReg believes that the cost of access delivered over fibre does not vary with circuit speed; therefore ComReg proposes that fibre access prices should be based on a single 1,000Mb/s price. WSEA physical prices are distant dependant, where up to the first 500 metres is recovered through the standard annual rental price and ComReg proposes that there is an incremental charge per 100 metres thereafter.

6.61 ComReg also proposes that in addition to the fibre pairs required, a NTU is required to terminate the access circuit in the customer’s premises.

ComReg’s preliminary view:

6.62 ComReg is of the preliminary view that the maximum WSEA physical charges, as set out below, are in line with ComReg’s conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. ComReg considers that these maximum charges also ensure that Eircom are in compliance with its cost orientation obligation.

Figure 6: WSEA physical annual rental charges

<u>Urban</u>	<u>Provincial</u>	<u>Rural</u>	
€2,100	€2,162	€3,187	First 500m
€154	€166	€324	Per additional 100m or part thereof

C. WSEA logical

6.63 The WSEA logical is the core conveyance element of the NGN Ethernet product. In Section 3, ComReg concluded that NGN Ethernet prices shall be based on a BU-LRAIC plus model of an NGN core network. As set out in Section 5, ComReg is of the view that geography and capacity are important drivers of cost in the core network, therefore it is proposed that WSEA logical prices are based on the following:

- circuit speed
- pricing gradient
- geographical location
- quality of service requirements.

6.64 Each of these elements is discussed below.

- **Circuit Speed**

6.65 WSEA logical prices will be available on circuit speeds from 10Mb/s and up to 1,000Mb/s delivered over core fibre.

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• Pricing gradient

- 6.66 As set out in Section 5, ComReg has concluded that it is reasonable to apply a gradient in order to determine the charges for leased line products within the market for wholesale terminating segment of leased lines so long as Eircom comply with its other obligations. The overall charges for the product increase by capacity (measured in Mb/s) but the charges of each 1Mb/s unit diminishes with capacity. In other words, the charges increase with the size of the connection, but less than proportionally. The gradient measures the extent of this proportionality.
- 6.67 As noted in ComReg Document No 10/70, gradients are applied in the context of setting leased lines charges in other jurisdictions including France, Netherlands and Belgium, and are reflected in the current PPC and WLL charges.
- 6.68 As noted in Section 5, BT agreed with the concept of gradient, however, BT considered that the gradient provided by Eircom was excessive. As ComReg understands it BT's main concerns surrounds the application of the pricing gradients versus capacity restrictions in practice on the NGN core network.
- 6.69 As set out in ComReg Document No 10/70, a gradient, is usually measured with reference to the cost of a base unit, generally 1 Mb/s (this is called the pivot). In the case of NGN Ethernet Leased Lines speeds extend to 1,000Mb/s therefore the gradient is constructed based on leased line speeds up to 1,000Mb/s. However, in practice leased line speeds up to 1,000Mb/s are only available for the 'best effort' class of service. EF and AF classes of service are generally only available for leased line circuit speeds up to 150Mb/s and 300Mb/s respectively. As explained earlier, given that the model includes the current level of traffic on Eircom's core legacy network and by using these traffic volumes as a basis for the traffic on the NGN core network (including lines with speeds of 1,000Mb/s), these capacity restrictions cannot be taken into account in the model.
- 6.70 As ComReg understands it, with leased line circuit speed restrictions in relation to core conveyance; there is a possibility that the price gradient could be excessive in cases where OAOs wish to avail of the EF and AF classes of service NGN Ethernet products.
- 6.71 The launch of traffic based class of service NGN Ethernet core conveyance products has alleviated some of the problems that may have been caused by capacity restriction of the NGN core network. OAOs can avail of up to 10% EF, 20% AF and 70% best effort on 1,000 Mb/s leased line circuit speeds over the core network.
- 6.72 As part of the Leased Lines Forum Eircom identified that network dimensioning has created capacity restrictions for real time classes of service. At the Forum, Eircom has also committed to the possibility of increasing the EF class of service capacity availability from 150Mb/s to 300Mb/s by the end of 2011 and has also committed to looking into eliminating capacity restrictions.
- 6.73 ComReg's approach on gradients is set on a longer term basis so that prices can be determined over a three year price control period. If ComReg were to reassess the NGN core model and revise the pricing gradients for capacity restrictions, in isolation from other model inputs, this could have a significant impact on NGN Ethernet WSEA logical prices, as in aggregate there must be overall cost recovery of the NGN core network. ComReg also believes that revising the price gradients, in

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isolation from other model inputs, would imply further revisions as capacity restrictions are eliminated on the core network, and this would lead to further WSEA logical price fluctuations and create uncertainty in the leased lines market. As set out in Section 4, ComReg will carry out an internal annual review of the main aggregated model inputs, including capacity restrictions on the NGN core network, to assess any material changes. If as a result of this review there are material changes, then Eircom may be required to revise its maximum charges as a result

ComReg's preliminary view:

- 6.74 ComReg is of the preliminary view that the current price gradient should remain in place to ensure price stability, but this is subject to Eircom continuously eliminating capacity restrictions on the NGN core network.

Q. 2. Do you agree with ComReg's approach on the application of the pricing gradient to WSEA logical prices? Please provide reasons for your response.

- **Geographical location**

- 6.75 In Section 5, ComReg concluded that a nationally de-averaged pricing approach shall be used to determine the prices of NGN Ethernet products. ComReg recognises that the costs of the core network are driven by the "topology" of the core network and in turn Eircom identifies two types of regions: high density and medium density. High density is based on eight urban aggregation regions while the medium density is based on nine provincial aggregation regions. In other words high density regions predominately refer to the major urban areas in the major cities such as Dublin, Cork, Limerick, and Waterford. Medium density regions refer to all other areas outside of the urban regions in the country.
- 6.76 The proposed WSEA logical prices are dependent on the geographical location of the end user, the geographical location of the OAOs point of interconnection and the categorisation (per table below) of the associated NGN aggregation nodes.
- 6.77 In addition to the NGN aggregation nodes, there is also an extended reach node product available. An extended reach node is an extension of the NGN core network and is connected directly via dedicated fibre to a specified NGN aggregation node. The extended reach nodes effectively extend Eircom's NGN core and thus national availability of NGN Ethernet. The costs of the extended reach node equipment and the costs of dedicated fibre are incorporated into ComReg's NGN core model and are recovered by the WSEA logical charge. Therefore, WSEA logical prices also apply to extended reach nodes, subject to the availability of dedicated fibre between the extended reach node and the specific NGN aggregation node it is directly connected to.
- 6.78 A full listing of the WEIL, WSEA and extended reach node categorisation is available to OAOs upon signature of an Eircom non-disclosure agreement.
- 6.79 WSEA logical pricing is not distant dependent and prices have been modelled on traffic dimensioned under the following scenarios of NGN node handover, same

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NGN region handover and different NGN region handover, further differentiated by high and medium density areas.

6.80 The table below demonstrates the pricing tables.

Figure 7: Pricing options relating to Eircom’s published pricing tables for the wholesale NGN Ethernet leased line products

Location of WEIL / Location of WSEA		Same NGN node (same agg. node)	Same Region Handover (same agg. region)	Different Regions (diff. agg. regions)
		High density	<p>1</p> <p>Table 3</p> <p>no circuit based class of service</p>	<p>3</p> <p>Table 4</p>
Medium density	<p>2</p> <p>Table 3</p> <p>no circuit based class of service</p>	<p>4</p> <p>Table 5</p>	<p>6</p> <p>Table 7</p> <p>(Medium Density to High Density)</p>	
	<p>7</p> <p>Table 8</p> <p>(Medium Density to Medium Density)</p>			

• Quality of Service

6.81 As set out in Section 5, ComReg is of the view that it is reasonable and in line with international best practice to differentiate Ethernet leased line products on the basis of the quality of service of conveyance.

6.82 Eircom offers two WSEA logical quality of service offerings:

- Circuit based class of service (“Cos”); and
- Traffic based CoS
 - **Circuit based CoS**

6.83 Circuit bases CoS is broadly offered based on two types of services in this regard:

- Best efforts; and
- Real time.

6.84 As set out in Section 5, real-time traffic requires end-to-end dedicated bandwidth which is reserved for the use of each real-time customer connection. A best efforts connection can share resources with other connections thereby achieving greater cost savings. Real time traffic, such as live voice, requires a higher performance and quality of service e.g. less latency, jitter and dropped packets, to ensure the end-to-end delivery of a coherent signal. The requirement of high performance and quality of service is not as vital for best efforts type traffic given that this relates to the delivery of data such as email. Given the distinction between the two types of services and as ComReg set out in Section 5, it is reasonable that the charges for real time traffic are higher than those for best efforts traffic.

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6.85 As set out in Section 5, ‘real time’ traffic can be further categorised as

- a) Assured traffic (“AF”)
- b) Expedited traffic (“EF”)

6.86 As described in Section 5, there are currently capacity restrictions applicable to the ‘real time’ classes of service, where the AF CoS is only available on circuit speeds up to 300Mb/s and the EF CoS is only available on circuit speeds up to 150Mb/s.

Figure 8: WSEA logical class of service summary (per Eircom product description)

Circuit based Class of Service Options	Committed Information Rate	Peak Information Rate	Queue	Maximum Class of Service Bandwidth
Option 1	CIR=100%	PIR=100%	All traffic is mapped into the Expedited Forwarding queue	<=150Mm/s
Option 2	CIR=50%	PIR=100%	All traffic is mapped into the Assured Forwarding queue	<=300Mb/s
Option 3	CIR=10%	PIR=100%	All traffic is mapped into the Assured Forwarding queue	<=300Mb/s
Option 4	CIR=5%	PIR=100%	All traffic is mapped into the Assured Forwarding queue	<=300Mb/s
Option 5	CIR=0%	PIR=100%	All traffic is mapped into the Standard queue	<=1,000Mb/s

6.87 The proposed WSEA logical circuit based CoS prices are referred to in Appendix A.

o **Traffic based CoS**

6.88 Traffic based CoS allows an operator or customer to better tailor the mix of real time and best efforts traffic required for a specific products or service, or efficient delivery of a combination of products and services. ComReg believes that this should allow operators and customers to customise its products and services to its specific needs and therefore should allow greater opportunity for product differentiation within the overall marketplace.

6.89 ComReg believes that EF traffic should bear a price premium over and above AF traffic and the premium should be applied by taking an average of EF and AF and applying a premium. Therefore, ComReg is forecasting that there will be a projected 50:50 split between EF and AF traffic. ComReg will monitor the actual split as the product(s) develop and if the actual traffic for both EF and AF differs from that forecasted, then prices may need to be adjusted accordingly.

6.90 ComReg agrees with the formula based approach allowing OAOs to calculate their specific requirements based on a specified equation. This approach is preferred as there are potentially in excess of 5,000 possible price point permutations and combinations.

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6.91 The proposed formula outlined below, enables OAOs to calculate the relevant rental associated with a selected WSEA logical bandwidth, class of service option and the associated node/region/density, where:

$$A + 0.2 \times (1 - C - D) \times B + ((C + D)0.45) \times B \times (1 + 0.1 \times C - 0.1 \times D)$$

Where A and B are selected from the calculation inputs for the required WESA (logical) bandwidth from the relevant tables (service schedule 014, tables 12 through 16 – conveyance by region/density).

Where C and D are the EF and AF percentages associated with the WESA (logical) traffic based class of service options by bandwidth (in service schedule 014, tables 10).

6.92 The objective of the proposed traffic based CoS formula is to calculate the price for a required mix of real time and best effort traffic and ensure consistency with the pricing approach (gradient) used for circuit based CoS. The formula can be further explained as follows:

- ‘A’ is the cost per port
- ‘B’ is the cost of one Mb/s uncontended (taking into account the gradient).
- ‘[C+D]’ is the share of real time traffic, where the mix of EF + AF traffic is reflected in percentage terms. A ‘0.45’ exponent is added to ensure that there is consistency between circuit speeds and to avoid instances where products could offer better quality or speeds compared to other and be cheaper at the same time.
- ‘10%’ is the premium applied to the EF traffic and ‘-10%’ is the corresponding discount to be applied to the AF traffic to ensure that under the assumption of 50:50 split between EF and AF traffic, costs are recovered.
- ‘[1-C –D]’ is the share of best effort traffic. Since best effort traffic is assumed to be contended at a 5:1 rate, the cost of 1 Mb/s uncontended is therefore five times the cost of a best effort Mb/s (same as circuit based CoS). ‘[1-C –D]’ is multiplied by ‘20%’ to reflect this.

ComReg’s preliminary view:

6.93 ComReg is of the preliminary view that the maximum WSEA logical charges, as referred to in Appendix A, are in line with ComReg’s conclusions on the costing methodology, the cost modelling approach and the pricing approach, set out in the earlier sections of this document. These maximum charges also ensure that Eircom are in compliance with its cost orientation obligations.

Q. 3. Do you agree with ComReg’s approach and the draft maximum prices, above and as referred to in Appendix A, for WLLs, PPCs and NGN Ethernet? Please provide reasons to support your answer.

7 Consultation on a further specification of the Margin Squeeze test between WLLs, PPCs and NGN Ethernet

Introduction

- 7.1 Following the conclusions set out in Section 3 regarding the appropriate Margin Squeeze test, this section of the document now contains a consultation on the specification of the Margin Squeeze test to assess the appropriate economic space between WLLs, PPCs and NGN Ethernet. It should also be noted that the points consulted on in this section of the document will also apply to a Margin Squeeze test between any of the wholesale products, current or future, in the market for wholesale terminating segments of leased lines. For NGN Ethernet, ComReg will adapt the Margin Squeeze model to take account of the different costs associated with the different technologies and to ensure that the appropriate economic space is maintained between the relevant wholesale products.
- 7.2 Set out below is the proposed approach used to determine the minimum price floors for WLLs by reference to the efficient costs of a hypothetical new entrant availing of PPCs (or equivalents). In essence, this sets the minimum price floors by reference to a SEO cost base, as the minimum price floors are informed by the costs facing a hypothetical new entrant availing of PPCs with a lower market share and network reach than that of Eircom.
- 7.3 The main points consulted on are discussed further under the following headings:
1. Reasons for setting minimum price floors for WLLs
 2. Further specification of the margin (price) squeeze test.

1. Reasons for setting minimum price floors for WLLs

- 7.4 The Margin Squeeze test between WLLs and PPCs (or equivalents) aims to ensure the promotion of efficient infrastructure investment and encourages OAOs to climb the ladder of investment. This should, therefore, facilitate effective and sustainable competition. ComReg is of the view that the margin between WLLs and PPCs (or equivalents) must be sufficient so that OAOs have the incentives to invest in its own infrastructure and also that any investments made are not stranded as a result of anti-competitive pricing through a Margin Squeeze from Eircom.
- 7.5 ComReg also believes that while the application of an economic space creates a price floor, there should also be a price ceiling for WLLs to avoid significant distortions to the in-situ install base of WLL users and to avoid excessive pricing of WLLs in general. In addition, ComReg believes that setting minimum price floors for all WLLs in the relevant market also allows Eircom flexibility to offer promotions to the benefit of end-users.

2. Further specification of the Margin Squeeze test

- 7.6 In parallel to the legacy and NGN cost modelling exercise discussed in Section 4 in relation to PPCs and NGN Ethernet, ComReg has also developed a Margin Squeeze model to ensure that there is an appropriate economic space between the relevant regulated wholesale products in the market for wholesale terminating segment of leased lines. Set out below are the details of the proposed approach used to arrive at this test.

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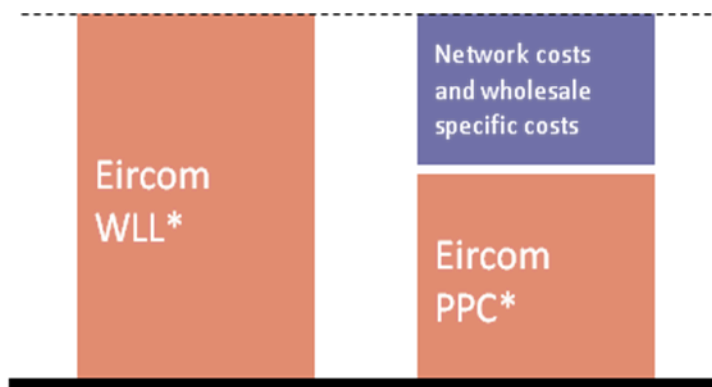
7.7 ComReg proposes that the Margin Squeeze test to be applied is calculated based on:

- Wholesale inputs based on the results of the cost based model for PPCs and NGN Ethernet

Plus

- Derived SEO costs (as set out below).

Figure 9: Cost Elements for WLLs and PPCs



**Or other Ethernet equivalent product*

7.8 ComReg's objective is to ensure that an appropriate economic space is maintained in the short to medium term, by ensuring that relevant regulated wholesale prices cannot be less than a price floor, based on the test outlined. In Section 3, ComReg concluded that a product-by-product basis appears to be the most appropriate approach for now given that the market is not competitive to advocate the portfolio approach. ComReg proposes that a product should be defined by circuit speed and where there is also a distance factor, as with PPCs and WLLs, an average distance(s) should be applied, by circuit speed.

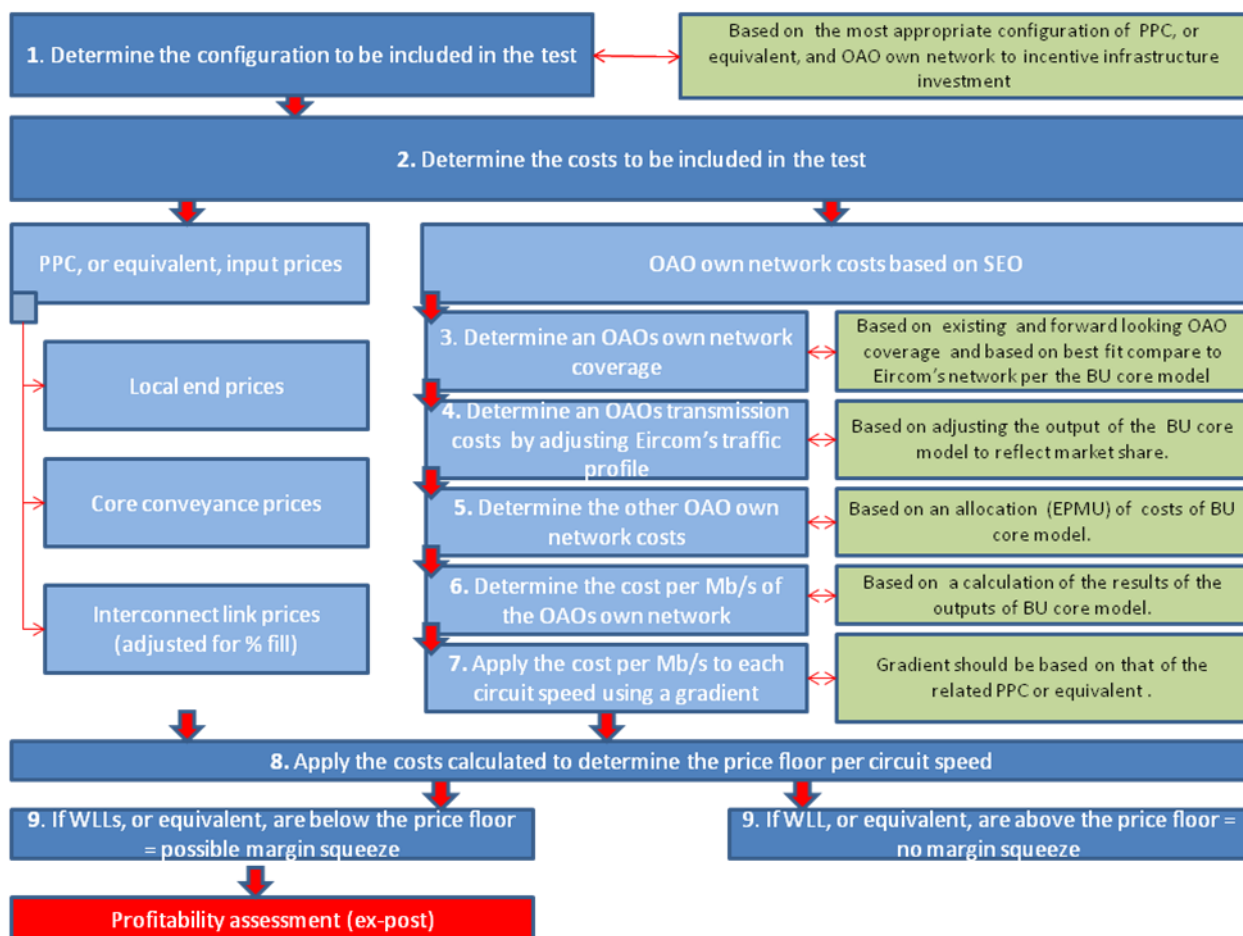
7.9 However, given the anticipated evolution to Ethernet technology over the coming years, ComReg believes that it may be necessary to further assess the options available on a case by case basis in the future.

7.10 The Margin Squeeze test, based on a SEO cost base, will ensure that there is a sufficient margin between wholesale products, by setting price floors for WLLs. While this is an ex-ante obligation, it will only be possible to assess this on an ex-post basis given the vast number of tenders likely to be issued in any particular year. Therefore, it will be up to Eircom, in line with their obligation not to cause a margin squeeze as set out in Section 11 of Decision No D06/08, to review any proposed tenders for compliance with the Margin Squeeze test. ComReg will review, at least annually, the sale of regulated wholesale products for compliance with the Margin Squeeze obligation on an ex-post basis. In the event of a compliance investigation or dispute arising as a result of a particular bid, ComReg may require Eircom to demonstrate a profitability assessment of a specific bid. The profitability analysis should clearly identify the regulated and unregulated elements of that particular bid. The regulated elements of that bid should clearly demonstrate that no Margin Squeeze exists, using the SEO cost base. A competitive assessment will be carried out before a decision is made on whether any breach of the profitability analysis could cause a serious anti-competitive effect on an ex-ante basis.

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7.11 The flow chart below sets out the inputs required and the steps involved in calculating the appropriate economic space, based on the SEO cost base.

Figure 10: Illustration of proposed application of the Margin Squeeze test



7.12 Set out below are further details relating to each of steps highlighted in the flowchart above.

Step 1 – Determine the most appropriate network configuration to be included in the SEO test

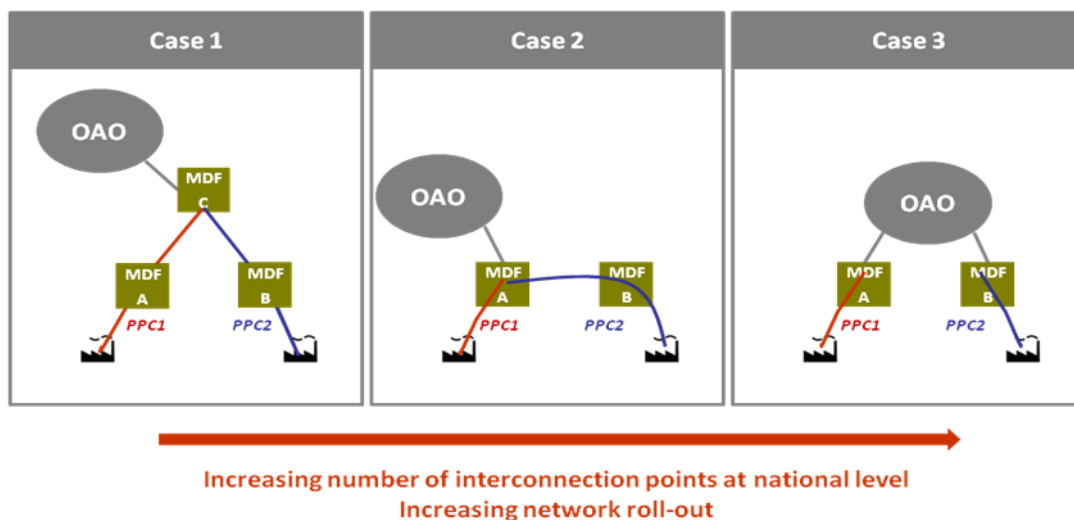
7.13 There are several OAO network configurations to consider depending on what level of the network the OAO is interconnected at (and where it has deployed its network):

- *Case 1: An OAO with little infrastructure. Interconnected only at one point. Therefore, there would tend to be two long PPCs connecting two customer sites. This case is unlikely to provide an incentive to move to PPCs or an incentive for further infrastructure investment.*
- *Case 2: An OAO with some infrastructure, but the OAO is not fully utilising its own infrastructure. Interconnected only at a limited number of points. Therefore, this OAO would tend to buy one long PPC and one short PPC (in/out same node) connecting two customer sites. This case creates more incentives to move to PPCs, but limited incentives for further infrastructure investment.*

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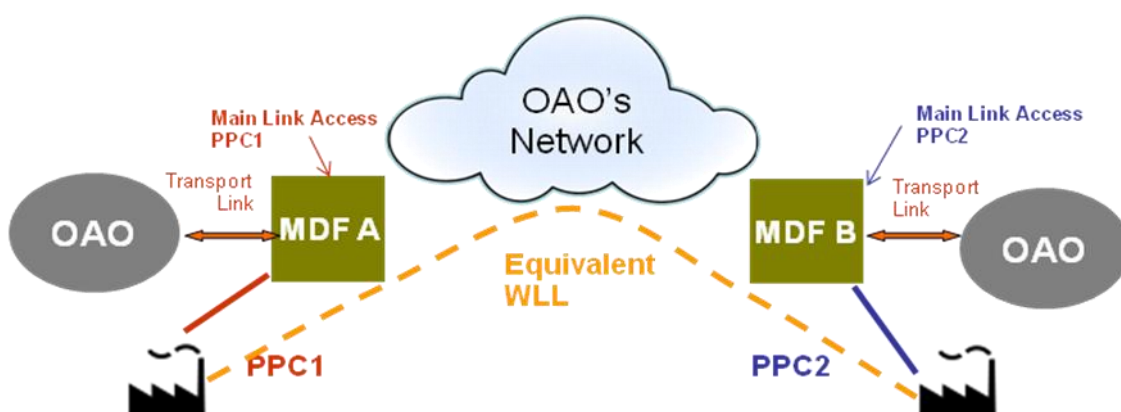
- *Case 3: An OAO with significant infrastructure. Interconnected at a number of points. Therefore, there would tend to be two short PPCs (in/out same node) connecting two customer sites. This case creates an incentive to move to PPCs and an incentive for further infrastructure investment.*

Figure 11: Illustration of test configurations scenarios



7.14 ComReg believes that case 3 is the most appropriate to use as the basis of an SEO test. This case corresponds to a mature OAO connected to both MDFs concerned with leased line service provision. In this case, two short PPCs (corresponding to local ends) can be purchased by the OAO. In this configuration, the OAO manages traffic itself between MDF A and MDF B on its own network. Also, contrary to other cases, this case fully takes into account the network costs of an OAO which provides appropriate build or buy incentives. The calculation of an OAO’s own network costs will need to be considered.

Figure 12: Expanded Illustration of preferred test configurations: Case 3



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Step 2 – Determine the costs to be included in the test

7.15 It is proposed that the costs to be included in the Margin Squeeze test will be based on the following cost stack:

Figure 13: Cost stack for Margin Squeeze test

Description of inputs		
Interconnect link input price(s)	x	
Core conveyance price(s)	x	
Local access price(s)	<u>x</u>	
Total PPC input prices		x
Transmission equipment costs	x	
Trenches and WDM costs	x	
Tie cable costs	x	
Leased Lines node costs	x	
Network Management Systems cost	x	
Power costs	x	
OPEX (including common costs)	<u>x</u>	
Total OAO own network costs based on SEO		<u>x</u>
Total costs included in margin squeeze test		x

Step 3 – Determine an OAOs own network coverage

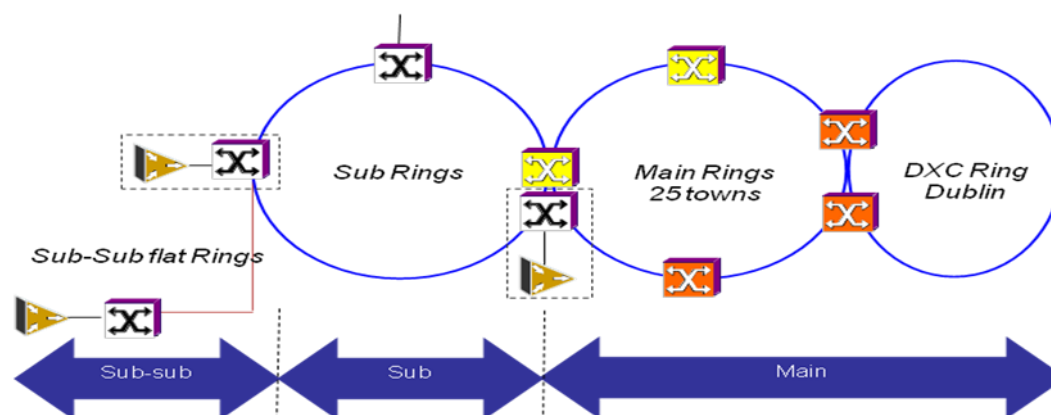
7.16 ComReg believes that the BU-LRAIC plus legacy core model can be used to calculate SEO costs by adjusting Eircom’s legacy core network for scale and by flexing the market share to reflect OAO traffic. An OAOs own network transmission costs should be considered²⁸.

7.17 Eircom’s legacy core network is divided into three network levels: a sub-sub network level, a sub network level and a main network level. The number of main network level sites, is broadly consistent with the number of exchanges considered for LLU, and therefore represents a reasonable base to use for an OAO’s network coverage in the SEO test. ComReg believes the BU LRAIC plus core model is capable of calculating the costs for the main network level only.

²⁸ Where transmission costs incorporate transmission equipment costs, cable management systems (“CMS”) and tie cable costs.

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Figure 14: Configuration of network levels in Eircom's legacy core network



Step 4 – Determine an OAOs transmission costs by adjusting Eircom's traffic profile

- 7.18 After establishing the coverage of an OAO network, ComReg proposes to use the BU LRAIC plus legacy core model to calculate the cost of an OAOs own network. For that purpose, it is necessary to calculate the average cost per Mbps of the main network for an OAO with a lower market share.
- 7.19 In ComReg Document No 08/63, Eircom's share of traffic in the trunk market was identified as 45%²⁹. An OAO share of traffic is assumed to be equal to 25%, based on the conclusions set out in Section 3. This means that Eircom's traffic needs to be adjusted by 1.8 (i.e. based on a ratio 45:25).
- 7.20 The OAO is not benefiting from sharing the main network ring trenches with the sub network ring and sub-sub network rings, therefore adjustments need to be made to reflect the OAOs own network transmission costs.

Step 5 – Determine an OAO's other network costs

- 7.21 ComReg proposes that an OAO's own network costs, other than the transmission costs, should also be included in the SEO test. These costs relate to leased line node costs, power costs, network management systems costs and operating costs. These costs are costs that would be incurred by an OAO who wishes to replicate Eircom's resale offers. As set out above, ComReg proposes that an OAOs own network would have coverage similar to Eircom's main core network. Therefore, ComReg proposes that an OAO's other network costs, to be included, are those costs allocated to the main network, which are extracted from the BU LRAIC plus legacy core model. This allocation is carried out using an Equi-Proportionate Mark-Up ("EPMU")³⁰ approach.
- 7.22 These other OAO's network costs include operating costs, which include common costs.

²⁹ Section 4.35: ComReg Consultation Document No. 08/63. Note - 43.9% market share / 43.7% by revenue, rounded to 45% for the purposes of calculation.

³⁰ The Equi-Proportionate Mark-Up ("EPMU") methodology leads to the recovery of common costs through the addition of a mark-up on top of incremental costs. These mark-ups are defined so that each service bears a share of the common costs that is proportionate to the incremental costs of the service

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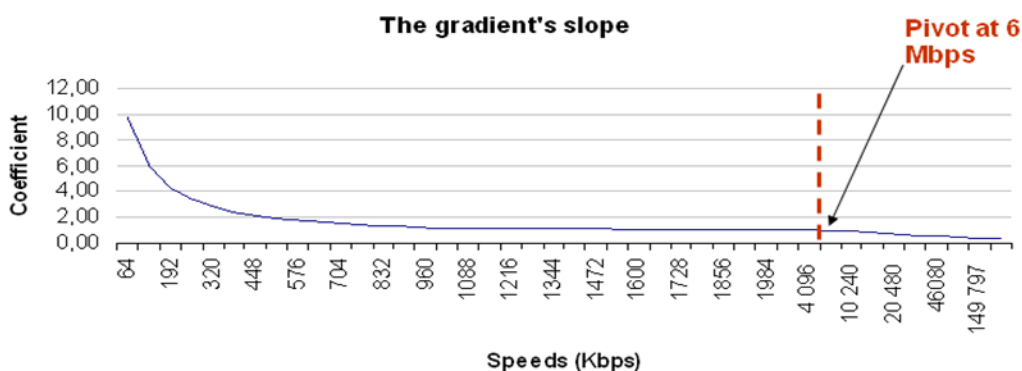
Step 6 – Calculate an OAO’s own network cost per Mb

7.23 The annual network cost supported by an OAO is calculated. The cost per Mb is then calculated dividing the total of an OAO’s own network cost by the volume of traffic on the main network level multiplied by 155Mb/s. The results of this calculation equates to a cost per Mb/s per annum.

Step 7 – Apply the cost per Mb to each circuit speed using a price gradient

7.24 The cost per Mbps calculated above must be then applied to each speed using a gradient. ComReg assumes that an OAO trying to replicate Eircom’s WLL would use the same pricing gradient as Eircom. The slope of the gradient used is the gradient used for PPCs. The pivot is the speed at which the cost per Mbps is equal to the average cost per Mb/s. It is set at a point that ensures overall cost recovery, so that the total revenues generated by leased lines with prices set on the basis of this gradient equal total costs allocated to leased lines.

Figure 15: Pricing gradient to be applied



Step 8 - Apply the costs calculated to determine the price floor per circuit speed

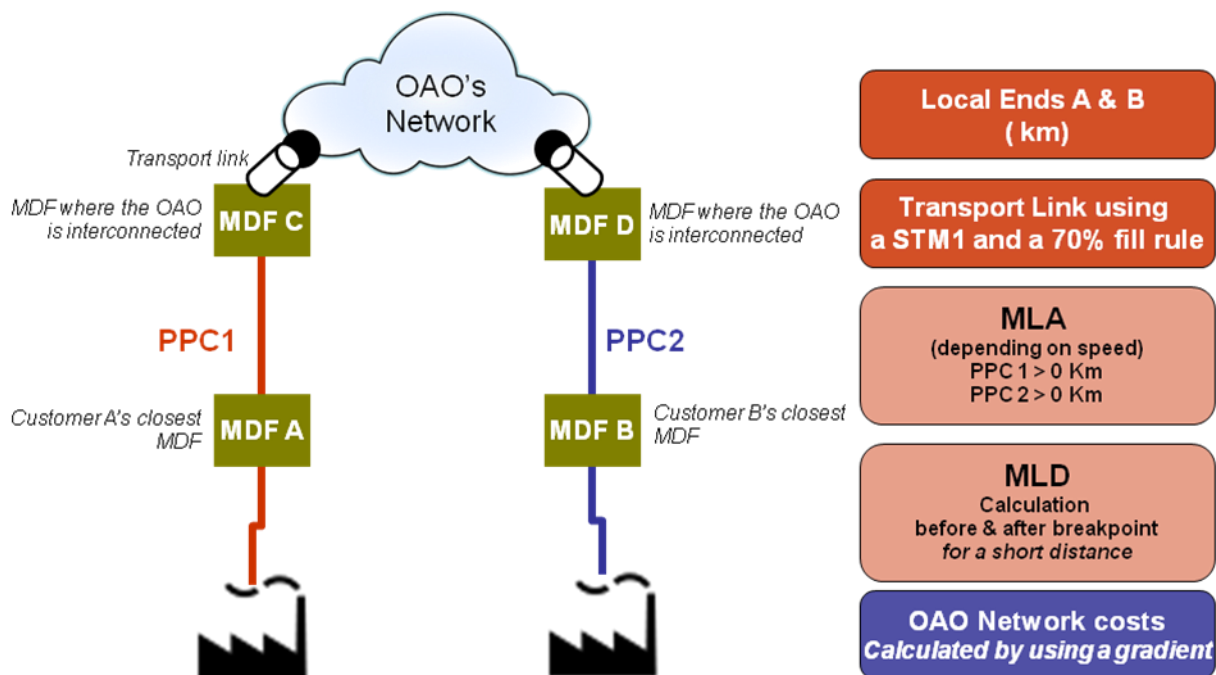
7.25 ComReg derives the average distance(s) between the MDF where the end user is located and the MDF where the OAO is interconnected (i.e. weighted average distance between any MDF in the country and the closest main network level sites for all leased lines). This average distance is used to calculate the costs incurred by the OAO to buy PPCs and that will enable them to replicate WLLs.

7.26 As set out above, the case being considered in the context of the current Margin Squeeze test is where the OAO has to buy two short PPCs.

7.27 WLL prices are complex as they are dependent on circuit speed and distance. ComReg believes that by trying to apply the Margin Squeeze test based on a circuit speed and the respective distance of each WLL is overly complex. ComReg proposes to incorporate the distance element as an average distance. This distance is different from the distance used above for PPCs and is used to assess revenues that an OAO could expect to earn when trying to replicate WLLs based on PPCs. Therefore, the WLL product to be considered in the test is based on circuit speed only (assuming a calculated average distance(s)).

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Figure 16: Illustration of components of test to be carried out per circuit speed



Step 9 - Results

7.28 The results of the test, per Step 8, will create the price floors. . As explained above, the test will be conducted on a product by product basis, a product being defined by a leased line with a given speed. The average distance element to be used will be the average distance of leased lines in a particular bid. If the price(s) included in a particular bid are above the price floor, then it is likely that there is no Margin Squeeze. However, if the price(s) included in a particular bid are below the price floor, then it is likely that there may be a Margin Squeeze evident.

ComReg's preliminary view:

7.29 ComReg is of the preliminary view that the price control obligation already imposed on Eircom should be further specified for WLLs, by assessing a sufficient margin between WLLs and PPCs (or equivalents). ComReg believes that this can be achieved by setting a minimum price floor on the basis of an SEO test.

Q. 4. Do you agree with ComReg's approach, as set out above, for setting the minimum price floors for WLL and other equivalents? Please provide reasons for your response.

8 Margin (price) squeeze test between the market for Wholesale terminating Segments of Leased Lines and Retail Leased Lines market (ex-post assessment)

Overview:

- 8.1 For the purposes of clarity, unlike the pre-defined ex-ante Margin Squeeze test discussed in Section 3 and 7, the principles or guidelines discussed in this section relates to any future assessment of a potential or actual margin squeeze test in the context of a competition case, between the market for wholesale terminating segments of leased lines and the associated retail market.
- 8.2 In ComReg Document No 10/70, ComReg set out that the margin squeeze test between the market for wholesale terminating segment of leased lines and its associated retail offerings is deemed important given that the retail leased lines market is no longer regulated. As a result of de-regulation of the retail leased lines market, there is no transparency in terms of retail prices as there is no obligation on Eircom to publish such prices. Given that the provision of leased lines products is to business consumers and is largely based on bespoke pricing, it is important to ensure that there are no anti-competitive practices occurring either in terms of leveraging or cross subsidisation.
- 8.3 However, ComReg noted that the proposed principles set out for the assessment of any future margin squeeze between the price of a product in the wholesale market and the associated price of a product in the retail market was a mechanism for Eircom to ensure it is in line with its margin squeeze obligation and for ComReg to monitor this obligation. However, ComReg highlighted that any future assessment of compliance with the margin squeeze obligation would be carried out by ComReg on an ex-post basis.
- 8.4 ComReg set out its proposals regarding the following principles:
 1. Appropriate cost base;
 2. Appropriate cost standard; and
 3. Product-by-product or portfolio basis.

Consultation Proposal:

- 8.5 In ComReg Document No 10/70, ComReg considered the three options of SEO, EEO and REO for the appropriate cost base. ComReg was of the preliminary view that an EEO approach was the most appropriate measure of cost to be applied to retail activities in the context of leased lines. ComReg believed that the EEO was more appropriate given that the retail market was more mature than the wholesale market. The EEO approach ensured that operators as efficient as the SMP operator were protected against possible margin (price) squeeze by the SMP operator. ComReg was of the preliminary view that an EEO test encouraged efficient investment in infrastructure which is consistent with ComReg's objectives under Section 12 of the Communications Regulation Act, 2002 (as amended).
- 8.6 In relation to the appropriate cost standard, ComReg considered a number of options including LRAIC, 'LRAIC plus' and ATC approach. ComReg was of the preliminary view that the 'LRAIC plus' approach was the most appropriate cost

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measure to adopt as it included appropriate amounts of variable, fixed and common costs, which is the calculus faced by an operator when deciding to enter or expand. The 'LRAIC plus' approach can be more favourable where competition is somewhat more developed and spans the full range of retail products of the SMP operator.

- 8.7 ComReg believed that applying the obligation not to margin (price) squeeze to leased lines products as a whole would give Eircom a large discretion in selectively discounting individual products according to the degree of competition in the various segments, that is, it would allow Eircom to selectively reduce the prices of individual retail products, provided by an associated product in the market for wholesale terminating segment of leased lines, where competition is more intense. ComReg believed that the application of the obligation not to margin (price) squeeze on individual products in an *ex-ante* context, allowed sufficient transparency to safeguard against possible exclusionary behaviour, allowing the promotion of sustainable competition by OAOs/entrants which currently may have a smaller range of retail leased lines products than Eircom.

Main issues raised by respondents:

- 8.8 Eircom disagreed on the basis that it believed that enforcing a margin squeeze test under the regulatory rules is tantamount to a review of the level of retail prices and accordingly to re-introducing ex-ante remedies in the retail market. In this regard, Eircom believed it would be helpful if ComReg could explain what the consequences would be in terms of price setting if Eircom failed the test that ComReg proposed. Depending on this, Eircom also believed it may be helpful for Eircom to have visibility of the components of the test that ComReg would follow ex-post and the consequences of a finding. Given the stage of development of the retail market ComReg believes that an EEO approach is the appropriate costing standard to use to determine the appropriate retail costs. In ComReg Document No 08/103 (Decision No D06/08), ComReg stated that:

“ComReg’s conclusion is that, although Eircom has a high share of the retail market, remedies in the wholesale market, which were imposed following the previous market review, allow existing and potential competitors to enter and compete. In the presence of wholesale regulation, the retail market must therefore be considered not to be susceptible to ex ante regulation. ComReg is therefore proposing to remove this market from regulation and to withdraw its previous finding that Eircom had SMP on this market”.

- 8.9 It is also worth noting that the European Commission stated in its Explanatory Note to the 2007 Recommendation on relevant product and service markets susceptible to ex ante regulation,

“when there is regulation at wholesale and/or retail level, the possibility of price or margin squeezes can result from regulatory intervention and it should be assessed in that context... That often involves checking the structure of regulated prices or the aggregate of services over which possible margin squeezes might arise... For the assessment of a margin squeeze it is irrelevant whether both wholesale and retail prices are regulated or only one of the two.” (emphasis added)

- 8.10 As ComReg highlighted in Consultation Document 10/70, it is important to note in this context that the proposed principles for the assessment of any future margin

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squeeze between the price of a product in the wholesale market and the associated price of a product in the retail market is a mechanism for Eircom to ensure it is in line with its obligations. ComReg will only intervene if necessary in the event of a competition case. If such an event arises ComReg will assess any potential margin squeeze on the basis of the principles set out in this section of the document. Therefore, should a competition case arise, any future assessment of a potential margin squeeze between a wholesale product and an associated retail product will be undertaken by ComReg on an ex-post basis and will be guided by the principles or rules set out herein. ComReg considers that the approach set out gives Eircom clarity and transparency regarding the guidelines that may be applied by ComReg as a result of any future margin squeeze assessment.

- 8.11 Eircom also believed that a product-by-product assessment would seriously limit Eircom's ability to compete in the retail market. ComReg is of the view that a similar approach will be taken in this regard in line with ComReg's approach set out in Section 7 above. In essence, a product should be defined by circuit speed and where there is also a distance factor, an average distance(s) should be applied, by circuit speed.
- 8.12 BT, ALTO, E-net and Magnet raised concerns surrounding the choice of EEO. Some respondents believed that the EEO test was not appropriate as Eircom has higher economies of scale, it controls the infrastructures, and Eircom tends to delay the availability of replicable wholesale products and Eircom benefits from externalities from operating in different products. These operators also suggested that a REO approach was more appropriate. However, ComReg remains of the view that the EEO approach is more appropriate as the arguments put forward by respondents appear to relate mainly to network costs while the EEO approach will be applied to the retail costs. In addition, ComReg is of the view that a "LRAIC plus" costing standard is the appropriate approach to use as a reasonable allocation of common costs are included. For the same reasons as set out in Section 3, ComReg believes that a REO approach is not appropriate given that the quality and robustness of OAO data is not sufficient to definitely compute REO costs.
- 8.13 BT stated that ComReg should pay attention to the allocation methodologies and the figures supplied by Eircom. BT noted that appropriate accounting separation and transparency should be mandated to ensure that only reasonable common costs are taken into this account. As noted above, the "LRAIC plus" costing approach includes an appropriate allocation of common costs. ComReg, with the assistance of its consultants, have considered the appropriate level of common costs for the purposes of determining the relevant costs to be taken into account.

ComReg's Conclusion:

- 8.14 In the event of a competition case ComReg will be required to assess any potential margin squeeze between a wholesale product(s) and an associated retail product(s) on an ex-post basis. If such an event arises ComReg will be guided by the principles below, in its assessment:
- EEO cost base;
 - 'LRAIC plus' cost standard;

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- Product-by-product analysis where, a product is defined on a per circuit speed basis (as described in Section 7 above).

9 DRAFT DECISION INSTRUMENT AND DIRECTIONS

9.1 ComReg would appreciate respondents' views on this draft decision.

Q. 5. Do you believe that the draft text of the proposed decision is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

DECISION INSTRUMENT

1. STATUTORY AND LEGAL POWERS

1.1 This Decision and these Directions are made by the Commission for Communications Regulation ("ComReg"):

- 1.1.1 Pursuant to Regulations 9, 14 and 17 of the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2003³¹;
- 1.1.2 Pursuant to the SMP Decision, in particular, but not limited to sections 6, 8, 9 and 11.
- 1.1.3 Having had regard to the analysis and reasoning set out in ComReg Document No 10/70 and ComReg Document No. 11/32 and the submissions received from respondents in relation to same;
- 1.1.4 The analysis and reasoning set out in ComReg Document **FINAL DECISION HERE** [], which shall where necessary, be construed together with this Decision Instrument and this Decision.
- 1.1.5 Having taking regard of the following analysis and reasoning set out in the following ComReg decisions:
 - 1.1.5.1 Market Analysis: Leased Lines Markets Review of Urban Centres, Response to Consultation and Final Decision, Document No. 12/10, D02/10
 - :
 - 1.1.5.2 Response to Consultation and Final Decision: Amendments to the transparency obligation and the access obligation in the market for wholesale terminating segments of leased line, Document No. 11/22, D02/11

³¹ European Communities (Electronic Communications Networks and Services) (Access) Regulations 2003 (S.I. No. 305 of 2003), amended by the European Communities (Electronic Communications Networks and Services) (Access) (Amendment) Regulations 2007 (S.I. NO. 373 of 2007).

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Which shall, as necessary, be construed together with this Decision Instrument and these Directions.

- 1.1.6 Having regard to its functions and objectives under sections 10 and 12 respectively of the Communications Regulation Act 2002, as amended by the Communications Regulation (Amendment) Act 2007;
- 1.1.7 Having, where appropriate, complied with Policy Directions made by the Minister³²;
- 1.1.8 Having notified the draft measure to the European Commission, further to Regulation 20 of the Framework Regulations whereby it was also made accessible to national regulatory authorities (NRAs) in other EU Member States, and having taken the utmost account of the European Commission's response.

2. DEFINITIONS

- 2.1 In this Decision Instrument, unless the context otherwise suggests:
- 2.2 “**Access Regulations**” means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2003 (S.I. No. 305 of 2003) as amended by the European Communities (Electronic Communications Networks and Services) (Access) (Amendment) Regulations 2007 (S.I. No. 373 of 2007) as amended;
- 2.3 “**Eircom**” means Eircom Limited and its subsidiaries, and any undertaking which it owns or controls and its successors and assigns;
- 2.4 “**Product**” means any offering in the terminating segment of wholesale leased lines market. Products are subsets of services;
- 2.5 “**service**” means a group of offerings in the terminating segment of wholesale leased lines market;
- 2.6 “**Similarly Efficient Operator**” means an operator which shares the same basic cost function as Eircom but which does not yet enjoy the same economies of scale and scope as Eircom;
- 2.7 “**SEO Test**” refers to the application of an economic space test, based on the model outlined in figure X at Section 7 of ComReg Doc No. (**insert main document number here**).
- 2.8 “**Margin Squeeze**” – shall mean here the setting of a price floor ensuring an appropriate economic space as between any wholesale products, current or future, in the market for terminating segments of wholesale leased lines. The Margin Squeeze test shall be based on SEO costs as provided for in Section 7 of ComReg Doc. No. (**insert main document number here**)

³² Policy Directions made by the Minister for Communications, Marine and Natural Resources on 21st February, 2003 and 26th March, 2004.

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- 2.9 **“SMP Decision”** ComReg in Market Analysis: Leased Lines Markets Review, Response to Consultation on draft Decision Instrument, Final Decision Notice and Decision Instrument, ComReg Document No. 08/103 D06/08
- 2.10 **“terminating segment of wholesale leased lines market”** means the wholesale leased lines market as defined in Decision D06/08;
- 2.11 **Wholesale Leased Lines (“WLLs”)** are a sub set of the leased line products set offered by Eircom Wholesale. WLLS are an end to end leased line provided by the incumbent operator. A WLL is essentially the same product that Eircom’s sells at the retail level.
- 2.12 **Private Partial Circuit (“PPCs”)** are a sub set of the leased line products set offered by Eircom Wholesale. PPC is a generic term used to describe a category of private circuits that terminate at a point of connection between two communications providers’ networks. It is therefore the provision of transparent transmission capacity between a customer’s premises and a point of connection between the two communications providers’ networks. PPCs are delivered over Eircom’s legacy core network.
- 2.13 **“Ethernet”** is a family of packet -based computer networking technologies initially developed for local area networks.
- 2.14 **Next Generation Networks (“NGN”)** is a packet-based network able to provide services including telecommunication services and able to make use of multiple broadband, quality of service-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.
- 2.15 **“NGN Ethernet”** is a sub set of the leased line products set offered by Eircom Wholesale. NGN Ethernet is similar to PPC, but is delivered over Eircom’s NGN core network utilising Ethernet technologies.
- 2.16 **“Current prices”** refer to the current WLL annual rental prices as published in Eircom’s network price list.
- 2.17 **Bottom-up Long Run Average Incremental (“BU LRAIC plus”)** refers to bottom-up modelled costs. Where the LRAIC plus accounting methodology includes all of the average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned, plus an apportionment of joint and common costs.
- 2.18 **“Reference Offer”** refers to Eircom’s leased line reference offer.

3. SCOPE AND APPLICATION

- 3.1 This Decision Instrument and these Directions, apply to Eircom.
- 3.2 This Decision Instrument and these Directions are binding upon Eircom and Eircom shall comply with it in all respects.

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4. PRICE CONTROL

- 4.1 This Direction is issued pursuant to Regulation 17 of the Access Regulations, for the purposes of further specifying requirements to be complied with by Eircom relating to obligations imposed upon it pursuant to Regulation 14 of the Access Regulations and section 11 of the SMP Decision.
- 4.2 In accordance with section 11 of the SMP Decision, Eircom are obliged to offer cost oriented prices and not to cause a margin squeeze.
- 4.3 Eircom is hereby directed to charge no more than current published prices for WLL as referred to in Appendix A.
- 4.4 Eircom is hereby directed to charge not less than the minimum price floors, as specified by the SEO test, so as to not cause a 'Margin Squeeze' as against related WLL services, including but not limited to, PPCs and NGN Ethernet.
- 4.5 Eircom is hereby directed to base the charges for PPCs and NGN Ethernet on the BU-LRAIC plus methodology.
- 4.6 Eircom is hereby directed to charge no more than the prices referred to in Appendix A for PPC's and NGN Ethernet.
- 4.7 Eircom should apply sections 4.3, 4.4, 4.5 and 4.6 from the Effective Date, to all Eircom invoices/credit notes issued to OAOs, for NGN Ethernet and PPCs monthly rental prices, but in any event, Eircom shall do so no later than 28 days following the effective date of this decision.
- 4.8 Eircom shall not be required to pre-notify ComReg or OAOs of the price changes required by this section for the purpose of applying those prices.
- 4.9 For the avoidance of doubt and notwithstanding section 4.8 and in accordance with its existing transparency obligations at section 9 of the SMP Decision, Eircom shall update the Reference Offer accordingly.

5. WITHDRAWAL OF SMP OBLIGATIONS

- 5.1 It is hereby decided that sections 11.3, 11.4 and 11.5 of the SMP Decision shall be revoked.
- 5.2 Section 5.1 shall not come in to operation if this Decision Instrument and these Directions are appealed, or otherwise the subject of legal proceedings and if a stay or suspension in respect of this Decision Instrument and these Directions (or a section or provision thereof) has been ordered by a Court, or if this Decision Instrument and these Directions (or a section or provision or portion thereof) is annulled or found unlawful or invalid by a court, or remitted by a Court to ComReg.

6. STATUTORY POWERS NOT AFFECTED

- 6.1 Nothing in this Decision Instrument and these Directions shall operate to limit ComReg in the exercise and performance of its statutory functions, powers and duties under any primary or secondary legislation (in force prior to or after the

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effective date of this Decision Instrument and these Directions) from time to time as the occasion may require.

7. MAINTENANCE OF OBLIGATIONS

7.1 If any section, clause or provision or portion thereof contained in this Decision Instrument and these Directions is found to be invalid or prohibited by the Constitution, by any other law or judged by a court to be unlawful, void or unenforceable, that section, clause or provision or portion thereof shall, to the extent required, be severed from this Decision Instrument and these Directions and rendered ineffective as far as possible without modifying the remaining section(s), clause(s) or provision(s) or portion thereof of this Decision Instrument and these Directions, and shall not in any way affect the validity or enforcement of this Decision Instrument and these Directions.

8. EFFECTIVE DATE AND PRICE CONTROL PERIOD

- 8.1 This Decision Instrument and these Directions shall be effective from [date of decision]
- 8.2 This Decision Instrument and these Directions shall remain in force from the Effective Date of this decision for a period of three years.
- 8.3 Notwithstanding sections 10.2, the prices in sections 4 and 5 are subject to an annual review by ComReg and may be amended by ComReg, if as a result of the annual review; material/exceptional changes are identified.

**[]
CHAIRPERSON
THE COMMISSION FOR COMMUNICATIONS REGULATION
THE [] DAY OF []**

10 Regulatory Impact Assessment

Introduction

- 10.1 A Regulatory Impact Assessment (“RIA”) is an analysis of the likely effect of proposed new regulation or regulatory change. The RIA should help identify regulatory options, and should establish whether proposed regulation is likely to have the desired impact. The RIA is a structured approach to the development of policy, and analyses the impact of regulatory options on different stakeholders.
- 10.2 ComReg’s approach to the RIA is set out in the Guidelines published in August 2007 in ComReg Document Nos. 07/56 & 07/56a. In conducting the RIA, ComReg takes into account the RIA Guidelines³³, issued by the Department of An Taoiseach in June 2009 under the Government’s Better Regulation programme. Section 13(1) of the Communications Regulation Act 2002 requires ComReg to comply with Ministerial Policy Directions. Policy Direction 6 of February 2003³⁴ requires that, before deciding to impose regulatory obligations on undertakings, ComReg shall conduct a RIA in accordance with European and International best practice and otherwise in accordance with measures that may be adopted under the Government’s “Better Regulation” programme.
- 10.3 In conducting the RIA, ComReg has regard to the RIA Guidelines, while recognising that regulation by way of issuing decisions e.g. imposing obligations or specifying requirements in addition to promulgating secondary legislation may be different to regulation exclusively by way of enacting primary or secondary legislation. ComReg’s ultimate aim in conducting a RIA is to ensure that all proposed measures are appropriate, proportionate and justified. To ensure that a RIA is proportionate and does not become overly burdensome, a common sense approach will be taken towards a RIA. As decisions are likely to vary in terms of their impact, if after initial investigation, a decision appears to have relatively low impact; ComReg may carry out a lighter RIA in respect of those decisions.
- 10.4 ComReg wishes to point out that since it is not imposing a new regulatory obligation on an undertaking, it is not mandatory for it to conduct a RIA. However, ComReg has nonetheless decided to carry out a RIA in order to demonstrate that it has considered and evaluated the regulatory options available, with due regard to necessity, effectiveness, proportionality, transparency, accountability and consistency. ComReg has considered all respondents views to Consultation Document No 10/70 and ComReg will consider all respondents’ views to this further consultation and draft decision. Therefore in taking any decision ComReg will assess whether a further RIA should be conducted, though it is not mandatory for ComReg to do so.
- 10.5 In assessing the available regulatory options, ComReg’s approach to the RIA follows five steps as follows:

³³ See “Revised RIA Guidelines How to Conduct a Regulatory Impact Analysis”, June 2009. http://www.betterregulation.ie/eng/Developments_in_Better_Regulation_Policy/Revised_RIA_Guidelines.pdf

³⁴ Ministerial Policy Direction made by the Minister of Communications, Marine and Natural Resources on 21 February 2003.

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Step 1: describe the policy issue and identify the objectives

Step 2: identify and describe the regulatory options

Step 3: determine the likely impacts on stakeholders

Step 4: assess the likely impacts and choose the best option.

1. Identify the regulatory objectives and describe the policy issues

10.6 ComReg considers that one of the main objectives, *inter alia*, is to foster competition in the telecommunications industry through appropriate and efficient infrastructure investment.

10.7 When determining the appropriate cost base and ultimately the resulting charges for legacy wholesale leased lines products and services (i.e. WLLs and PPCs) as well as wholesale NGN Ethernet leased lines products, it is necessary to ensure that the cost base and the charges finally set lead to the efficient recovery of costs, efficient investment by operators, prevent or mitigate the possibility of anti-competitive behaviour such as excessive wholesale pricing, margin (price) squeeze and/or foreclosure by way of an insufficient economic space, as well as providing greater choice and competitive prices for consumers (in this case business customers).

10.8 ComReg is also minded to the relevant objectives as set out in section 12 of the Act, which includes, in particular, the following:

- Ensure that there is no distortion or restriction of competition;
- Encourage efficient investment in infrastructure and promoting innovation;
- Promote the interests of users within the Community; and
- Encourage access to the internet at a reasonable cost to end-users.

10.9 An important consideration for this RIA is the scope of the further specification of the price control obligation in terms of the costing methodology and the pricing approach in order to determine the regulatory charges for wholesale leased line products and services including Ethernet technology. It is important for ComReg to consider and determine whether the costing methodology and the pricing approach provides Eircom, and OAOs with efficient competition and investment incentives while at the same time enhancing consumer welfare i.e. business customers. Another important aspect is the principles and guidelines for a margin squeeze test between the prices in the market for wholesale terminating segment of leased lines and the corresponding prices in retail market. Consideration of the appropriate economic space between the wholesale products is also an important consideration in this context.

- **Costing methodology**

10.10 As set out in section 3 of this document, a BU-LRAIC (LRAIC plus) costing methodology is the basis for determining the relevant efficiently incurred costs for PPCs, current generation Ethernet leased lines and wholesale NGN Ethernet leased lines going forward. The main objectives of this approach is that it sends the correct “build/buy signal” to industry and therefore encourages efficient infrastructure investment while allowing operators to assess their possible investment decisions and

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promotes competition in the market for wholesale terminating segment market of leased lines. This approach also encourages operator efficiency and should assist in incentivising investment.

10.11 One exception to the BU-LRAIC plus costing methodology is the costing approach in relation to WLLs. ComReg has reconsidered its original proposal for WLLs. As set out in Section 6, ComReg is now proposing that the current charges for WLLs be set as a maximum price ceiling. An assessment of the economic space between WLLs and PPCs will determine the minimum price floors. A further specification of the Margin Squeeze model between the products and services in the wholesale market, including PPCs and WLLs, has been further consulted upon in Section 7.

• Pricing methodology

10.12 In ComReg Document No 10/70 ComReg consulted on the proposal to continue with the national average pricing approach for the legacy WLLs and PPCs products. ComReg also consulted on a geographically de-averaged pricing approach for the wholesale NGN Ethernet leased lines products and services. The policy risks identified in relation to the de-averaged pricing approach are set out below.

10.13 ComReg believes that the one development which is new and of particular significance is the application of geographic de-averaging of prices and the potential impact that this may have on the market for wholesale terminating segment of the leased lines and on the prices charged in the retail market for associated retail offerings. As set out in section 5 above, a geographic de-averaged pricing approach based on high and medium density regions, will be used to determine the charges for NGN Ethernet products. Basically prices will differ between urban areas (high density) and other parts of the country (medium density). The rationale for geographic de-averaging is generally to bring prices for the various regions (high and medium density) in the country closer to their actual economic costs. While ComReg acknowledges Eircom's point that the costs of providing Ethernet services to different regions of the country varies between urban areas and those provincial and more rural areas it is equally important for ComReg and Eircom to understand the amount of the variation that exists between the different regions in Ireland and to ensure that consumers are not disproportionately impacted by such a change.

10.14 The key policy issue relates to the de-averaged pricing approach for wholesale NGN Ethernet leased lines and the likely impact that this may have in terms of the evolution of leased lines competition at a wholesale level as well as the likely impact, if any, on future investment in more rural regions of the country. For example, it is important to understand any potential effects that this approach may have in terms of attracting future direct investment to those areas of the country with medium densities.

10.15 As set out in Section 5, some existing or potential future key business areas in regions across the country may consider moving or relocating in urban regions to avail of lower Ethernet prices. High density regions have a lower unit cost per Mb/s than medium density regions and therefore the associated pricing for high density regions is lower. In order to mitigate against this risk in medium density regions of Ireland, ComReg is of the view that the 'high density' pricing approach be applied to those medium density regions on a case by case basis where the type of business involved will require very high bandwidth circuits from an exchange outside the high

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density regions. ComReg has also considered a number of options for measuring the demand in those medium density regions. The options for determining demand included bandwidth, footprint or on a case-by-case basis.

- **Margin squeeze test**

10.16 In ComReg Document No 10/70 ComReg consulted on a set of principles that should apply in the event of any future margin squeeze between the market for wholesale terminating segments of leased lines and the associated retail market. ComReg is of the view that this test is deemed important given that the retail leased lines market is not longer regulated. As a result of de-regulation of the retail leased lines market, there is no transparency in terms of retail prices as there is no obligation on Eircom to publish such prices. Given that the provision of leased lines products is to business consumers and is largely based on bespoke pricing, it is important to ensure that there are no anti-competitive practices occurring either in terms of leveraging or cross subsidisation. However, it is important to note in this context that the principles for such a margin squeeze test between the price of a product in the wholesale market and the associated price of a product in the retail market are merely guidelines, which ComReg may use in the event of a competition case in the future. In the event of a competition case, the principles set out in this document will be used as guidance, by ComReg, in assessing any potential (or actual) margin squeeze. Therefore, any future assessment of the margin squeeze between the wholesale and retail market in this context will be carried out by ComReg on an ex-post basis.

10.17 In addressing the risk of margin (price) squeeze between the market for wholesale terminating segment of the leased lines and its associated retail offerings, the regulatory options included:

- i. Should the test be an Equally Efficient Operator ('EEO') or Reasonably Efficient Operator ('REO') test?
- ii. Should the test be conducted on a product by product basis or on the aggregate of the products?
- iii. Is Long Run Average Incremental Cost ('LRAIC plus') the appropriate measure of cost?

10.18 The regulatory options are further discussed in the subsections below.

2. Identify and describe the regulatory options

10.19 Set out below are the main regulatory options considered by ComReg in order to determine the appropriate costing methodology and pricing approach in relation to the legacy WLLs and PPC products and the costing methodology and pricing approach in relation to the wholesale NGN Ethernet leased lines products. These regulatory options are discussed as follows:

- a) Regulatory options for the costing and pricing approach for the wholesale legacy leased line products and services;
- b) Regulatory options for the costing and pricing approach for the wholesale NGN Ethernet leased lines products and services;

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- c) Regulatory options to assess any potential margin (price) squeeze between the prices in the market for wholesale terminating segment of the leased lines and the corresponding prices at a retail level, based on a competition case.

A. Regulatory options for the costing and pricing approach for the wholesale legacy leased lines products and services

10.20 ComReg considered the following in order to determine the appropriate costing methodology and pricing approach in relation to the legacy WLLs, PPCs and WEA product.

- **Option 1:** Use the BU-LRAIC plus model to determine the national average monthly rental charges for the legacy products i.e. PPCs and WEA (current generation Ethernet leased lines).
- **Option 2:** Use the BU-LRAIC plus model but differentiate the costs by high and medium density regions (geographic de-averaging) in order to determine the geographic de-averaged monthly rental charges for the legacy products i.e. PPCs and WEA.
- **Option 3:** In ComReg Document No 10/70 ComReg proposed that WLLs should be set on the basis of an appropriate economic space assessment with PPCs while continuing to set the WLL prices on the basis of a national averaged pricing approach. Since publication of ComReg Document No 10/70 ComReg has reconsidered its original proposal regarding WLLs. ComReg are now proposing that the current WLLs charges, in the market, should be set as the maximum price ceiling charges. In addition, the assessment of the economic space between WLL and PPC will determine the minimum prices floors for WLLs. The options for determining the principles of the Margin Squeeze test between the wholesale products (including WLLs and PPCs) are also set out below. The proposal for WLLs means that Eircom will have price flexibility for WLLs so long as it does not price above the maximum ceiling price or below the minimum price floor. ComReg concluded that a national average pricing approach should remain in place for WLLs.

10.21 Option 1 would mean a continuation of the national average pricing approach while using a BU-LRAIC plus model to determine the costs of PPCs and WEA.

10.22 Option 2 would be similar to option 1 from a cost model perspective but there would be a change in the pricing approach from national averaged prices to prices differentiated on the basis of geographic regions.

10.23 Option 3 now means that the current WLLs prices will be set as maximum price ceiling charges and there will also be minimum price floors, which will be determined as part of the Margin Squeeze test to assess the economic space between WLLs and PPCs.

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B. Regulatory options for the costing and pricing approach for the wholesale NGN Ethernet leased lines products and services

10.24 ComReg considered the following three options in order to determine the appropriate costing methodology and pricing approach in relation to the wholesale NGN Ethernet leased lines products and services within the market for wholesale terminating segment of the leased lines.

- **Option 1:** Use the BU-LRAIC plus model to determine the nationally averaged monthly rental charges for the wholesale NGN Ethernet leased lines products and services in the market for wholesale terminating segment of the leased lines;
- **Option 2:** Use the BU-LRAIC plus model but differentiate the cost by high and medium density regions (geographic de-averaging) in order to determine the geographic de-averaged monthly rental charges for the wholesale NGN Ethernet leased lines products and services in the market for wholesale terminating segment of the leased lines. In addition, consider applying the 'high density' pricing approach to medium density areas on a case by case basis where there is demand requirements; or
- **Option 3:** Use the BU-LRAIC plus model for those areas of high density (urban areas) but use top down historical cost data (based on fully distributed costs) for the access network for those regions of low density and low demand in order to determine the geographic de-averaged monthly rental charges for the wholesale NGN Ethernet leased lines products and services within the market for wholesale terminating segment of the leased lines.

10.25 Option 1 considered that the wholesale NGN Ethernet leased lines prices would be based on nationally averaged prices on the basis of a BU-LRAIC plus model. Therefore, the higher costs of more rural regions of the country would be compensated by the lower cost of urban regions. ComReg believed that under a national averaged pricing approach as competition developed in cities it was likely that, since they would by definition be above cost, Eircom would increasingly be unable to compete in these areas thereby eroding the profitability in urban areas required to subsidize rural pricing which would not recover the full costs under a nationally averaged pricing approach.

10.26 Option 2 considered that the wholesale NGN Ethernet leased lines prices would be geographically de-averaged on the basis of a BU-LRAIC plus model. By using this approach wholesale NGN Ethernet leased lines prices would differ between urban areas (high density) and other parts of the country (medium density). The rationale for geographic de-averaging is generally to bring prices for the various regions (high and medium density) in the country closer to their actual economic costs. ComReg noted that there are a number of advantages to a de-averaged pricing approach. Prices set in this manner, which will more closely reflect underlying costs should set more accurate price signals. In particular, all operators should face the correct signals as to whether it is better to rent or buy capacity. For example, because there would be

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no cross subsidy from urban areas based on Eircom's prices an alternative operator may be more likely to build its own infrastructure in some less densely populated areas than otherwise would have been the case. From Eircom's perspective it is more likely to supply remote areas since it now would be in a position to recover its costs. Conversely, in cities Eircom's prices will be lower than otherwise which should improve the competitiveness of services in these areas. As a result, this should help improve the competitiveness of Irish cities internationally.

10.27 Option 3 is similar to option 2 but this option takes account of the fact that a BU-LRAIC plus approach may not be appropriate for those regions of the access network where densities and demand are lower. This option would most likely lead to lower access prices than those arrived at using a BU-LRAIC plus cost model given that the costs already recovered on the access network are not included. However, ComReg was of the preliminary view that the BU-LRAIC plus cost approach was more appropriate given that it encouraged investment in infrastructure and is consistently applied.

C. Regulatory options for assessing a margin (price) squeeze between the wholesale and retail leased lines market

ComReg considered the following points regarding the options for determining principles or guidelines to assess any future potential margin squeeze test between the wholesale market and the associated retail market, based on a competition case:

- a) In its assessment of competition problems in the market for wholesale terminating segment of the leased lines, ComReg identified the possible leverage of market power by Eircom from the market for wholesale terminating segment of leased lines into adjacent markets by way of a margin (price) squeeze. As a result of de-regulation of the retail leased lines market, there is no transparency in terms of retail prices as there is no obligation on Eircom to publish such prices. Given that the provision of leased lines products is to business consumers and is largely based on bespoke pricing, ComReg believed that it was important to ensure that there are no anti-competitive practices occurring either in terms of leveraging or cross subsidisation. Given this potential risk of anti-competitive behaviour, a set of principles were consulted on. These principles would be used for guidance purposes in the event of a competition case being raised to ComReg in this context.
- b) The principles for any potential or actual future margin squeeze between the market for wholesale terminating segments of leased lines and the associated retail market would be a guidance tool for ComReg in the event of a potential (or actual) margin squeeze in the future. Therefore, any future assessment of a margin squeeze between the relevant wholesale market and the associated retail market would be undertaken by ComReg on an ex-post basis and ComReg would be guided by the principles set out.
- c) As set out in ComReg Document No 10/70, margin squeeze can be demonstrated by showing that the SMP operator's own downstream

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operations could not trade profitably on the basis of the upstream price charged to its competitors by the upstream operating arm of the SMP operator (“equally efficient competitor test”). Alternatively, a margin squeeze can also be demonstrated by showing that the margin between the price charged to competitors on the upstream market for access and the price which the downstream arm of the SMP operator charges in the downstream market is insufficient to allow a reasonably efficient service provider in the downstream market to obtain a normal profit (“reasonably efficient competitor test”). A similarly efficient operator (“SEO”) could be utilised, which is set by reference to the SMP operator’s costs, but adjusted for economies of scale and scope differences.

The SEO/REO approach recognises that even in the long-run alternative operators may not be able to compete with the SMP operator due to structural diseconomies of scale and scope, and the nature of the market. The EEO approach recognises, however, that in a competitive situation an effective alternative operator will be able to compete if it is as efficient as the SMP operator in the market and thus encourages efficient investment in infrastructure. The EEO may be more consistent with the above-mentioned objectives of promoting efficient investment in infrastructure. However, to the extent that operators do not benefit from the same economies of scale and scope and having different unit network costs, a test based on SEO/REO was also be considered. It is important to note that the cost base chosen would be relevant in terms of determining the appropriate level of retail costs.

- d) ComReg was of the view that applying the obligation not to margin (price) squeeze only to products in the market for wholesale terminating segment of the leased lines on an aggregated basis would give Eircom a large discretion and flexibility in selectively discounting individual leased line products. It may however limit transparency and confidence in the effectiveness of the margin squeeze obligation with consequent implications for competition and investment. The application of a margin (price) squeeze test on a product-by-product basis would allow for enhanced transparency and confidence in the effective operation of the obligation, ensuring that there is no distortion or restriction of competition and supporting investment.
- e) ComReg also considered that the appropriate cost standard for the calculation of retail costs can be between the lower threshold of average variable cost (“AVC”) and average avoidable cost (“AAC”) toward the respectively higher thresholds of, Long Run Average Incremental Cost (“LRAIC”), ‘LRAIC plus’ and Average Total Cost (“ATC”). ‘LRAIC plus’ is defined to include all of the long run average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned, plus an apportionment of joint and common costs. Using ‘LRAIC plus’ includes appropriate amounts of variable, fixed and common costs, which is the calculus faced by any operator when deciding to enter or expand.

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3. Determine the likely impacts on stakeholders

10.28 The likely impact on stakeholders was also considered and discussed in ComReg Document No 10/70. The main points are included below under the following headings:

- a) Likely impact on stakeholders based on the costing and pricing options for the legacy leased line products and services.
- b) Likely impact on stakeholders based on costing and pricing options for the wholesale NGN Ethernet leased lines products and services.
- c) Likely impact on stakeholders based on principles (guidelines) for any potential or actual future margin (price) squeeze test between wholesale and retail markets as a result of a competition case.
- d) Likely impact on stakeholder based on the Margin Squeeze test to assess the appropriate economic space between any current or future variant of the wholesale products in the wholesale terminating market for leased lines.

• Likely impact on stakeholders based on the costing and pricing options for the legacy leased line products and services

Option 1 – Use the BU-LRAIC plus model to determine the national average costs and charges for legacy products i.e. PPCs and WEA		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
<p>(i) No change to the pricing approach which has been in place for a number of years. There is currently a large in-situ base of WLLs and PPCs in Ireland. Continuing with the average pricing approach ensures that there are no unnecessary disruptions in the marketplace.</p> <p>(ii) Reductions in leased lines access prices (particularly fibre prices). This ensures consistency with the prices for NGN Ethernet access prices.</p>	<p>(i) The status quo of a nationally average price will remain in place. Historically OAOs have based their investment decision on this well established approach. A continuation of this approach will provide OAOs with stability and certainty over the timeframe of this review.</p> <p>(ii) OAOs will benefit from reduced access prices.</p>	<p>(i) Business consumers continue to pay a national price regardless of geographic region. This ensures that no distortions are created in the marketplace for those current in-situ based customers using PPCs and WEA products.</p> <p>(ii) On contract renewal, OAOs have an opportunity to offer more competitive prices to its business customers.</p>

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Option 2 – Use the BU-LRAIC plus model to determine the costs and charges for high and medium density regions i.e. geographic de-averaging for legacy products

(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) A change from a long established national average pricing approach for legacy leased line products which may be unduly disruptive to the marketplace.	(i) May create instability for OAOs given that they initially made their investment decisions based on the national averaged pricing approach.	(i) There will be no significant changes from a pricing perspective for those consumers that remain on legacy products, pursuant to any contractual arrangements agreed between operators and its business customers.

Option 3 - Determine the cost for WLLs on the basis of an appropriate economic space assessment with PPCs and setting this as the WLL minimum price floor. Setting the current WLL charges as maximum price ceiling.

(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) Ensures that Eircom recover its efficiently incurred costs. (ii) By setting price floors and prices ceilings this allows Eircom price flexibility for WLLs.	(i) Sends the correct buy/build price signal to OAOs. (ii) Incentivises infrastructure based competition. (iii) Ensures that those OAOs that have or that intend to invest are not evicted from the market. (iv) By setting price ceiling, avoids the risk of excessive pricing for current WLL customers.	(i) Ensures a better choice of services for consumers. (ii) No immediate risk of price increases for current in-situ based WLL customers.

• Likely impact on stakeholders based on the costing and pricing options for wholesale NGN Ethernet leased lines products and services

Option 1 – Use the BU-LRAIC plus model on the basis of national average costs and charges for NGN Ethernet leased lines

(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) Will restrain Eircom	(i) OAOs pay lower prices	(i) Business customers in

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from setting lower charges for services in high density (urban) areas and therefore may constrain Eircom from competing with other operators in those urban areas.	in the more rural regions of the country where they are unlikely to invest in given the higher costs associated with lower density areas. OAOs will pay higher prices in urban areas to compensate for the costs of rural areas.	high density (urban) areas could pay prices above the actual economic cost for those regions so as to compensate the high cost regions (rural areas).
(ii) May dis-incentivise Eircom from further investment in NGN.	(ii) May discourage further infrastructure investment by the OAOs	
	(iii) Limited scope for new, efficient, entry by OAOs. May not provide OAOs with the correct build/buy decisions.	
	(iv) May discourage operators from migrating from legacy to the higher speed wholesale NGN Ethernet leased lines products as the price differentiation is not so significant.	
Option 2 – Use the BU-LRAIC model to determine the costs and charges for high and medium density regions i.e. geographic de-averaging for NGN Ethernet leased lines		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) Given that this approach should ensure recovery of costs for the specific regions, Eircom may be more likely to supply more remote areas of the country.	(i) This approach sets more accurate price signals. All operators should face the correct signals as to whether it is better to rent or buy capacity.	(i) Prices could be lower in all regions but this approach should particularly improve the competitiveness in urban areas where some significant business customers are located.
(ii) Provides Eircom with the appropriate incentives to invest in NGN.	(ii) Encourages further infrastructure investment by the OAO.	
(iii) Increases the incentive	(iii) Wholesale charges	

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for Eircom to offer competitive and innovative products and services especially in urban areas.	provide OAO's (including platform competitors) with correct make/buy decisions and facilitate efficient entry.	
(iv) The prices proposed by Eircom for NGN Ethernet in August 2010 are not expected to change therefore no immediate impact on Eircom's current prices.	(iv) For OAOs currently availing of NGN Ethernet services there is no changes expected to current NGN Ethernet prices. This will not affect any investment decisions already taken by OAOs since August 2010.	
Option 3 – Use the BU-LRAIC model to determine the costs and charges applicable in high density regions (urban regions) and use the top down historical costs to determine the access network costs in the medium density regions for NGN Ethernet leased lines		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) Eircom's charges in lower density areas will reflect the fact that a significant portion of the access network costs have already been recovered for trenches and ducts.	(i) OAOs are only expected to pay for the incremental costs relating to the access network in lower density regions.	(i) Consumers may benefit from more choice given that OAOs may extend their geographic reach.
(ii) May be subject to more competition in lower density areas i.e. rural areas.	(ii) May promote investment in technology where it is cheaper to get access to a wider network.	(ii) Consumers may have increased levels of choice.

- **Likely impact on stakeholders based on the principles (guidelines) for any future potential margin (price) squeeze test between wholesale and retail markets, in the event of a competition case**

1. Margin (price) squeeze test between the price of a product in the market for wholesale terminating segment of leased lines and the corresponding price for the retail product is based on an EEO approach		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) EEO approach will give	(i) Facilitates competition	(i) Facilitates competition

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Eircom greater scope to offer competitive retail offers.	from as efficient operators – ensure operators as efficient as the incumbent are protected against possible margin (price) squeeze by the incumbent to the detriment of competition.	from as efficient operators to the benefit of consumers.
<i>2. Margin (price) squeeze test between the price of a product in the market for wholesale terminating segment of leased lines and the corresponding price for the retail product is conducted on a product by product basis</i>		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) A product by product basis enhances transparency and increases confidence in ensuring the incumbent is complying with its obligations.	(i) Allows promotion of competition by OAOs/entrants. The application of a margin (price) squeeze test on a product-by-product basis would allow for enhanced transparency and confidence in the effective operation of the obligation, ensuring that there is no distortion or restriction of competition and supporting investment by OAOs.	(i) Allows the promotion of competition by OAOs/entrants to the benefit of consumers.
<i>3. Margin (price) squeeze test between the price of a product in the market for wholesale terminating segment of leased lines and the corresponding price for the retail product should be based on a ‘LRAIC plus’ cost measure</i>		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) Ensures that Eircom can offer competitive retail offers.	(i) Allows the promotion of sustainable competition by OAOs as ‘LRAIC plus’ includes appropriate amounts of variable, fixed and common costs, which is the calculus faced by any operator when deciding to enter or expand.	(i) Allows the promotion of sustainable competition by OAOs to the benefit of consumers.

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- **Likely impact on stakeholders based on the assessment of the Margin Squeeze test between current or future variants of wholesale products in the market for wholesale terminating segment of leased lines**

1. Assessment for appropriate economic space between the wholesale products in the market for wholesale terminating segment of leased lines is based on an SEO approach		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) This is based on BU model taking into account Eircom’s costs and adjusting for efficiencies and economies of scale.	(i) This approach provides the appropriate “build/buy” signal to new entrants. The SEO approach will also encourage infrastructure investment while encouraging OAOs to climb the ladder of investment.	(i) Allows the promotion of competition by OAOs/entrants to the benefit of consumers.
2. Assessment for appropriate economic space between the wholesale products in the market for wholesale terminating segment of leased lines is conducted on a product by product basis		
(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) More transparent and ensures that Eircom is complying with its obligations.	(i) The application of an appropriate economic space assessment on a product-by-product basis allows for enhanced transparency and confidence in the effective operation of the obligation, ensuring that there is no distortion or restriction of competition and supporting investment by OAOs.	(i) Allows the promotion of competition by OAOs/entrants which currently have a smaller range of products than the incumbent to the benefit of consumers.
3. Assessment for appropriate economic space between the wholesale products in the market for wholesale terminating segment of leased lines is based on a ‘LRAIC plus’ cost measure		

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(a) Impact on incumbent	(b) Impact on OAOs	(c) Impact on consumer
(i) Allows Eircom to recover all (incl. joint and common costs) of its efficiently incurred costs.	(i) Enables a potential entrant to recover all of its efficiently incurred cost while promoting infrastructure competition by OAOs.	(i) Allows the promotion of sustainable competition by OAOs to the benefit of consumers.

4. Assess the likely impacts and choose the best option

Consultation proposal

- 10.29 In ComReg Document No 10/70 ComReg was of the preliminary view that the preferred costing approach for PPCs, current generation Ethernet (also known as WEA) and wholesale NGN Ethernet leased lines was BU-LRAIC (LRAIC plus). On the other hand ComReg believed that the costing methodology for WLLs should ensure the recovery of a reasonable level of efficiently incurred costs while consideration is given to the appropriate economic space between PPCs and WLLs. The basis of the Margin Squeeze test to assess the economic space between WLLs and PPCs was a SEO approach with a ‘LRAIC plus’ cost standard. ComReg also set out that the adjustment for market share should be based on an operator with a market share of 25%. It was also proposed that the assessment should be carried out on the basis of a static model since this would ensure consistency with the “replicability” principle so that the offer under consideration could be replicated by an efficient alternative operator. ComReg also proposed that the assessment should be carried out on a product-by-product basis. ComReg believed that the economic space assessment between WLLs and PPCs would send the appropriate investment signal to new entrants which should encourage infrastructure investment and encourage OAOs to climb the ladder of investment.
- 10.30 In terms of the pricing approach for the products in the market for wholesale terminating segment of the leased lines, ComReg believed that the national average pricing approach for the legacy leased lines products and services i.e. PPCs, WLLs and WEAs should continue and would ensure no future distortions in the marketplace. ComReg believed that changes to this pricing approach may be unduly disruptive.
- 10.31 ComReg was of the preliminary view that Eircom’s proposal for geographic de-averaging appeared to be an appropriate option for the newly launched wholesale NGN Ethernet leased line products since this option would bring prices for the various regions (high and medium density) in the country closer to their actual economic costs. In order to prevent foreclosing future investment in the medium to low density areas of Ireland, ComReg was of the preliminary view that some medium density regions may be re-designated as high density regions for pricing purposes where there is sufficient demand in a specific medium region(s). ComReg believed that demand in these medium to low density regions should be assessed on a case-by-case basis. ComReg believed that this pricing approach should ensure

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that any future direct investment promoted through any of the various agencies in Ireland was protected.

- 10.32 ComReg also considered whether the top down historical cost approach is more relevant for those part of the access network where densities and demand are low. Given the high cost of civil works on the access network and the fact that Eircom's investment in the access network was made many years ago it may be the case that some of Eircom's assets i.e. trenches and ducts may now be fully recovered. Therefore, the only costs to be recovered going forward would be the incremental costs of maintaining the access network and the day to day operations of it. In summary, this would most likely lead to lower access prices than those arrived at using the BU-LRAIC plus costing approach. While ComReg believed that this point was worth considering in terms of the access network ComReg was of the preliminary view that its main regulatory objective should be to incentivise infrastructure investment on the basis of the BU-LRAIC plus cost approach.
- 10.33 In relation to the principles for any potential future margin (price) squeeze between the prices in the market for wholesale terminating segment of leased lines and the corresponding prices in the retail market, ComReg believed that the EEO cost base was the most appropriate measure to be applied to retail activities in the context of leased lines. The EEO approach ensured that operators as efficient as the SMP operator for retail activities were protected against possible margin (price) squeeze by the SMP operator. ComReg was of the preliminary view that the 'LRAIC plus' approach was the most appropriate cost measure to adopt as it included an appropriate amount of average, efficiently incurred variable, fixed and common costs, which is the calculus faced by an operator when deciding to enter or expand. In addition, a product-by-product analysis allowed for sufficient transparency to safeguard against possible exclusionary behaviour, allowing the promotion of sustainable competition by OAOs/entrants which currently may have a smaller range of retail leased lines products than Eircom.
- 10.34 ComReg also proposed that the principles established for the appropriate economic space assessment, should be applied in the context of the Margin Squeeze test for all relevant wholesale products (current and future variants) in the market for wholesale terminating segment of the leased lines. Similar to that proposed above for WLLs and PPCs, ComReg proposed that an SEO approach with a 'LRAIC plus' cost standard is the most appropriate basis. A similar adjustment for economies of scale should be carried out.
- 10.35 ComReg believed that its proposals in the consultation were consistent with ComReg's statutory objectives under section 12 of the Act, as follows:
- a. Setting cost oriented maximum prices for leased line rentals and cost orientation for the ancillary services/products in the market for wholesale terminating segment of leased lines together with the obligation not to margin (price) squeeze should facilitate greater regulatory certainty for longer-term competitive entry and expansion and greater flexibility for the development of innovative offerings, with positive implications for the price, choice and quality of products ultimately delivered to end-users.
 - b. *Ensuring that there is no distortion or restriction of competition:*

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By seeking to pre-empt the possibility for anti-competitive practices by the SMP operator to induce strategic barriers to entry in markets, the costing and pricing approach for the market for wholesale terminating segment of leased lines would ensure that competitors can enter and sustain competition in the market and in adjacent markets.

- c. *Encouraging efficient investment in infrastructure and promoting innovation:*
The measures set out should allow for greater flexibility to OAOs to offer more innovative retail products. The economic space assessment should encourage entry and expansion by competitors wishing to invest in their own infrastructure over time. At the same time, the obligation not to margin (price) squeeze should facilitate entry and sustain competition by OAOs as efficient as the SMP operator which is consistent with encouraging efficient investment.

10.36 ComReg was also of the view that the measures set out were appropriate, proportionate and justified for the following reasons:

- a. The costing and pricing approach should encourage efficient investment by operators as well as providing a greater choice and competitive prices to consumers. It should also send the correct “build/buy signal” to industry and therefore encourage infrastructure investment while allowing operators to assess their possible investment decisions. ComReg also believed that the safeguards of the margin (price) squeeze test between the pricing of wholesale rentals within the market for wholesale terminating segment of the leased lines and its associated retail offerings are necessary to safeguard alternative operators from potential anti-competitive behaviour by the SMP operator. However, this assessment would only be conducted by ComReg in the event of a competition case, on an ex-post basis.
- b. ComReg considers that it has been **proportionate** in its review. ComReg believed that the measures set out should not be overly burdensome or onerous on Eircom as the SMP operator in the market for wholesale terminating segment of leased lines. The costing approach should ensure that Eircom recovers its efficiently incurred costs while also providing it with added flexibility for developing further differentiated retail and wholesale offers.

10.37 ComReg considered that the regulatory option were justified in its review and that it had provided all of the detail, reasoning and information necessary to demonstrate how it reached its views as set out in the sections throughout this document. As shown above, having considered the respective merits of a range of different regulatory options, ComReg believes that its options are consistent with its statutory objectives under section 12 of the Act. However, ComReg has reviewed and considered responses to this consultation and, based on those responses, ComReg may make a decision which is different to the preliminary views expressed in the consultation. In addition, on some areas ComReg is further consulting with industry before it takes a final view.

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Main issues raised by respondents:

- 10.38 Generally, all of the other respondents, except Eircom, agreed with the main issues and the preliminary discussion set out in the RIA. Magnet added that it did not agree with all of the methodologies proposed but it highlighted its concerns in the preceding part of the consultation. E-net believed that there was one additional factor which should be included in the RIA. E-net proposed that Eircom's standard terms of business should include a provision on the cessation of a service whereby operators should give at least one month's notice in writing to Eircom, expiring on the last day of the calendar month following that in which the notice is given. E-net stated that this provision probably would add an average of about 15 days to a notice period of one month. E-net suggested that this cessation notice should simply be set at one month. However, ComReg is of the view that the issue regarding a cessation process is not relevant in the context of the current consultation process and should be addressed either bilaterally with Eircom or as part of the Leased Lines forum.
- 10.39 Some of the issues raised by Eircom related to ComReg's discussion on the options and the impact of the changes to Eircom's billing frequency. However, this has now been separately addressed by ComReg in ComReg Document No 11/22 (ComReg Decision No D02/11).
- 10.40 In general, Eircom believed that there was no explicit or systematic analysis of the coherence or consistency of proposals and that the RIA simply reiterates general theoretical propositions, and avoids any detailed or balanced discussion of its particular proposals. Eircom also added that the RIA was not adequate or fit for purpose and it was not clear how each of the six core principles were met. Eircom also believed that several important options were omitted in the RIA assessment. Eircom believed that the "do nothing" option was, in many instances, ignored or given only superficial consideration. In addition, it also stated that no effort was made by ComReg in its RIA to quantify the predicted effect on stakeholder welfare of the various options identified. As a general point, it suggested that ComReg should apply objective cost-benefit analysis principles in its RIAs. It also highlighted that there was no discussion of the appropriate weight that should be attached to the various costs and benefits experienced by each of the relevant stakeholders. Eircom also believed that the RIA frequently quotes general statements of opinion as facts, without any basis or supporting material.
- 10.41 Given that the cost modelling and the associated pricing are now at a more advanced stage ComReg has taken into account insofar as possible the points raised by Eircom regarding the potential impacts that the outcome of this consultation may have on the various stakeholders. This document also includes a further consultation specifying the Margin Squeeze model for assessing the appropriate economic space between the wholesale products in the relevant market which also allows for a better understanding of the impact that this may have, in particular, on WLLs and the various stakeholders. Regarding Eircom's point on the six core principles, ComReg believes each of these principles was met and this has been discussed further below.
- 10.42 With regard to Eircom's point on the option of 'do nothing', ComReg believes that this option was not considered particularly relevant in this context given that the

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costing and pricing approach for leased lines products and services in the market for wholesale terminating segments of leased lines has not been reviewed in a number of years and that it is now appropriate to ensure that Eircom charges for legacy and NGN products comply with its cost orientation obligation. In addition, this review gives operators and other interested parties transparency of the process used to determine the appropriate methodologies to derive the relevant charges for products in an evolving market place. Given the extensive cost modelling exercise carried out by ComReg the detail of this review allows operators the opportunity to provide their views, especially given the current transition to NGN and the level forecasts required to determine demand and related costs. ComReg also believes that given that the NGN Ethernet product prices were published by Eircom in August 2010, this review should now give operators and the marketplace confidence in the current prices in the marketplace. This is also important for any operators who have already invested based on current prices or who have built their business case models on the basis of the prices previously published.

ComReg's conclusions on the costing and pricing principles and ComReg's preliminary views on the draft charges and the Margin Squeeze test:

- 10.43 Further to the consultation and consideration given to the issues and concerns raised by respondents in relation to the various proposals set out in ComReg Document No 10/70, ComReg has now reached a number of conclusions regarding the costing methodology and the pricing approach for WLL, PPC and NGN Ethernet leased lines in the market for wholesale terminating segment of leased lines.
- 10.44 This document also contains a further consultation which specifies the Margin Squeeze model to be applied for assessing the appropriate economic space between the relevant wholesale products (current or future variants) in the relevant market and also a consultation on the draft maximum charges determined as a result of the cost modelling exercise carried out.
- 10.45 A summary of the main conclusions and the areas for further consideration and consultation are discussed under the following areas:
- Costing methodology
 - Pricing methodology
 - Draft maximum prices (consultation)
 - Price control period
 - Further specification of the Margin Squeeze test between wholesale products in the relevant wholesale market (further consultation)
 - Principles (guidelines) for any potential (or actual) margin squeeze between the wholesale market and retail market in the event of a competition case.

• Costing methodology:

- 10.46 ComReg has concluded that a BU-LRAIC plus model is the appropriate basis for determining the costs and rental charges for PPCs, WEA and NGN Ethernet leased lines. ComReg believes that the BU- LRAIC plus approach will be used as the general basis for determining charges in the market for wholesale terminating segment of leased lines. This approach should be reflective of the prices that would

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prevail in a competitive market and it should send the right “build/buy” signals to new entrants. This costing methodology includes all of the average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned, plus an appropriate apportionment of joint and common costs. The methodology also ensures that Eircom’s charges for legacy and NGN products comply with its cost orientation obligation.

- 10.47 In ComReg Document No 10/70, ComReg considered in the consultation that a BU-LRAIC plus approach may not be appropriate for those regions of the access network where densities and demand are lower and that consideration should be given to whether top down FDC historical cost data is more relevant for those parts of the access network. While no issues or points were raised by respondents on this particular point ComReg is of the view that the BU-LRAIC plus cost approach is more the appropriate basis given that it encourages investment in infrastructure.
- 10.48 Given the issues raised by Eircom as part of the consultation regarding ComReg’s initial proposal on the costing approach for WLLs, ComReg is of the view that the current charges, should be maintained as a maximum price ceiling. If ComReg were to impose a pure cost orientation obligation on WLLs this could lead to a significant anomaly in certain cases where the cost of a WLL is cheaper than a PPC which would undermine the principle of network investment and be contrary to ComReg’s objectives. In addition, ComReg believes that an assessment of the economic space between WLL and PPC should determine the minimum price floors which Eircom should comply with. Eircom will be free to reduce WLL prices so long as any reductions respects the price floor set through the Margin Squeeze test.
- 10.49 The principles set out below will apply in relation to Margin Squeeze test to assess the appropriate economic space between WLL and PPCs products. In addition, ComReg is of the view that the same principles will be applied in the Margin Squeeze test between all of the current wholesale products and services or between any future variant of the products and services in the market for wholesale terminating segments of leased lines as currently defined. The Margin Squeeze test to assess the appropriate economic space between the relevant wholesale products will be based on the following principles:
- Cost base: SEO
 - Cost standard: ‘LRAIC plus’
 - Operator market share: 25%
 - Model: Static model
 - Product by product (based on circuit speeds and distance, where relevant).
- 10.50 ComReg is now consulting on the application of the Margin Squeeze test. This is set out in Section 7 of this document and is discussed below.
- 10.51 ComReg also considered whether WLLs above 10Mb/s generally should be subject to a differentiated price control. ComReg concluded that the costing methodology and pricing approach, set out in the attached response document, for WLLs relates to all WLLs generally within the market for wholesale terminating segments of

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leased lines. Therefore no differentiation is made to the price control for WLLs on the basis of bandwidth speeds or urban centres in the market for wholesale terminating segments of leased lines.

• Pricing methodology:

- 10.52 The pricing approach for legacy WLL and PPC products will continue on the basis of nationally averaged prices. ComReg believed that there was currently no need to change the pricing approach over the timeframe of this review as changes to this pricing approach may be unduly disruptive.
- 10.53 NGN Ethernet leased lines will be based on geographic de-averaging, whereby the prices reflect the costs of the geographic regions i.e. high density regions and medium density regions. In order to prevent foreclosing future investment in the medium density areas of Ireland, a high density pricing approach will be adopted, on a case by case basis, in some medium density regions where there is sufficient demand. ComReg is of the view that this approach should ensure that any significant existing or future direct investment which requires significant bandwidth is not materially disadvantaged through a de-averaged pricing approach to the detriment of end users. Eircom launched this pricing approach in 2010 and to date no issues have arisen.
- 10.54 ComReg believes that under a national averaged pricing approach as competition develops in cities it is likely that, since they would by definition be above cost, Eircom would increasingly be unable to compete in these areas thereby eroding the profitability in urban areas required to subsidize rural pricing which would not recover the full costs under a nationally averaged pricing approach. ComReg is of the view that this pricing approach should ensure that any future direct investment which might be for example promoted through the various agencies in Ireland is not disadvantaged through a de-averaged pricing approach to the detriment of end users.

• Draft maximum prices for WLLs, PPCs and Ethernet:

- 10.55 Given the initial conclusions set out above regarding the costing methodology and the pricing approach for the products and services in the market for wholesale terminating segments of leased lines, ComReg has now determined as part of the cost modelling exercise, the draft maximum prices for WLLs, PPCs and Ethernet products and services, which are referred to in Annex A of this document. ComReg is not proposing any material changes to the prices in the existing network price list as published by Eircom, given that there have been recent reductions to PPC prices of approximately 15% over the past eighteen months which has brought these prices in line with the obligations. In addition, NGN Ethernet prices were launched in 2010 on foot of a cost modelling exercise carried out by ComReg at that time. ComReg now believes that the current maximum prices in the market are in line with the principles set out in this document. It is intended that the proposed price floors for WLLs will not be published but will be monitored separately by ComReg for potential or actual margin (price) squeeze.

• Price control period and annual review:

- 10.56 The price control period will be for three years. In the initial consultation ComReg proposed that the price control period should be for one year initially and after a

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review of the prices the price control period should subsequently be set for at least two years. However, given the concerns of respondents and the importance of providing longer term certainty to the marketplace it now seems appropriate to set a 3 year price control period which should provide the market with the price certainty required over a reasonable period of time. However, it is intended that ComReg will carry out an internal yearly review of the main aggregated model inputs to assess any material changes, especially the model inputs for NGN (and the other examples set out in Section 4). Where material changes are noted as part of the annual review intervention may be deemed appropriate and discussions will take place with Industry regarding those material changes identified. The review of exceptional or material circumstances will be determined by ComReg on a case by case basis. A review of the impact of the main assumptions will be considered in aggregate and if considered to be material Eircom may be required to revise its prices in the intervening period.

- 10.57 This review will also include a review of the high and medium density regions, where it may be necessary to reclassify some areas from medium to high density as a result of changes in unit costs. ComReg will reserve its right to re-categorise areas during the year, if as a result of accelerated NGN network roll-out or as a result of new industries in a particular area, as long as it does not distort overall cost recovery.

• Further specification of the Margin Squeeze test for wholesale products in market for wholesale terminating segments of leased lines:

- 10.58 Further to the initial conclusions on the main principles for establishing a Margin Squeeze test to assess the appropriate economic space between the relevant wholesale products, this document now consults on a further specification of the Margin Squeeze model. The consultation is contained in Section 7 of this document.

• Principles for any potential (or actual) future margin (price) squeeze between the wholesale and retail market as a result of a competition case:

- 10.59 The principles for a margin (price) squeeze test between the market for wholesale terminating segments of leased lines and the associated retail market are as follows: Equally efficient operator (“EEO”) cost base and a LRAIC plus cost standard. These principles will allow Eircom to assess any likely margin (price) squeeze between the prices for the wholesale products against the prices for the corresponding retail products. In the event of a competition case, ComReg will be required to assess any potential (or actual) margin squeeze on the basis of the principles set out. However, ComReg will only intervene on an ex-post basis.
- 10.60 As stated above ComReg has considered the six principles of Better Regulation as follows:
- 10.61 ComReg considers it **necessary** to undertake the review at this time. The costing and pricing approach for leased lines products and services in the market for wholesale terminating segments of leased lines has not been reviewed in a number of years and that it is now appropriate to ensure that Eircom charges for legacy and

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NGN products comply with its cost orientation obligation. In addition, given that the NGN Ethernet product prices were published by Eircom in August 2010, this review should now give operators and the marketplace the necessary confidence in the current prices in the marketplace.

- 10.62 ComReg considers that it has been **effective** in its review of the costing and pricing approach for the leased lines products and services and also in determining the Margin Squeeze test to assess the appropriate economic space between the wholesale products in the market for wholesale terminating segments of leased lines. Extensive interaction has taken place with Eircom in constructing the model. Meetings and discussions have also taken place with OAOs and other interested parties. While ComReg has already published an initial consultation (ComReg Document No 10/70) and has received a number of submissions to it, this document now sets out some points for further consideration and consultation before a final decision is taken.
- 10.63 As already set out above, ComReg considers that it has been **proportionate** in its review. ComReg believes that the measures set out should not be overly burdensome or onerous on Eircom as the SMP operator in the market for wholesale terminating segment of leased lines. The draft prices set out in this document (for further consultation) are largely consistent with the current prices in the marketplace. Therefore, this ensures that Eircom are in compliance with its obligations. While it is proposed that the current WLL charges be set as maximum price ceiling charges, there will also be a minimum price floor for WLLs. This will allow Eircom flexibility so long as it does not charge above the price ceiling or below the price floor. ComReg has acknowledged the fact that to impose a pure cost orientation obligation on WLLs could lead to a significant anomaly in certain cases where the cost of a WLL is cheaper than a PPC which would undermine the principle of network investment and be contrary to ComReg's objectives. In addition, the Margin Squeeze test between the wholesale products in the relevant market protects OAOs from any potential anti-competitive measures from Eircom.
- 10.64 ComReg considers that it has been **transparent** in its review. ComReg has already issued a consultation regarding the costing and pricing approach for the products in the market for wholesale terminating segments of leased lines. ComReg has also had extensive interaction with Eircom, over the past year or so, as part of the cost modelling work. Interaction and discussions have also taken place with OAOs and other interested parties as part of this review. This document now includes a number of points for further consideration and consultation. Once ComReg has sought the views of interested parties on these further points, a decision may then be taken. ComReg also intends to notify the European Commission of its draft measures relating to the price control obligation, once all the views of interested parties are obtained regarding the further consultation points contained in Sections 6 and 7 of this document.
- 10.65 ComReg considers that it has been **accountable** in its review. Throughout the process it has outlined its approach, provided the necessary and relevant information in relation to the review and it has clearly set out its findings so far as well as its preliminary views in relation to the points for further consultation. ComReg has also given Eircom, OAOs and other interested parties the opportunity to critique and contribute to the cost modelling and its underlying inputs and

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assumptions. ComReg has considered the responses submitted to it so far. Given that there are a number of points to be further consulted on, ComReg will consider and address any further issues raised as part of its final decision.

- 10.66 ComReg considers that it has been **consistent** in its approach. A cost orientation obligation was imposed on Eircom in ComReg Decision No D06/08 in 2008. This consultation process has now further specified the meaning of cost orientation regarding the rentals for the various products and services in the market for wholesale terminating segments of leased lines. While the costing approach (BU-LRAIC plus) is generally consistent between the products in the relevant market other than WLLs, the pricing approach for NGN Ethernet leased lines will be based on de-averaged pricing approach while the prices for the legacy WLLs and PPCs will remain as nationally averaged prices. The reason for using a de-averaged pricing approach for NGN Ethernet is that prices reflect the costs of the geographic regions i.e. high density regions and medium density regions. In order to prevent foreclosing future investment in the medium density areas of Ireland, a high density pricing approach will be adopted, on a case by case basis, in some medium density regions where there is sufficient demand. This approach should ensure that any significant existing or future direct investment which requires significant bandwidth is not materially disadvantaged through a de-averaged pricing approach to the detriment of end users. Eircom launched this pricing approach in 2010 and to date no issues have arisen.

Q. 6. Do you have any views on this Regulatory Impact Assessment with regard to the draft maximum charges determined for WLLs, PPCs and NGN Ethernet and also with regard to the Margin Squeeze test and are there any other factors that ComReg should consider in completing its Regulatory Impact Assessment on these points? Please explain your response and provide details of any additional factors that should be considered by ComReg.

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11 Submitting comments

All comments are welcome however it would make the task of analysing responses easier if comments were referenced to the relevant question numbers from this document.

The further consultation period will run from **29 April 2011** to **3 June 2011** during which the Commission welcomes written comments on any of the issues raised in this paper.

Having analysed and considered the comments received, ComReg will review the main proposals set out in the consultation and publish a report on the consultation which will, inter alia summarise the responses to the consultation.

In order to promote further openness and transparency ComReg will publish all respondents' submissions to this consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information in ComReg Document No. 05/24. We would request that electronic submissions be submitted in an-unprotected format so that they can be appended into the ComReg submissions document for publishing electronically.

Please note

ComReg appreciates that many of the issues raised in this paper may require respondents to provide confidential information if their comments are to be meaningful.

As it is ComReg's policy to make all responses available on its web-site and for inspection generally, respondents to consultations are requested to clearly identify confidential material and place confidential material in a separate annex to their response.

Such Information will be treated subject to the provisions of ComReg's guidelines on the treatment of confidential information as set out in ComReg Document No. 05/24.

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Appendix A: Reference to draft maximum prices

Note: The draft maximum prices for WLLs, PPCs and NGN Ethernet can be located at www.eircomwholesale.ie. A reference to the specific service schedules on Eircom's network price list is included in the table below.

Product	Product element	Eircom network price list / Service Schedule (“SS”) reference:
WLLs	Local access (Local ends)	SS 006, Table 4
WLLs	Core conveyance (MLA and MLD)	SS 006, Table 4
PPCs	Local access (Local ends)	SS 003, Table 2
PPCs	Core conveyance (MLA and MLD)	SS 003, Table 2
NGN Ethernet	Local Access (WSEA physical)	SS 014, Table 1
NGN Ethernet	Core conveyance (WSEA logical – Circuit based CoS)	SS 014, Tables 3 - 8
NGN Ethernet	Core conveyance (WSEA logical – Traffic based CoS)	SS 014, Tables 9-16
NGN Ethernet	Interconnection Links (WEILs)	SS 013, Table 2

Appendix B: Operator Responses – other points

Q.1 Do you agree that in general a ‘LRAIC plus’ approach on the basis of a BU model is the most appropriate costing methodology to use for determining the cost oriented wholesale charges for the products, service and associated facilities in the market for wholesale terminating segment of leased lines? Please provide reasons for your response.

Magnet, E-net, BT and ALTO agreed with the proposed approach.

Q.2. Do you agree that the WLL charges should be based on the PPC costs, WLL network costs and WLL specific costs while taking into account the appropriate economic space between PPCs and WLLs? Please provide reasons for your response.

Eircom believed that amending the pricing mechanism of WLLs would be a change in the nature of the remedy imposed on Eircom and this would have a serious impact on the retail market.

In response to Eircom’s point, ComReg has given further consideration to its original proposal regarding WLLs and is now proposing that the current WLL charges will be set as maximum price ceilings. The economic space between WLLs and PPCs will determine the minimum price floor. Please refer to Section 6 and 7 of the main document for further details.

Q.3. Do you agree with ComReg’s preliminary views, as set out above, on the main principles for the appropriate economic space assessment between WLLs and PPCs? Please provide reasons for your response.

Q.4. Do you agree with ComReg’s preliminary views, as set out above, on the main principles in relation to an assessment of the appropriate economic space between the other related wholesale products i.e. wholesale NGN Ethernet leased line products in the market for wholesale terminating segment of leased lines? Please provide reasons for your response.

E-net stated that there was a need for ComReg to be able to take account of technology changes from legacy to NGN Ethernet. Therefore, any future assessments of the appropriate economic space between wholesale products in the market for wholesale terminating segments of leased lines should be undertaken on a product-by-product basis.

As stated in Sections 3 and 7, the Margin Squeeze test will be based on a product by product basis. ComReg believes that a product should be defined by circuit speed and where there is also a distance factor, as with PPCs and WLLs, an average distance(s) should be applied, by circuit speed.

Q.5. Do you agree with ComReg’s preliminary views, as set out above, in relation to the modelling approach adopted for the leased lines access network? Please provide reasons for your response.

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Magnet doesn't agree with the civil works proposal. ComReg believes that it has set out the reasons for its approach for accounting for civil works costs in the model. This is discussed in Section 4 of the main document.

Q.6. Do you agree with ComReg's preliminary views, as set out above, in relation to the modelling approach adopted for the leased lines legacy core network? Please provide reasons for your response.

BT and ALTO generally agreed and believed that NGN Ethernet would form a strong substitute to traditional leased lines in the coming years. BT and ALTO would thus expect future growth of the traditional leased lines platform to be limited and the platform managed for cash over the next period. Given the age of the network, BT and ALTO believed that significant portions to have been written down or coming close to being written down hence the cost of the network will reduce and capacity will become available as customers migrate to the NGN. Magnet generally agreed with ComReg's proposals regarding the modelling approach for leased lines legacy core network and believed that traffic volumes on the legacy network should decrease as legacy services move to NGN.

In response to the points noted by BT, ALTO and E-net, ComReg refers to Section 4 of the document which discusses the relevant levels of traffic incorporated into the model to account for the volumes of traffic expected to remain on the legacy core network and also the level of traffic expected to move to the NGN core network, over the timeframe of this review. ComReg believes that any assumptions made in this regard are appropriate and reasonable for now but as part of the annual review of the model ComReg will assess whether any further changes are necessary to these inputs.

E-net also believed that while it makes sense to use Eircom's operating cost data as a starting point, ComReg will, as it states, itself, need to make some adjustments to these costs to reflect current market costs and the engineering rules of an efficient operator. ComReg has, with the assistance of TERA, carried out an a review of Eircom's operating cost data and where necessary adjustments have been made to ensure that only relevant and efficient costs are recovered as part of the modelling exercise.

Q.7. Do you agree with ComReg's proposed approach regarding the traffic volumes for the NGN core network for the next three years? Please provide reasons for your response.

Eircom agreed with the approach of setting charges based on volumes projected forward for three years, as it strikes the right balance between setting charges so high as to suppress demand by only considering early life volumes and unit costs, and setting charges so low as to risk deterring investment in competing networks and access services. Eircom believed that an early review of projected volumes is appropriate. As set out in Section 4 on the price control, ComReg is of the view that a three year price control period is appropriate with an internal annual review of the main inputs to the model on an annual basis. Please refer to Section 4 of the main document for further details.

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Q.8. Do you agree with ComReg’s preliminary views, as set out above, in relation to the modelling approach adopted for the leased lines NGN core network? Please provide reasons for your response.

Eircom agreed with respect to the operating costs where the level of operating costs in the NGN core network will reduce over time and these should be ultimately lower than the operating costs levels of the core legacy network. Eircom also believed that the projected level of future efficiencies modelled for the NGN core network, relative to the observed level of costs in the core legacy networks, could prove a useful cross check to validate the level of modelled NGN operating costs.

Q.9. Do you agree with ComReg’s preliminary views, as set out above, in relation to the modelling approach adopted for the WEA product? Please provide reasons for your response.

E-net agreed that a “LRAIC plus” approach on the basis of a BU NGN core network model using IP switching layer. E-net believes this is consistent with the MEA principle. ComReg’s conclusion on the ‘LRAIC plus’ approach are set out in Section 3 of the main document.

Q.10. Do you agree with ComReg’s preliminary views, as set out above, in relation to the modelling approach adopted in relation to the common areas between the leased lines core and access network? Please provide reasons for your response.

BT and ALTO agreed: the common areas between leased lines in the core and access network as some ducts will be shared. ComReg’s conclusions on the cost modelling approach adopted are set out in Section 4 of the main document.

Q.11. Do you agree with the duration and future review of the price control? Please provide reasons for your response.

Eircom believed that in view of the time that would have elapsed since the last market analysis for terminating segments of leased lines, any review of the price control should be preceded by, or concomitant with, a new market analysis.

E-net agreed with an initial one year review due to uncertainty with product volumes, etc, upon launch. E-net believes that, following this initial review, the control period should shift to a two-year one, in order to provide greater certainty to OAOs regarding their own input costs and bearing in mind the contract lengths of their own downstream retail products. ComReg has reconsidered its original proposal regarding the price control period. ComReg has now concluded that the price control period will be for three years but ComReg will carry out an internal annual review of the main inputs, in aggregate, which will be discussed with industry where material issues arise. Where there are material or exceptional changes noted to the main inputs (in aggregate) ComReg may require Eircom to revise its charges, as a result of this review. This is discussed in Section 4 of the main document.

Q.12. Do you agree that the pricing approach for legacy WLL and PPC products should continue on the basis of nationally averaged prices? Please provide reasons for your response.

BT, ALTO and E-net believed that the current national averaged pricing approach for legacy WLL and PPC products should continue to maintain price stability and not to

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undermine existing long term customer contracts. ComReg has concluded that the national average pricing approach will continue for legacy WLL and PPC products. This is discussed in Section 5 of the main document.

Q.13. Do you agree that ‘real-time’ traffic conveyance has an additional associated cost compared with ‘best efforts’ traffic conveyance? Please provide reasons for your response.

Eircom believed that there is also the consideration that retail customers, and as a result their service providers who buy in access services, attach a higher value to real-time conveyance of data traffic. Eircom believed that it is a well established pricing principle that setting charges to reflect this additional value leads to higher utilisation and lower unit costs to the benefit of all consumers. ComReg has further considered the points raised relating to conveyance of traffic. This is discussed in Section 6 of the main document.

Q.14. Do you agree that geographic density is one of the main cost drivers in terms of the provision of leased lines services on the core network? Please provide reasons for your response

Q.15. Do you agree that the pricing approach for ‘high density’ areas should be extended to ‘medium density’ areas, where there is demand envisaged in those medium density areas? Please provide reasons for your response

Q.16. Do you believe that the assessment of demand for those medium density areas should be determined by footprint, bandwidth or determined by ComReg on a case-by-case basis? Please provide reasons for your response

Eircom believed that the pricing approach should be extended to medium density areas where demand is envisaged as demand density (and so the unit costs achieved) do not depend solely on the population density but rather on the demand density. Eircom believe that when a sparsely populated area is the site of a cluster of businesses with large demands for business data services and these services are delivered over the eircom NGN then unit costs in that region will drop and eircom is in agreement with adjusting prices to reflect that drop. Eircom noted that where such increased demand density exists, Eircom will change the prices charged for services connected from the node(s) in the affected region from “medium density” rates to the lower level “high density” rates. As set out in Section 5 of the main document, ComReg has committed to undertake an annual review of the BU-LRAIC plus model which will incorporate a review of NGN node roll-out and categorisation, and extend to a review of NGN core conveyance regions. Any changes identified, will be considered in aggregate with a review of other key assumptions and parameters. Any categorisation updates will be reflected in the WSEA /WEIL categorisation list in line with the LLRO process (i.e. published three months in advance). The details of this have been further discussed in Section 5.

Magnet agreed and believed that geographic density occurs due to industries being present in a particular location. Magnet believed that industry is the driver for provision of leased lines as a residential customer is not a leased line user, therefore Magnet believed that geographic density and industrial locations are interlinked. Magnet also believed that if there is a large industry in a low density area there

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would still be a demand for leased lines. ComReg has addressed this point as part of its discussion in Section 5 of the main document.

Magnet believes that all of the 3 potential determinations are acceptable. However, Magnet believes that it should be noted that political lobbying should not be listened to when requested to reclassify a medium density exchange. Magnet believes that it is imperative that there is confirmation of such increase in demand to merit reclassifying the exchange. ComReg has concluded that medium density areas will be assessed on a case by case basis. This has been discussed in Section 5 of the main document.

ALTO agrees and believes that in Ireland where the economics of different areas varies, geographic density is one of the main cost drivers as ducts and fibres will most likely already exist. ComReg has concluded on this point in Section 5 of the main document.

ALTO believed that Eircom's price list contains considerable differences between the medium and high-density areas and it would be beneficial to extend the high density pricing approach to medium density areas where demand it's envisaged. ALTO believed that will be less competition from other operators in these medium density areas so customers will have no option but to pay higher prices. ComReg has considered this point in Section 5 of the main document.

ALTO also believed that at this time the wholesale Ethernet market is nascent as it just commenced in Ireland and it's difficult to predict the key element for determining demand, hence the availability should be on a case by case basis. ComReg has concluded on this point in Section 5 of the main document.

E-net agreed and believed that it follows that geographic density must be an important cost driver for the core network provision of leased lines. E-net also believes that ComReg needs to balance its desire to achieve regulated prices for leased lines that accurately reflect underlying costs with the need to ensure that more remote parts of the country are not significantly disadvantaged compared to urban centres. ComReg has concluded on this point in Section 5 of the main document.

E-net believed that this kind of assessment will require careful consideration and, as such, that it could only sensibly be done on a case-by-case basis. ComReg has concluded on this point in Section 5 of the main document.

Q.17. Do you agree with the application of a gradient to set leased line charges in the market for wholesale terminating segment of leased lines is reasonable so long as the SMP operator recovers its efficiently incurred costs and does not create a margin (price) squeeze? Please provide reasons for your response.

Eircom agreed. Eircom believed that the use of value gradients in access pricing is a very important tool in arriving at the optimal demand, by recognising that the value of any one product may vary according to circumstances, including, for example, according to uses and users, and by guiding the allocation of joint and common costs to different products on this basis. Eircom believed that a price calculated on the basis of an allocation of cost remains a cost oriented price, even if it differs from the average cost, once the component volumes priced at each point along the gradient curve allow full cost recovery. While ComReg has concluded that it is reasonable to apply a gradient in order to determine the charges for leased line products within the

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market for wholesale terminating segment of leased lines ComReg has given further consideration to gradient in Section 6 of the main document.

ALTO agreed and believed that the situations where price gradients are valid are where the service moves towards the core of the network as the service is shared and the amount of usage becomes quantifiable. ALTO believed that in this situation, price gradients can be developed to reflect costs and additionally to provide controls on the levels of traffic in the core. While ComReg has concluded that it is reasonable to apply a gradient in order to determine the charges for leased line products within the market for wholesale terminating segment of leased lines ComReg has given further consideration to gradient in Section 6 of the main document.

E-net agreed and believed it would be reasonable to apply a gradient in order to determine the charges for leased line products providing Eircom complies with its other regulatory obligations, including its cost orientation obligation and its obligation not to create a margin squeeze. E-net notes that, as ComReg points out, the charges for existing legacy leased line products are priced using gradients and this method of pricing is commonly used in other EU Member States. While ComReg has concluded that it is reasonable to apply a gradient in order to determine the charges for leased line products within the market for wholesale terminating segment of leased lines ComReg has given further consideration to gradient in Section 6 of the main document.

Magnet is uncertain in its response to this question as Magnet believes that the concept of gradients in itself is sound and responsible in certain situations, however Magnet cannot comment any further as no particular examples were put forward. While ComReg has concluded that it is reasonable to apply a gradient in order to determine the charges for leased line products within the market for wholesale terminating segment of leased lines ComReg has given further consideration to gradient in Section 6 of the main document.

Q.18. Do you believe that principle of cost orientation should be applied at a high level of aggregation, i.e. the price structure to be adopted should ensure that total revenues recover the total costs for the various elements of the wholesale NGN Ethernet leased lines products? Please provide reasons for your response.

Eircom agreed. Eircom noted that they understand this question concerns the application of cost orientation obligation to the prices charged for wholesale NGN Ethernet access and interconnect products. Eircom believed that when access and interconnect services are delivered over an entirely new network, it is appropriate, and necessary, to test for cost orientation at the highest level. Eircom believed that because of complexity it is meaningless, and accordingly unreasonable, to test for cost orientation at the level of a single service, and so is only appropriate to test at the highest level by comparing the total of revenues evaluated at the level of wholesale charges for access and interconnect services to the modelled costs of delivering the same mix of demands. ComReg has concluded on this point in Section 5 of the main document.

Magnet agreed: the principle of cost orientation should be applied at high level of aggregation, because if revenue didn't recover costs then there would be below cost selling. ComReg has concluded on this point in Section 5 of the main document.

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Q.19. Do you agree with the proposed approach set out above (EEO, 'LRAIC plus' and product-by-product basis) for an ex-ante margin (price) squeeze test between the prices in the market for wholesale terminating segment of leased lines and the corresponding prices in the retail market? Please provide reasons for your response.

BT, ALTO, E-net and Magnet agreed with the proposed product-by-product assessment. ComReg has concluded that a product by product basis is reasonable. As set out in Section 7, ComReg proposes that a product should be defined by circuit speed and where there is also a distance factor, as with PPCs and WLLs, an average distance(s) should be applied, by circuit speed.

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Appendix C: List of further consultation questions

List of Questions

- Q. 1. Do you agree with ComReg’s proposed approach to determining PPC fibre access prices? Please provide reasons for your response. 59
- Q. 2. Do you agree with ComReg’s approach on the application of the pricing gradient to WSEA logical prices? Please provide reasons for your response. 66
- Q. 3. Do you agree with ComReg’s approach and the draft maximum prices, above and as referred to in Appendix A, for WLLs, PPCs and NGN Ethernet? Please provide reasons to support your answer. 69
- Q. 4. Do you agree with ComReg’s approach, as set out above, for setting the minimum price floors for WLL and other equivalents? Please provide reasons for your response. 77
- Q. 5. Do you believe that the draft text of the proposed decision is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required. 82
- Q. 6. Do you have any views on this Regulatory Impact Assessment with regard to the draft maximum charges determined for WLLs, PPCs and NGN Ethernet and also with regard to the Margin Squeeze test and are there any other factors that ComReg should consider in completing its Regulatory Impact Assessment on these points? Please explain your response and provide details of any additional factors that should be considered by ComReg. 110