

Appendix A



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- Market Analysis -

**Markets for wholesale network infrastructure
access at a fixed location (M4) and wholesale
broadband access (Market 5)**

13 August 2014

Table OF CONTENTS

1.0	Introduction	9
1.1	General.....	9
1.2	Electronic communications legislation.....	11
1.3	The PTA's execution of market analysis	13
1.4	On market analysis	14
1.4.1	General	14
1.4.2	Demarcation of product and service markets	14
1.4.3	Demarcation of the geographical market	15
1.4.4	Conditions for being able to define other markets	16
2.0	Description and definition of the relevant service markets.....	17
2.1	Pre-defined markets for network infrastructure access at a fixed location and for broadband.....	17
2.1.1	Definition in the ESA Recommendation.....	17
2.1.2	Wholesale network infrastructure access at a fixed location	19
2.1.3	Wholesale broadband access.....	21
2.1.4	The position of the EU Commission ESB and BEREC in the on next-generation access networks (NGA).....	24
2.1.5	Icelandic government electronic communications plans until the year 2022	28
2.1.6	Digital television (IPTV).....	30
2.1.6.1	General	30
2.1.6.2	Decisions by the Competition Authority regarding mergers of companies in the electronic communications and media markets in the year 2005.....	31
2.1.6.3	The decision by the Competition Authority will respect to the Siminn infringement in 2009	34
2.1.6.4	Ruling by the Competition Authority Appellate Committee 2/2010 in a case concerning Siminn.....	37
2.1.6.5	Judgement of the District Court of Reykjavik and of the Supreme Court in the case of Siminn versus Competition Authority	37
2.1.6.6	Market 18 according to the ESA Recommendation from 2004.....	38
2.1.6.7	The Media Act from 2011.....	40
2.1.6.8	Final words on digital TV (IPTV)	43
2.2	Description of the relevant service markets in Iceland.....	44
2.2.1	Retail market related to Markets 4-5.....	44
2.2.2	Wholesale market for access to fixed access networks (Market 4).....	49
2.2.3	The wholesale market for broadband access (Market 5).....	55
2.3	Evaluation of access technology and substitutability on the relevant wholesale markets in Iceland	59
2.3.1	Evaluation of access technology and substitutability on the market for access to fixed access networks (Market 4).....	59
2.3.1.1	Introduction.....	59

2.3.1.2	Copper local loops	60
2.3.1.3	Fibre-optic local loops	65
2.3.1.4	Coax cable.....	70
2.3.1.5	Fixed wireless access (FWA).....	70
2.3.1.6	Summary.....	71
2.3.2	Assessment of access technology and substitutability for broadband access (Market 5).....	72
2.3.2.1	Introduction.....	72
2.3.2.2	Copper network.....	73
2.3.2.3	Fibre-optic network.....	76
2.3.2.4	Cable system	78
2.3.2.5	Fixed wireless access systems (FWA).....	79
2.3.2.6	Satellite	79
2.3.2.7	UMTS and other mobile network service for access to data transmission networks. 79	
2.3.2.8	Summary.....	82
2.4	Summarised PTA conclusions (Markets 4-5).....	83
3.0	Definition of geographical market	85
3.1	General.....	85
3.2	Access to network infrastructure at a fixed location	86
3.3	Broadband access	88
4.0	Analysis of the market for wholesale network infrastructure access at a fixed location, including shared or fully unbundled access (Market 4)	93
4.1	Introduction	93
4.2	Market share	95
4.3	Overall size of a company	98
4.4	Entry barriers	100
4.4.1	General comments on barriers to entry	100
4.4.2	Control of infrastructure not easily duplicated.....	100
4.4.3	Sunk costs.....	102
4.4.4	Economy of scale	103
4.4.5	Economy of scope	104
4.4.6	Access to capital.....	105
4.4.7	Barriers to growth.....	107
4.4.8	Service systems	108
4.4.9	Vertical integration.....	108
4.4.10	Conclusion concerning entry barriers in the relevant market.....	109
4.5	Competition problems on the market in question.....	110
4.5.1	Customer countervailing buying power	111
4.5.2	Product diversification / bundling.....	112
4.5.3	Potential competition.....	112

4.5.4	Pressure from substitute products	113
4.5.5	Customer choice and potential switching costs/the effects of binding contracts 114	
4.5.6	Conclusions on competition on the relevant market	114
5.0	Assessment of SMP on the relevant market and the designation of a company with SMP	117
5.1	General.....	117
5.2	Assessment of SMP on the relevant market	117
6.0	Analysis of the wholesale market for bitstream access (Market 5).....	119
6.1	Introduction	119
6.2	Market share	121
6.3	Overall size of a company	126
6.4	Entry barriers	127
6.4.1	General comments on barriers to entry	127
6.4.2	Control of infrastructure that is difficult to duplicate	128
6.4.3	Sunk costs.....	130
6.4.4	Economy of scale	131
6.4.5	Economy of scope	132
6.4.6	Access to capital.....	133
6.4.7	Barriers to growth.....	134
6.4.8	Service systems	135
6.4.9	Vertical integration.....	136
6.4.10	Conclusion concerning entry barriers in the relevant market.....	138
6.5	Competition problems on the market in question.....	139
6.5.1	Customer countervailing buying power	140
6.5.2	Product diversification/bundling	141
6.5.3	Possible competition	142
6.5.4	Horizontal integration	143
6.5.5	Customer choice and potential switching costs/the effects of binding contracts 143	
6.5.6	Conclusions on competition on the relevant market	143
7.0	Assessment of SMP on the relevant market and the designation of a company with SMP	145
7.1	General.....	145
7.2	Assessment of SMP on the relevant market	145
8.0	Imposition of obligations on Market 4	147
8.1	In general on obligations	147
8.2	Competition problems	148

8.2.1	In general on problems in the field of competition	148
8.2.2	Competition problems on the market in question	148
8.3	Obligations in force	150
8.3.1	Obligations imposed with the PTA Decision no. 26/2007 from 21 December 2007.	150
8.3.2	The impact of existing obligations	152
8.3.3	The necessity to maintain obligations (not to impose new obligations)	153
8.4	The Decision of the Competition Authority no. 6/2013	153
8.5	Imposition of obligations pursuant to the Electronic Communications Act	156
8.5.1	Obligation to provide access	157
8.5.1.1	Access to specific network elements or facilities, including unbundled access to local loops	157
	<i>Copper local loops</i>	158
	<i>Access to copper sub loops</i>	159
	<i>Fibre-optic local loops</i>	161
8.5.1.2	Co-location or sharing.....	162
8.5.1.3	Access to other essential facilities	164
8.5.1.4	Technical migration	164
8.5.1.5	Summary	165
8.5.2	Obligation for non-discrimination.....	165
8.5.2.1	Summary	170
8.5.3	Obligation for transparency.....	171
8.5.3.1	Summary	174
8.5.4	Obligation for separation of accountancy	174
8.5.5	Obligation for price control.....	176
8.5.5.1	Summary	187
8.5.6	Cost accounting	188
9.0	Assessment of impact of imposed obligations on Market 4.....	189
10.0	Imposition of obligations on Market 5	192
10.1	In general on obligations.....	192
10.2	Competition problems.....	193
10.2.1	In general on problems in the field of competition	193
10.2.2	Competition problems on the market in question	193
10.3	Obligations in force.....	195
10.3.1	Obligations imposed with PTA Decision no. 8/2008 from 18 April 2008	195
10.3.2	The impact of existing obligations	197
10.3.3	The necessity to maintain obligations or to impose new obligations.....	198
10.4	Decision of Competition Authority no. 6/2013	198
10.5	Imposition of obligations pursuant to the Electronic Communications Act.....	202
10.5.1	Obligation to provide access	202

10.5.1.1	Summary	207
10.5.2	Obligation for non-discrimination.....	208
10.5.2.1	Summary	213
10.5.3	Obligation for transparency.....	214
10.5.3.1	Summary	217
10.5.4	Obligation for separation of accountancy	217
10.5.5	Obligation for price control.....	220
10.5.5.1	Summary	229
10.5.6	Cost accounting	230
11.0	Assessment of impact of imposed obligations on Market 5.....	232

Summary and Conclusions

This document contains a draft Post and Telecom Administration (PTA) analysis of the wholesale market for access to network infrastructure access (including shared or fully bundled access) at a fixed location and wholesale broadband access which are Markets 4 and 5 in the ESA Recommendation from 2008. The market analysis is the basis for decisions on whether to impose, maintain, amend or withdraw specific regulatory obligations on electronic communications companies that have been designated as having SMP.

Analysis of these markets was previously made in the year 2007 for the markets for network infrastructure access at a fixed location (then Market 11) and in the year 2008 for wholesale broadband access (then Market 12). According to the older ESA Recommendation from 2004 the market for wholesale network infrastructure access at a fixed location was limited to copper local loops, but is now independent of technology. The market for wholesale broadband access is however unchanged.

The PTA conclusion in a prior analysis by the Administration of the market for wholesale network infrastructure access at a fixed location from 21 December 2007 was to designate Mila as having SMP on the wholesale market for access to copper local loops, which was then M11. The PTA imposed the following obligations on Siminn at wholesale level for the relevant market:

- Obligation to provide access
- Obligation for non-discrimination
- Obligation for transparency
- Obligation for separation of accountancy
- Obligation for price control

The PTA conclusion in a prior analysis by the Administration of the WB, from 18 April 2008, was to designate Siminn as having SMP on the wholesale market for WB, which was then M12. The PTA imposed the following obligations on Siminn at wholesale level for the relevant market:

- Obligation to provide access
- Obligation for non-discrimination
- Obligation for transparency
- Obligation for separation of accountancy
- Obligation for price control

The PTA has now made a new analysis of both these markets and the planned PTA conclusion is as follows:

On M4, Mila still has the largest market share, about 83% of the market by number of local loops in use with Gagnaveita Reykjavíkur (GR) coming next with 15%. Other companies have a joint share of less than 2%. The Mila market share has dropped from being 100% as previously the market only covered access to copper local loops but is now technology independent. It is the PTA's conclusion that Mila still has SMP on this market and that this will not change during the lifetime of the analysis.

The PTA intends to maintain the obligations on Mila on Market 4 as follows:

- Obligation to provide access
- Obligation for non-discrimination
- Obligation for transparency
- Obligation for separation of accountancy
- Obligation on price control, except with respect to fibre-optic local loops on the fulfilment of specific conditions.
- Obligation for cost accounting

On Market 5, Mila which took over the Siminn bitstream system, has the largest market share of about 65% of connections in use while GR is next with 21% and FjarSKIPTI (Vodafone) has about 13%. Other companies have a joint share of less than 1%. The market share of Mila (previously Siminn) has remained relatively stable during the past years and has risen from just over 60% in the last analysis to 65% at the end of 2013. Discounting Vodafone's self-supply Mila has a share of 76% in the relevant market for wholesale bitstream and GR 24%. It is the PTA's conclusion that Mila (previously Siminn) still has SMP on this market and that this will not change during the lifetime of the analysis.

The PTA intends to maintain the obligations on Mila on Market 5 as follows:

- Obligation to provide access
- Obligation for non-discrimination
- Obligation for transparency
- Obligation for separation of accountancy
- Obligation on price control, except with respect to bit-stream access through fibre-optic local loops on the fulfilment of specific conditions.
- Obligation for cost accounting

1.0 Introduction

1.1 General

1) This document contains a Post and Telecom Administration (PTA) analysis of the wholesale market for access to network infrastructure access, including shared or fully bundled access at a fixed location, (Market 4) and wholesale broadband access (Market 5). The PTA published an analysis of these markets along with decisions on obligations on companies with SMP on 21 December 2007 (then Market 11) and on 18 April 2008 (then Market 12).¹ It is assumed that market analyses will be repeated at regular intervals in order to monitor whether circumstances have changed on the markets. The PTA planned to complete the market analysis of the markets in question at a much earlier date than has proven to be the case, as for a number of reasons the analysis has taken more time than was expected.

2) The analysis of each market in turn is divided into three main parts. First, there is a definition of the relevant service market and its geographical dimensions. The next step is that the market that has been geographically defined is analysed and it is determined whether competition is active or whether one or more companies on the market have SMP. It is finally evaluated whether it is appropriate to impose, maintain, change or withdraw obligations on companies on the market.

3) This document is based on a PTA Draft Conclusion and the Decision on the relevant market which was initially submitted for consultation by the PTA on 7 March 2013, to electronic communications companies, the Competition Authority and to other possible stakeholders see Article 6 of Act no. 69/2003 on the Post and Telecom Administration. The consultation lasted until 7 May 2013. The draft is furthermore based on comments received in connection with a limited additional consultation initiated by the PTA on 20 December 2013 and which terminated on 24 January 2014. The above-mentioned comments and the PTA position on the comments are covered in separate documents (Appendices B1 and B3). The market analyses were updated in accordance with the comments that were taken into account. The market analyses along with the draft Decision on obligations on the markets in question were sent to the EFTA Surveillance Authority (ESA) and other national regulatory authorities on the EEA area for consultation on 11 July 2014 according to Paragraph 1 of Article 7 of the above specified Act.

4) With a letter dated 11 August 2014 the PTA received ESA's comments to the above draft Decision. ESA made some comments to the draft which can be seen in Appendix C to the final Decision. ESA made inter alia comment regarding the long time which passed between market analysed on the relevant markets, i.e. 6-7 years. Such practice could harm competition on those markets and reduce legal certainty for market participants. The PTA agrees with that comment and the intention is to finish the next round of analyses on these markets within 3 years time.

5) Moreover, in relation to the planned revision of Mila's costing methodologies, ESA reminded the PTA of the need in its forthcoming pricing decisions to provide a clear elaboration of the relevant steps involved in determining the precise level of the proposed wholesale access prices and how the chosen pricing approach in each instance meets the

¹ These markets are the same as 11 and 12 in the ESA Recommendation on the relevant market from 16 June 2004 (with the exception that Market 4 is not limited to copper local loops as market 11 was in the old Recommendation), see further discussion in Chapter 2.

objectives of the EEA regulatory framework. The PTA will take this comment into account in its forthcoming draft Decision on Mila's costing methodologies on the relevant markets which Mila shall deliver to the PTA within 6 months from the publishing of the final Decision in the case here under discussion. Before final decision in the costing methodologies case is reached the PTA will consult market participants and ESA and other NRA's in the EEA area.

6) Furthermore ESA stressed the importance of the need to ensure equivalence of access to fibre-based infrastructure in the relevant markets, since the PTA didn't have the intention of imposing price control obligation on Mila regarding such networks. However, the Authority recognised the currently limited stage of Mila's fibre-based infrastructure and that it might be important, in order to promote efficient investment and innovation, to allow operators investing in NGA networks a certain degree of pricing flexibility to test price points and differentiated offers. However, in order to ensure that such pricing flexibility does not lead to excessive pricing or margin squeeze in markets where SMP has been found, additional safeguards to protect competition should be in place. With regard to technical equivalence of access, the Authority noted the PTA's confirmation that it intended to apply EoI to all (copper- and fiber-based) access products and to associated and ancillary services in the relevant markets. The PTA also proposed to enforce this obligation within three months (in market 4) and within six months (in market 5) after the publication of the final decision. The PTA also clarified that in the event that EoI was not implemented, it might impose a price obligation with respect to Mila's fibre-based infrastructure. With regard to economic equivalence of access, the Authority noted that the PTA might perform an *ex post* economic replicability test to identify whether external parties could replicate the product offer of internal parties in a sustainable manner. The Authority further noted that the PTA intended to instruct Mila to alter its product offer and/or offer new wholesale products to enable external parties to replicate the product offer in the event that the PTA concludes that the product offer is not replicable. However, despite identifying potential competition problems associated with possible obstructions of wholesale access in the relevant markets, the PTA didn't specify any further details or timelines regarding the application of its proposed economic replicability test. Therefore, the Authority invited the PTA to develop and implement an *ex ante* economic replicability test for broadband access products delivered over fibre-based infrastructure related to markets 4 and 5. The details of such *ex ante* economic replicability test should clearly specify the relevant retail products, the relevant cost standard and the downstream costs taken into account, as well as the relevant wholesale inputs concerned and the time period for applying the test. Finally the Authority noted that any draft decision regarding the above would be subject to consultation at national and EEA level. Subsequent to the decision under discussion here, the PTA will closely monitor the development of the broadband access over fibre networks and the functionality the obligations which the PTA now imposes on Mila. If the conclusion is that the PTA consider there to be a need for further safeguards to ensure active competition, the Administration will initiate work on the development of the aforementioned *ex ante* economic replicability test.

7) Finally ESA made a comment on the proposed priority rights for VDSL roll-out in the market for bitstream access (M5) where the PTA plans to implement the obligation on non-discrimination in such a way that an operator of a bitstream network may publish its VDSL roll-out plans for a specific area and enjoy a priority right to VDSL roll-out for that area for a period of the subsequent three months. According to the PTA the purpose of this arrangement is to increase motivation for investment in VDSL networks. ESA invites the PTA to explain precisely in the final measure how this arrangement is based on identified competition problems in the relevant market and is proportionate and justified in light of Article 8 of the

Access Directive. Also that the PTA clarifies the legal position of those bitstream operators that have not been appointed as having SMP status and how the PTA will ensure that the aforementioned arrangement will not deter or impede investment by alternative broadband operators in Iceland. The aim of the PTA with the aforementioned arrangement is first and foremost to increase willingness to invest in VDSL networks for the benefit of consumers in all of Iceland. When service providers in the retail market enjoy better products in the market of wholesale bitstream access, the PTA envisions that competition in the downstream markets will increase with the increased coverage of bitstream networks of more powerful capacity. Since the original draft was published for national consultation Mila has built up its VDSL network very quickly without this priority right being in force. The situation now is that Mila's VDSL network reaches all major urban areas and if Mila's plans come to fruition almost all homes where it is technically possible and economical to do so will be reached before the end of 2014. No other network operators have shown tangible interest in building their own VDSL networks. Network operators have however shown interest in building fiber optic networks. Service Providers then have access to these fiber and VDSL networks. PTA is of the opinion that this arrangement fits within the objective of the aforementioned Article 8 since roll out is promoted, competition in end user services is ensured and consumer benefit is greatly increased, especially around the countryside that until now has only had access to ADSL bitstream and fiber optic networks are unlikely to be built in the near future. Additionally the arrangement is such that all parties have an equal possibility to ensure themselves this three months priority right, and this time period is very short when the scope and investment of such a project is taken into account, that guarantees a certain proportionality. Non-discrimination is then ensured between parties with SMP status and those that are not designated as having SMP.

8) Markets are in continual development which means that they must be re-examined within a reasonable period of time. In making market analysis, attention is paid to projected development in the near future, to the extent that this is possible. The period that a market analysis is intended to cover depends to a certain extent on the characteristics of the relevant market, but as a rule of thumb one could expect conclusions of an analysis to apply for 2 to 3 years.

1.2 Electronic communications legislation

9) The Electronic Communications Act no. 81/2003 implements the European Union Directives on Electronic Communications.² EU electronic communications legislation is intended to create a homogenous working environment for electronic communications

² The Directive of the European Parliament and of the Council no. 2002/19/EC from 7 March, 2002 on access to and interconnection of, electronic communications networks and associated facilities (Access and interconnection Directive).

The Directive of the European Parliament and of the Council number 2002/20/EC from 7 March, 2002 on the authorisation of electronic communications networks and services (Authorisation Directive).

The Directive of the European Parliament and of the Council no. 2002/21/EC from 7 March, 2002 for a common regulatory framework for electronic communications networks and services (Framework Directive).

The Directive of the European Parliament and of the Council no. 2002/22/EC, of 7 March 2002, on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).

Directive of the European Parliament and Council no. 2002/58/EC, of 12 July 2002, concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).

companies in Europe, to limit barriers and create conditions for sustainable competition for the benefit of consumers.

10) The Electronic Communications Act obliges the PTA to define certain electronic communications markets, both in terms of service and product types and in terms of geographical dimension in accordance with the fundamental principles of competition law and the obligations pursuant to the European Economic Area (EEA) Agreement. Furthermore, the PTA is required to analyse the defined markets and determine whether they are characterised by effective competition. If the PTA comes to the conclusion that there is effective competition in the relevant market – that is that no operator has SMP – it is prohibited from imposing obligations on the operators in that market. If the Administration has previously imposed obligations on undertakings in the relevant market, these shall be withdrawn and no new obligations imposed. Should on the other hand the PTA come to the conclusion that competition is not active on the relevant market because one or more companies have SMP, then the institution is obliged to designate them as having SMP and to impose on them the appropriate obligations.

11) The European Commission has published Guidelines and a Recommendation on market analysis. On the one hand there are Guidelines on market analysis and assessment of SMP³ and on the other hand there is a Recommendation on the relevant markets.⁴ The EFTA Surveillance Authority (ESA) has issued analogous Guidelines⁵ (hereafter called "Guidelines") and Recommendation⁶ (hereafter called "Recommendation" and the PTA will refer to both the ESA and EU Commission Guidelines and Recommendation when making the market analysis⁷. Furthermore, reference will be made to the report of the European Regulatory Group of National Regulatory Authorities (ERG⁸) on obligations that may be imposed on electronic communications companies with significant market power for the

³ Commission Guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic networks and services, 2002/C 165/3.

⁴ Existing regulations are: Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (notified under document no. C(2007) 5406) (2007/879/EC) and explanatory notes;

Commission Staff Working Document - Explanatory Note Accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Second edition) {(C(2007) 5406)}

⁵ EFTA Surveillance Authority Guidelines of 14 July 2004 on market analysis and the assessment of significant market power under the regulatory framework for electronic communications networks and services referred to in Annex XI of the Agreement on the European Economic Area.

⁶ Existing regulations are: EFTA Surveillance Authority Recommendation of 5 November 2008 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with the Act referred to at point 5cl of Annex XI to the EEA Agreement (Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services), as adapted by Protocol I thereto and by the sectoral adaptations contained in Annex XI to that Agreement.

⁷ Among other things the EU Commission Recommendation on Regulated Access to NGA Networks frá 20. september 2010 og EU Commission Recommendation on consistent Non-discrimination obligations and Costing Methodologies from 11 September 2013

⁸ Abbreviation for "European Regulatory Group of National Regulatory Authorities". Now the institution is called Body of European Regulators for Electronic Communications (BEREC).

purpose of enhancing competition⁹ and to other reports from the Institution which is now called BEREC¹⁰.

12) In existing recommendations on the relevant markets, seven electronic communications markets have been predefined that the PTA in accordance with the electronic communications legislation currently in force and with Iceland's obligations according to the EEA Agreement is obliged to analyse. Furthermore the electronic communications legislation stipulates that the PTA define these markets in accordance with circumstances that currently pertain in Iceland. In this connection it could be the case that the PTA market definition would vary from those prescribed in the Recommendation. The PTA is also authorised to investigate all relevant electronic communications markets in connection with market analysis, regardless of whether or not they are listed in the Recommendation.

1.3 The PTA's execution of market analysis

13) In the regulation on market analysis in the field of electronic communications no. 741/2009 and in the PTA information brochure on market analysis, the implementation of market analysis can be divided into three stages:¹¹

- 1) Define the relevant service markets and geographical markets.
- 2) Analyse each of the defined markets, assess whether there is active competition on these markets and decide whether one or more companies have SMP.
- 3) Make a decision on whether obligations shall be imposed, amended or withdrawn on companies with SMP.

14) This document contains the planned PTA conclusion is from all three phases and they are hereby notified to ESA and to other electronic communications regulatory bodies in the EEA and to the companies in question. If ESA makes no comments on the draft Decision then it will be notified to the relevant companies and to others.

15) One of the methods used by the PTA to collect data was to send out questionnaires about the market to companies operating on the relevant markets on 14 January 2011 and 19 January 2012. The Administration has also collected information with independent surveys, such as with review groups on customer purchasing behaviour at Capacent in May 2010 and with special questions sent to specific parties to the market. Statistics, including data on the relevant market, are collected from all parties to the market at six monthly intervals. In addition to this, the PTA collects and registers information on all changes to tariffs as they take place.

⁹ Revised ERG Common Position on the approach to Appropriate remedies in the ECNS regulatory framework. Final Version May 2006. ERG (06) 33. The document can be seen at:

http://erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

¹⁰ One could mention in this context the BEREC Common Position on Best Practice in Remedies on the Market for Wholesale Network Infrastructure (BoR (12) 127) og BEREC Common Position on Best Practice in Remedies on the Market for Wholesale Broadband Access (BoR (12) 128).

¹¹ [http://pfs.is/upload/files/Kynningarrit_um_markaðsgreiningu_ágúst_2009\(1\).pdf](http://pfs.is/upload/files/Kynningarrit_um_markaðsgreiningu_ágúst_2009(1).pdf) and <http://www.stjornartidindi.is/Advert.aspx?ID=5da05fd2-7938-42f9-92b5-d277c583c236>

1.4 On market analysis

1.4.1 General

16) According to Article 16 of the Electronic Communications Act no. 81/2003 as amended, the PTA shall define service or goods markets and geographical markets in accordance with the main principles of competition law and with obligations according to the EEA Agreement. As has been stated it is necessary for the PTA to evaluate whether markets as defined in the Recommendation, harmonise with Icelandic circumstances. Both the service and geographical markets must be defined before it is possible to assess whether market conditions are such that the market is susceptible to the imposition of ex-ante obligations.

1.4.2 Demarcation of product and service markets

17) In Article 4 of the Competition Act no. 44/2005 a market is defined as a sales area for a product and substitute product and/or a sales area for a service and substitute service. The purpose of market definition is to identify in a systematic manner the competitive constraints in companies' environments.¹² Substitute products and services are defined as products or services that can, wholly or to a significant extent, take the place of other products or services, not only on the basis of the objective characteristics of the product in question, the purchaser's intended use of them and their price, but also with respect to competition requirements and/or conditions relating to supply and demand. Products that can compete with one another are therefore called substitute products and each market consists of products that are mutually substitutable. Products that can be substitutes for one another only to a limited extent are not considered to belong to the same market.

18) Substitutability is assessed from two points of view. First, how readily customers believe that one product can be a substitute for another (demand-side substitutability). Second, how easily a competitor of a given undertaking can adapt his production so that his product falls within the market to which a product of the given undertaking belongs (supply-side substitutability).¹³ Demand-side substitutability is considered fundamental to market definition, while supply-side substitutability is less meaningful and is often related instead to an assessment of potential competition. Possible competition is the third competition factor which influences the behaviour of companies. A difference between possible competition and supply substitutability is that supply substitutability can occur with shorter notice than possible competition. In addition to this, supply substitutability does not demand as much investment as new companies need to make when they enter a market. Assessment of possible competition is made in order to see whether there are entry barriers that limit possible competition.

¹² See also here Commission Notice on the definition of relevant market for the purpose of Community competition law. OJ C 372 on 9.12.1997, where it says among other things in the introduction *"Market definition is a tool to identify and define the boundaries of competition between firms. ... The objective of defining a market in both its product and geographic dimension is to identify those actual competitors of the undertakings involved that are capable of constraining those undertakings' behaviour and of preventing them from behaving independently of effective competitive pressure. It is from this perspective that the market definition makes it possible inter alia to calculate market shares that would convey meaningful information regarding market power for the purposes of assessing dominance ... "*

¹³ See further Paragraph 39 in the Guidelines and Explanatory Memorandum to the EU Recommendation, Section 3.1.

19) The SSNIP test¹⁴ has been used to measure possible substitutability. According to the test there is substitutability between product or service A and B if a small (5-10%) but significant non-transitory increase in the price of product A results in customers deciding to purchase product B instead, which in turn results in the price increase on A being unprofitable because of a loss of sales. Should on the other hand such a price increase prove profitable then one may consider that there is no substitutability.

20) The methodology described above requires significant collection of data which is often difficult in practice. It is however not mandatory that the SSNIP test is used when defining a market. There are other methodologies that can be used. One can use economic metrics of supply and demand on markets where such studies are available. When assessing demand one must also take into account consumer access to information and one must investigate whether there are barriers to consumers being able to switch service provider. Where an end user is faced with significant costs if he wishes to switch from service A to service B, then these two services should not belong to the same service market. When assessing supply one also has to take into consideration the real options that sellers have to change their operations and the legal constraints that could delay or hinder the entry of competitors to the market.

21) In Chapter 7 of the Appendix to the Competition Authority rules number 684/2008 on the notification of case procedure in merger cases it states among other things on the definition of markets:

Among the factors which are significant for the assessment of a relevant market is an analysis of why the relevant products or services pertain to this market and why other products and services do not [...] with reference, inter alia, to whether the products or services can serve as substitute products or substitute services, competitive position, price, price fluctuations resulting from demand or other factors which are significant for the definition of the market.

22) There are thus many factors that must be taken into account when deciding whether the product or service can substitute another and these factors must be discussed before a conclusion is reached.

1.4.3 Demarcation of the geographical market

23) When a service market has been defined, its geographical dimension must be defined. The main rule is that it is based on the scope of the electronic communications network and the legislative jurisdiction of the regulatory framework that applies to it. Geographical demarcation is also based on an assessment of substitutability of the product or service in question, on the supply side and on the demand side. The geographic market is the area where products or services are offered on sufficiently homogeneous competitive terms. In assessing demand-side substitutability, it is appropriate to consider customers' taste and geographical purchasing patterns. On the basis of this, it is possible to define markets as local, regional, national, or transnational; that is, extending to more than one country. The PTA does however not have the authority to define transnational markets on its own initiative. If a market is

¹⁴ SSNIP abbreviation for “small but significant non-transitory increase in price”. The test is also called “the hypothetical monopolist test”. See Paragraph 41 in the Guidelines where this is explained in more detail.

considered to extend to more than one country, European regulatory authorities collaborate on the market definition together with the European Commission and ESA if appropriate.

24) Two factors are important in defining geographical markets: on the one hand the electronic communications network coverage and on the other hand the price of products or services. If a telecommunications network is distributed over the whole country, then this is an indication that the geographical scope should be the whole country. If the distribution of the network is regional and there is no overlapping of regions, this is an indication that the geographical scope should be regional. If prices are the same for the entire country, this indicates that the geographical scope should be national. If prices differ according to region, this is a strong indication that supply- and demand-side substitutability do not exist and that the regions in question are distinct geographical markets.¹⁵

1.4.4 Conditions for being able to define other markets

25) The PTA can define other markets than those specified in the ESA Recommendation, for example because of special circumstances in this country. In such cases there shall be consultation with ESA. When defining other markets, the following conditions need to be fulfilled to enable the imposition of obligations:

- 1) The market shows high and non-transitory barriers to entry.
- 2) Market structures do not tend towards effective competition in a relevant time horizon.
- 3) Application of competition law alone does not adequately abolish obstacles and strengthen competition.

The above conditions, in the opinion of the EU Commission and of ESA, exist in the markets being examined here.

¹⁵ The geographical dimension of markets is discussed in Chapter 2.2.2 of the ESA Guidelines and also in the COMMISSION NOTICE on the definition of the relevant market for the purposes of Community competition law. (OJ C372 9/12/1997) and ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies) - October 2008 ERG (08) 20 final CP Geog Aspects 081016.

2.0 Description and definition of the relevant service markets

2.1 Pre-defined markets for network infrastructure access at a fixed location and for broadband

2.1.1 Definition in the ESA Recommendation

26) The service markets being examined here correspond to Markets 4 and 5 in the ESA Recommendation from 5 November 2008¹⁶ and are defined in the following manner:

- a) Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location.
- b) Wholesale broadband access.¹⁷

27) The EU Commission and ESA have come to the conclusion that access to local copper loops (including shared or fully unbundled access) and broadband access are separate markets.¹⁸

28) In the Explanatory Memorandum from the EU Commission (hereafter Guidelines) to its Recommendation from 2007, on which the ESA Recommendation from 2008 is based, it is stated that these markets are the same as those defined in its previous Recommendation from 2003 and in the ESA Recommendation from 2004, that is to say Market 11 is now Market 4 and Market 12 is now Market 5.¹⁹ It should be noted that, according to the new ESA Recommendation the change has also taken place that Market 4 is now technically independent instead of being limited to copper local loops.

29) These markets have previously been analysed by the PTA and on that occasion according to the older ESA Recommendation from 2004. The PTA published Decisions that contained analyses of the wholesale market for access to copper local loops (Market 11) on 21 December 2007 and its analysis of the wholesale market for broadband access (Market 12) on 18 April 2008²⁰.

30) The main difference between these markets is that wholesale broadband access is located higher in the value chain than network infrastructure access. Generally one refers to companies that provide network infrastructure access at a fixed location to the electronic communications as network operators while it is common to categorise companies that provide bitstream access as service providers.

¹⁶ See ESA Recommendation from 5 November 2008 on the relevant product and service markets, items 4 and 5 in Annex.

¹⁷ According to ESA Recommendations this market includes virtual access or virtual network access including bitstream access at a fixed location. This market is the continuation of the local loop market covered in Market 4 to the extent that broadband access can be implemented by using local loops and by adding other equipment and services.

¹⁸ Explanatory Note Accompanying document to the Commission Recommendation of 17 December 2007 on Relevant Product and Service Markets . . . , pages 29-37

¹⁹ Explanatory Note Accompanying document to the Commission Recommendation of 17 December 2007 on Relevant Product and Service Markets . . . , Page 32.

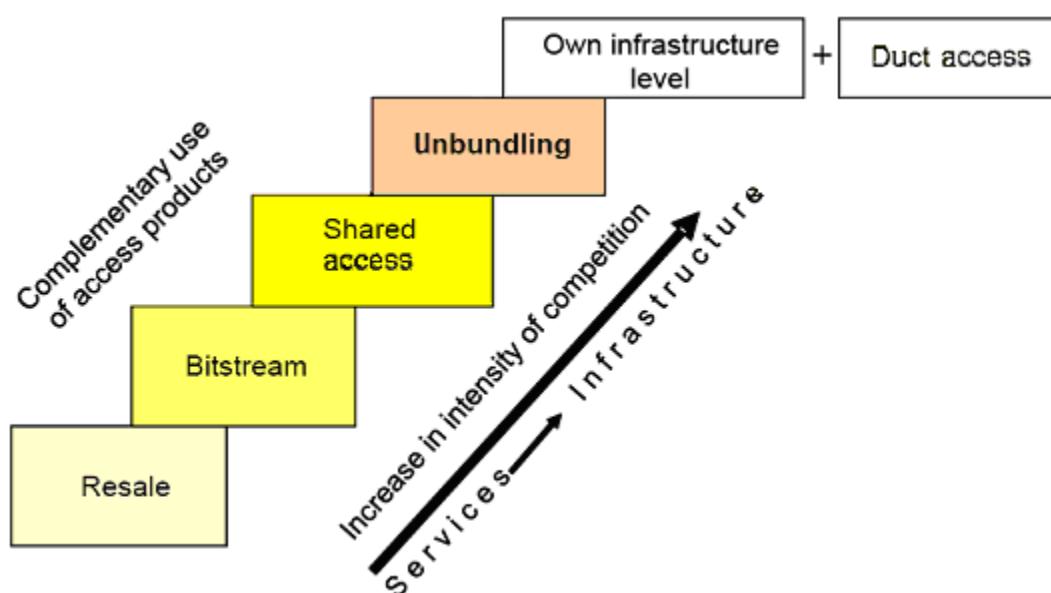
²⁰ See PTA Decision no. 26/2007 (former Market 11) and 8/2008 (former Market 12).

31) Market 4 covers physical network infrastructure, the physical copper loops themselves, switching stations, boosters etc. A variety of technical systems can be added to the local copper loops and it is at these points that the real production of service takes place. This service requires that end users can both send and receive data. This service which takes place on the network, for example the Internet, e-mail, television broadcasting (IPTV) and other services, is covered in more detail in the discussion on Market 5. It is not sufficient to have access to a local loop (whether copper or fibre-optic) to enable bitstream services. In the same way it is necessary to have access to some kind of electronic communications infrastructure to enable broadband services. This is why these markets are dependent on each other.

32) When these two markets are examined with respect to the investment generally required to be able to operate on them they are seen to be different. Very significant investments in one's own electronic communications infrastructure are necessary to be able to operate on Market 4 while it is possible to participate in Market 5 at a relatively low cost.

33) To be able to offer broadband services the service provider can develop his own system in part or in full and/or purchase a variety of wholesale access from operators of networks and/or systems. Wholesale access can mean anything from the leasing of local loops from the network operators to pure resale of ready-made service packages to end users. Figure 2.1 below of investment levels for various levels of access to Markets 4 and 5 show the Access Options that electronic communications companies can use to make broadband services for end users

Figure 2.1 Investment levels for broadband services



Source: EU Commission²¹

²¹ Commission Staff Working Document – Accompanying document to the Commission Recommendation on regulated access to Next Generation Access Networks (NGA) (SEC(2010) 1037 final.

34) The main Access Options in this context are:

- **Resale** Simple purchase of service at wholesale which is sold unchanged under the company's own trademark. The service provider has a business relationship with the end user and can offer value added service, such as service desk, e-mail addresses, etc.
- **Bitstream access** This is a matter of purchasing capacity in a data transmission system which creates contact between end users and the service provider's central system, such as ADSL owned by another party. The service provider operates his own service (such as Internet service and/or IPTV service) and can organise various parts of the service at his convenience, such as for example data volume to customers and more flexible pricing.
- **Shared access** is where a DSL utility purchases access to a higher frequency rate in a copper local loop and builds its own data transfer system on top. In order to be able to use such access, the service provider in question must have DSLAM²² equipment in its switching stations/telephone exchanges.
- **Local loop unbundling** The service provider leases all local loops for his own use. The service provider receives access to the local loop in his switching station/telephone exchange.

35) This close relationship between the relevant markets is the reason why the PTA considers it appropriate to analyse them together. This is in accordance with the ESA Recommendation on the relevant markets from November 2008²³.

2.1.2 Wholesale network infrastructure access at a fixed location

36) Network infrastructure access and a fixed location, which is being examined here is equivalent to Market 4 in the ESA Recommendation. According to the ESA definition this market covers access to local loops, both shared or fully unbundled access. In its analysis of Market 11, which was published with Decision no. 26/2007, dated 21 December 2007, the PTA defined the wholesale market for access to copper local loops. This definition is based on the definition in the ESA Recommendation that was then in force, taking into consideration the Explanatory Note to the EU Commission Recommendation from 2003. As is stated in Section 2.1.1 here above, the definition of this market is no longer the same. According to the new ESA Recommendation from 2008 the market is now considered technically independent and for this reason, it is necessary to study all types of access networks in use in this country.

37) The PTA however considers that it is necessary to investigate whether there have been changes in circumstances on the market in this country, including changes with respect to the service offer, that could call for changes to the definition or whether new services have emerged based on newer technology that fall within the scope of the market.

²² Digital Subscriber Line Access Multiplexer.

²³ See ESA Recommendation from 5 November 2008 on the relevant product and service markets.

38) When talking about access to network infrastructure at a fixed location, then one is generally referring to local loops. The concept of local loop is used about that part of the access network, which is generally not jointly used by other users or where the joint use is very limited, for example with people living in the same house. This means in other words, that the local loop is on the one hand the part which connects the user network connection point with the distribution frame in the telephone exchange or street cabinet in the case of copper wire and on the other hand in the case of fibre-optic to users, the last Section of the fibre-optic system for example from the network switch or from nodes that are parallel to a distribution frame in the copper scenario. In the same manner that each copper wire pair that forms one telephone line is one local loop, each individual service connection of a fibre-optic network is considered to be one local loop. Such a service connection is usually implemented with a single fibre optic thread but connections with pairs of threads are also known.

39) Initially the definition of access network was limited to copper local loops. Copper local loops did and do exist where there used for access to fixed line telephony service, first manually operated and then automatically. With the advent of fax machines the need for local loops increased, particularly in commercial property as they often had dedicated lines. The introduction of computers into commercial operations was the next step, which demanded separate lines for computer connections and connections with public data networks. Households were provided with computer connections with dial-up modems via the same local loop as was used for the fixed line telephone. Voice and data conveyance could be used in parallel with ISDN service. Where two 64 kb/s channels were conveyed on a copper local loop, one could for example use one for voice and one for data transfer. Possible data transfer within the ISDN system is thus only 128KB/s.

40) Currently, DSL technology is used which makes it possible to divide the bandwidth of the copper local loop between voice telephony and data transfer which extends the active bandwidth of copper local loop so that is possible to transmit greater data volume via the loop. In addition to voice telephony and Internet services, IPTV television service is now delivered through copper local loops. DSL technology has continued to develop and active bandwidth of the copper local loop has continued to increase. In this country it is now possible to buy connections with a capacity of up to 70 Mb/s with VDSL technology (VDSL2)²⁴. In addition to this Mila intends to provide 100 Mb/s connections at selected locations in 2014 with the help of bonding and vectoring technologies. Bonding technology means that instead of there being one copper line (made of a copper pair), consumers are given two or even more lines into their home. These lines are then bonded to form one electronic communications channel which at least doubles data speed in comparison with a single line. This technology can also be used to increase reach from Street cabinets and telephone exchanges given the existing data speed now on offer. Crosstalk is one of the main drawbacks of xDSL technology and it often limits quality and performance. Vectoring technology is used to eliminate crosstalk by conducting continuous measurements of crosstalk of all lines in a cable and by mostly eliminating it by sending an corresponding signal out of phase. By limiting crosstalk on xDSL lines, the quality of connections thus increases and it is possible to significantly increase their data transmission rate. According to Mila, development in xDSL technology will continue and within a few years the technology known as G.fast will emerge which will enable speeds of up to 1GB/S on shorter copper lines. The usability of copper local loops has thus increased

²⁴ Very-high-bit-rate digital subscriber line. Service parties that sell Mila VDSL2 connections, in most instances offer their customers 50 Mb/s download capacity. One must however note that this is only Internet speed. IPTV with up to 2 HD channels is added to these 50 Mb/s which means that total Mila VDSL2 connection capacity is about 70 Mb/s.

through the years and its importance has certainly not decreased. The main difference between data transmission through copper local loops and fibre-optic is that upload from the end user is much less with copper than with fibre-optic.

41) With continuous increasing demands for faster data transfer and for greater data volume in mind, options for data transfer competing with copper local loops have increased. Abroad, this competition was first in the form of cable systems, which were initially built for distribution of television channels and they were mostly based on coax cable. For a long time the cable systems were unidirectional and therefore not appropriate for voice telephony and data transfer but this changed and bidirectional communications technology for cable systems was introduced, which brought about the possibility of among other things voice telephony and Internet service. Shared access was however never on offer as there were considerable technical problems in implementing this. Here in this country cable systems have been relatively small and their design did not always provide the option of voice telephony and Internet connections. Such systems that were in operation at the end of the last century could not compete with xDSL services which were provided through traditional copper local loops. Coax cables have thus not yet had any significant impact on the local loop market in this country. It should however be noted that the Siminn *Breiðband* was operated from 1995 to 2011, initially only for unidirectional broadcasting of analogue TV channels and then for unidirectional broadcasting of digital TV channels. After that the system was made interactive, which enabled bidirectional services and for a while Internet services were operated on the system that was called Internet through broadband (IuB). There was never a large customer base and the service was discontinued subsequent to the Siminn development of its xDSL service. Siminn offered subscription packages with various TV channels through a coax cable, what was called *Breiðvarp* (Broadcast), but it never achieved significant market share and this service was discontinued in parallel to Siminn's development of its IPTV service.

42) During the last decade or so, systems have been developed based on fibre-optic connections direct to users where fibre-optic equipment is installed at homes (FTTH) or in companies (Fibre to the Office - FTTO).²⁵ The main advantage of fibre-optic is the large capacity for data transfer both to and from the end user, which can be increased in a relatively simple manner by changing its endpoint devices. The distribution of fibre-optic local loops has increased rapidly in very recent years, particularly in the capital city area and in certain urban centres elsewhere in the country. Various municipalities have developed fibre-optic infrastructure in their areas in recent years and it appears that this development will continue.

2.1.3 Wholesale broadband access.

43) The wholesale broadband access under examination here corresponds to Market 5 in the ESA Recommendation.²⁶ According to the ESA definition this market covers bitstream access which can be used for broadband data transmissions in both directions and it also covers access using other technology that is sold in wholesale, if it is analogous to bitstream access.

²⁵ Sometimes FTTO is called FTTP - fibre to the premises.

²⁶ See ESA Recommendation from 5 November 2008 on the relevant product and service markets, items 4 and 5 in Annex.

44) The EU Commission bases its understanding of the relevant wholesale market on the retail markets for access to data services and other analogous services for fixed line connections. The Commission considers that in general the supply of Internet services at retail level is twofold: 1) network and transit service to and from the location of the end user and 2) offer of Internet service, particularly interconnection with other end users or web servers. These two services may be interlinked.²⁷

45) In its analysis of Market 12, which was published with the PTA Decision no. 8/2008, dated 18 April 2008, the PTA defined the wholesale market for broadband access. This definition is based on the definition in the ESA Recommendation that was then in force, taking into consideration the Explanatory Note to the EU Commission Recommendation from 2003. As is stated in Section 2.1 here above, the definition of this market is not materially changed in the new ESA Recommendation from 2008. The new ESA Recommendation thus does not call for the prior PTA definition to be reviewed. PTA considers that the prior definition still applies and refers to the arguments for the definition in the previously mentioned market analysis. According to this definition this market covers bitstream access which can be used for broadband data transmissions in both directions and it also covers access using other technology that is sold in wholesale, if it is analogous to bitstream access. It also covers the market for "network access and special network access" which is mentioned in Item 2 in Annex 1 to the Framework Directive.²⁸

46) The PTA however considers that it is necessary to investigate whether there have been changes in the circumstances on the market in this country, including changes with respect to the service offer, that could call for changes to the definition or whether new services have emerged based on new technology that fall within the scope of the market.

47) In the Guidelines it is stated that there are now three possible ways to provide bitstream: dial-up connection, broadband access (for example FDSL, fibre-optic, coax cable, radio) and lease lines.²⁹

48) In the case of dial-up connections it is concluded in the Recommendation that this product is not technically in the same market as broadband access. This is because Internet. Access through dial-up connections is not a substitutable product for users that need broadband access. The capacity of dial-up connections is simply too little to be able to send and receive data at the speed required by users of broadband services. This is why broadband is defined in the Recommendation as a service which has a download capacity greater than 128 Kb/s.³⁰

²⁷ See page 29 in: EXPLANATORY NOTE Accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the electronic communications http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/sec2007_1483_final.pdf

²⁸ Page 8 in the ESA recommendation: "Wholesale unbundled access (including shared access) to metallic loops and sub-loops for the purpose of providing broadband and voice services".

²⁹ Explanatory Note Accompanying document to the Commission Recommendation of 17 December 2007 on Relevant Product and Service Markets . . . , Page 29.

³⁰ Explanatory Note Accompanying document to the Commission Recommendation of 17 December 2007 on Relevant Product and Service Markets . . . , Page 29-31.

49) In the opinion of the EU Commission, lease lines are not part of the wholesale market for broadband services³¹. Lease lines are used, among other things to make connections for users and to offer them additional transmission capacity. It is possible to provide broadband services through leased lines in the same manner as is done with bitstream access. The main difference between leased lines and bitstream is that with leased lines the lessor guarantees a specific bandwidth and in addition to this the quality of the connection is usually better. There is also the difference that leased lines are always symmetrical connections, that is to say that the transmission capacity is the same in both directions, which is not always the case with bitstream access. The Commission has defined access to lease lines as a special market, see the termination segments of leased lines (Market 6). Wholesale trunk segments of leased lines, which was previously Market 4 in the EU Recommendation from 2003 and in the ESA Recommendation from 2004, has however been removed.

50) The Commission defines the market for wholesale broadband access in such a manner that it does not cover simple resale. The argument for this is that simple resale is not considered sufficient to meet market needs for broadband access.³² An offer of resale where an electronic communications company purchases a service from another electronic communications company, that the latter also sales to end users is normally not considered to be a part of wholesale broadband access because the purchaser cannot change the content of the service he's buying for the purposes of selling to the end user. If purchasers are to be able to change or add to the broadband services that they buy in order to sell to end users, they must have access to network connection points where they can control certain technical attributes of the service to users and have full control of their own network attributes that allow them to change the quality of the service they offer. This is not the case with pure resale.

51) In accordance with the above discussion, the relevant market for wholesale broadband access covers bitstream access which is provided through local loops in a fixed line network and is not limited to specific technology. The purpose of broadband access is to offer a fast connection with more than 128 Kb/s bit speed for data transfer and for any kind of digital service. As has been stated these connections can be based on technology other than DSL on copper local loops, such as on fibre-optic, cable systems, satellite and wireless access systems.

52) The definition of the relevant market is thus not limited to a specific technical solution, as long as technology analogous to bitstream is offered through these technical solutions. As has been stated, high-speed bitstream access refers to the installation of a high-speed bitstream access to users that other electronic communications companies can purchase in wholesale to be able to sell-on to users in retail.

53) As the wholesale market for broadband access had up until the year 2008, when the PTA made a decision on Market 12, only to a small extent been available here in this country it is necessary to also examine supply and demand for broadband access at the retail level. In order to define the relevant service market one needs to examine possible substitute service and to assess whether it belongs to the relevant market. It is also necessary to examine what technical solutions are on offer on the broadband market in this country and at the same time to determine what companies are operating on the market.

³¹ See page 38-39 in: EXPLANATORY NOTE Accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the electronic communications
http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/sec2007_1483_final.pdf

³² See page 25 í Explanatory Memorandum.

2.1.4 The position of the EU Commission ESB and BEREC in the on next-generation access networks (NGA)

54) The EU Commission believes that high-speed networks, or what are called Next Generation Access networks (NGA), are necessary to increase economic growth, create jobs and encourage innovation in Europe. It is for this reason that the Commission considers investment in next generation networks to be a key issue in the policy called the European Digital Agenda. European Digital Agenda is one of 7 flagships in the Europe 2020 Project.³³

55) The overall objective of European Digital Agenda is to return the non-transitory economic and social advantages of having one digital market based on high-speed broadband networks and mutually compatible software. The project has set objectives for the years 2010-2020 with 100 different metrics. Among other things the sights are set on having all users are connected to broadband by the year 2013 and that by 2020 all users should have the option of a 30 Mb/s connection and that 50% of them should be connected with at least a 100 Mb/s connection. In an EU Commission report from June 2012 it is stated that the objections in question are well behind schedule. The Commission intended to review the schedule in the autumn of 2012 with the aim of getting the project back on track.

56) The Commission has issued a Recommendation on a structure for managing access to NGA networks in Europe. The aim is among other things, to coordinate government action across Europe and thus strengthen cooperation and competition in the inner market.³⁴ On 28 September 2012, the EEA Joint Committee³⁵ made the decision to introduce the Commission Recommendation in question into EEA law and it therefore applies in this country.

57) BEREC³⁶ has also issued a report on open access and also on how to structure access to access to NGA access networks in Europe and the report on how to structure open access to these networks³⁷. Among other things, the report describes various kinds of conditional access. In addition to obligations for access that can be prescribed with the authority in the electronic communications regulatory framework there is discussion on access obligations in accordance with the EU State Aid Rules³⁸ on access according to law and on access obligations imposed by the Competition Authorities.

58) On 7 December 2012 BEREC endorsed revised documents³⁹ on a common position with respect to the imposition of obligations on the markets for wholesale network

³³ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A Digital Agenda for Europe. 19.05.2010.

³⁴ Commission Recommendation of 20 September 2010 on Regulated Access to Next Generation Access Networks (NGA).

³⁵ The EEA Joint Committee.

³⁶ Body of European Regulators for Electronic Communications.

³⁷ BEREC: Report on "Open Access", February 2011 (BoR (11)05).

³⁸ The Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks of 15 June 2013. This is a revision of Guidelines on the same subject from 17 September 2009. ESA adopted analogous Guidelines on 23 May 2013.

³⁹ The initial BEREC document (then ERG) was agreed in the years 2006 and 2007. In the revision recent technical and regulatory changes were taking into account, such as development of NGA and changes to the EU electronic communications regulatory framework from 2009.

infrastructure access⁴⁰ and for broadband access⁴¹. The purpose of the documents was to assist electronic communications regulatory bodies in Europe with the design of the most effective obligations for the solution of competition problems that had been identified on the relevant markets. The documents were intended to strengthen legal security while at the same time maintaining a certain flexibility for regulatory bodies to enable them to take local conditions into account. BEREC agrees with the EU Commission that a clear, harmonised and predictable regulatory framework is one of the prerequisites for increased investment in high-speed networks in Europe. BEREC is however concerned that over-emphasis on development of high-speed networks should not lead to the loss of the progress that has been made in increased competition on electronic communications markets in Europe during the last 10 years. The above specified BEREC documents harmonise well with the above specified EU Recommendation on NGA network infrastructure access. The documents are based on the experience of electronic communications regulatory authorities in Europe and is different in nature from the recommendations then being compiled by the EU⁴² and that are intended to strengthen distribution of high-speed networks in Europe, recommendations that are intended to look to the future. Nor is their scope of application quite the same. The BEREC documents are intended to provide a model in the field of access, transparency, network migration, non-discrimination and pricing, without however going into the same depths, with respect to cost analysis methodologies as the above-specified Recommendation is intended to do. The BEREC documents in question are not binding for the electronic communications regulatory bodies, but those bodies are however expected to apply them conscientiously and to provide convincing justification for any deviations from them.

59) The above specified via documents are based on the main principle of the ladder investment development of electronic communications networks, which is intended to assure specific competition objectives. These objectives are in the first instance intended to ensure transparent access for electronic communications companies to the electronic communications networks of a company with SMP, regardless of whether the technical solution is based on copper or fibre-optic. In the second instance the objective is to ensure collocation of facilities at connection stations at cost analysed prices. In the third instance the objectives is to ensure non-discrimination between electronic communications companies by imposing a general obligation for non-discrimination on companies with SMP, to prevent an abnormal advantage for such a company with respect to innovations, to ensure normal quality of access and efficient processes in the upgrading from traditional electronic communications networks to the next generation of networks. Finally, the objective is to ensure a fair price for access, which will enable an efficiently operated electronic communications company to compete with a company with SMP.

60) The Commission has strongly emphasised Open Access to the high speed network. This is to ensure that users will be provided with this selection of innovations in services and technology that NGA technology can offer. The concept "open access" is in this analysis, as also in the BEREC report, used to embrace the competitive aspects of the introduction of

⁴⁰ BoR (12)127 - BEREC Common Position on best practices in remedies on the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location imposed as a consequence of a position of significant market power in the relevant market.

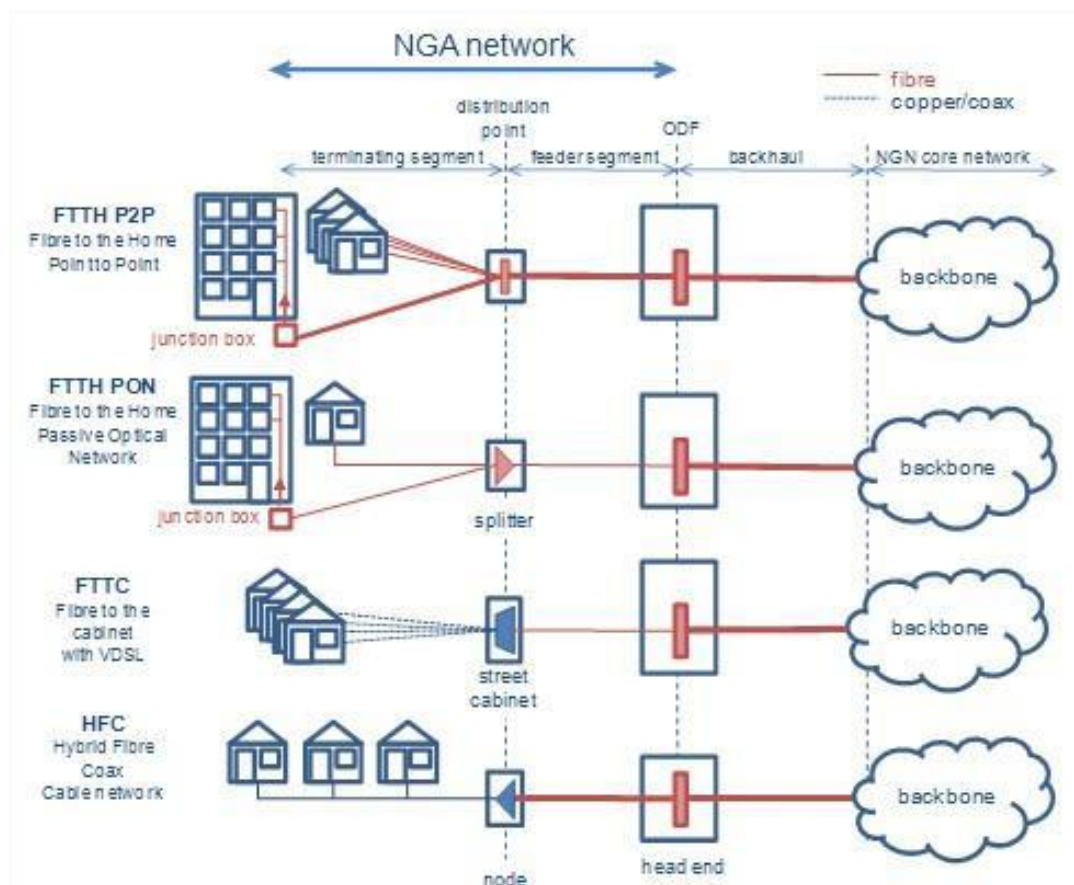
⁴¹ BoR (12)128 – BEREC Common Position on best practice in remedies on the market for wholesale broadband access (including bitstream access) imposed as a consequence of a significant market power in the relevant market.

⁴² Commission Recommendation of 11.09.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

NGA. There are instances of it having been used to mean the provision of broadband in general, in areas where such a provision is not profitable.⁴³

61) In recent years, next generation networks (NGN⁴⁴) based on fibre-optic technology have become increasingly common and have supported substantial increases in data transfer. But the fibre-optic does not necessarily need to reach all the way into the home of the user and the installation of fibre-optic is not implemented in the same way at all locations. Figure 2.2 shows the most common ways of installing an NGA connection.

Figure 2.2 NGA access network, common configurations



Source: EU Commission⁴⁵

62) The distribution of next-generation high-speed connections (NGA) could be supported by public planning, for example with exemptions from specific rules and even from public funds to some extent. Countries often resort to the requirement of having Mandated Access to help achieve the objective of strengthening competition and to encourage the distribution of broadband. Mandated access can in some instances encourage investments in electronic communications infrastructure and make such investments more targeted by preventing unnecessary and unprofitable investments. An example of this would be a duplicated investment where two companies invest, each in its own network, at a location which cannot economically support such investment.⁴⁶

⁴³ BEREC: Report on „Open Access“, February 2011, pages 3-8.

⁴⁴ Next Generation Networks.

⁴⁵ <http://www.cullen-international.com> (26.06.12).

⁴⁶ BEREC: Report on „Open Access“, February 2011, pages 8-10.

63) The Commission now has in its manifesto the objective to introduce internal correspondence in decisions related to next-generation broadband access throughout Europe. The purpose is to eradicate legal uncertainty, so that timely and successful investment can take place. The Commission thus recommends that the regulatory institutions in Europe pay particular attention to obligations with respect to the risk of investments related to the imposition of obligations.⁴⁷

64) In accordance with its efforts to remove financial uncertainty in the development of broadband systems, the EU has published Guidelines on how migration⁴⁸ from older systems should be implemented, for example from systems based on copper over to NGA systems. In the Guidelines it is stated that the regulatory authorities should acquire the development plans of a company with SMP that are likely to impact competitiveness of companies on the relevant market.⁴⁹ It is also expected that competitors should be informed with at least 5 years notice that agreement has been reached on a specific Migration path, or that analogous access is offered to replace the access that has been discontinued.⁵⁰

65) With its policy-making statement in July 2012⁵¹, the EU Commission declared that it no longer intended to recommend, as it had done previously⁵² that the regulatory authorities introduce, in almost all instances, obligations on cost related tariffs for wholesale access to NGA. The above would have been subject to strict conditions which would require that a dominant company practised full non-discrimination with respect to competitors⁵³, that is to say that the goods, prices and processes should be totally analogous for its own retail departments and for unrelated parties and that there should be significant competitive pressure in place from other access networks.⁵⁴ In addition to this, the Margin Squeeze Test should be applied to the pricing of access to NGA networks. The Commission also stated that price reduction in access to copper networks would be conducive to encouraging investment in the next generation of networks. The current average price in Europe, which would be about Euro 9 per month for full access, could be a normal price.

66) On 7 December 2012, the EU Commission requested the opinion of BEREC and of the EU Communications Committee (COCOM) on the preliminary draft of the Directive on the implementation of common non-discrimination obligations and of cost analysis methodologies to increase competition and to strengthen investment on broadband markets.⁵⁵ The Commission thus intends to follow up its above specified policy statement by making the Recommendation in question.

⁴⁷ Commission Staff Working Document, accompanying document to the Commission Recommendation on regulated access to Next Generation Access Networks (NGA) 02.09.2010, pages 21-32. see i.a.: The [preferable way] represent[s] a response favouring the imposition of access obligations duly adjusted for investment risk.

⁴⁸ Sometimes known as the migration process.

⁴⁹ Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) – page 43.

⁵⁰ BEREC Report on the Implementation of the NGA-Recommendation, page 74-75.

⁵¹ The 12 July Statement.

⁵² See Commission Recommendation of 20 September 2010 on Regulated Access to Next Generation Access Networks (NGA).

⁵³ Equivalence of input. Equivalence of output not sufficient.

⁵⁴ Enhancing the broadband investment environment – Policy statement by Vice President Kroes (12.07.2012).

⁵⁵ Commission Recommendation of 11.09.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

67) On 11 September 2013 the EU Commission published a Recommendation on integrated application of obligations for non-discrimination and for cost analysis methodologies to support competition and strengthen investment in NGA networks. It was stated that it was necessary to further develop the electronic communications inner market in Europe in order to encourage innovation, increase productivity, employment and competitiveness, and thus generate increased economic growth. These objectives would not be achieved without distribution of high-speed networks. The Recommendation was intended to encourage economic investments and innovation in new infrastructure while at the same time protecting active competition where active competition is an important catalyst for long-term investment. Increased predictability and coordination with respect to the imposition of obligations should increase necessary investment. The Recommendation are to augment the NGA recommendation from 2010 and are in force in parallel with those recommendation. The Recommendation are technically independent and apply both to NGA networks and to traditional networks.

68) The above specified recommendation cover among other things the implementation of obligations for non-discrimination, monitoring of non-discrimination obligations, cost analysis methodologies and the circumstances where it would be possible to refrain from imposing price obligations on NGA networks for the purpose of supporting their distribution. The Recommendation do not cover market analysis that was made before they came into force. The recommended cost analysis methodologies shall be implemented no later than 31 December 2016. Exemptions are specified from the recommended cost analysis methodologies for smaller electronic communications regulatory bodies.

2.1.5 Icelandic government electronic communications plans until the year 2022

69) On 29, November 2012 the Althingi (*Icelandic Parliament*) agreed on an electronic communications plan for a four-year period (2011-2014) and for a period of 12 years (2011-2022) in the form of a parliamentary resolution. Achievable and measurable objectives have been set that are to be met in the coming years and it is clear that the introduction of next generation access networks is a prerequisite for achieving the objectives. The plan is divided into 4 subcategories relating to the objectives for electronic communications, that is to say that they are 1) accessible and fast, 2), economical and efficient, 3) secure and 4) environmentally friendly. It was stated in the 12 year electronic communications plan that it emphasised development of employment, improving quality of life, positive regional development, ensuring security of public electronic communications networks, strengthening competition, electronic communications markets, increasing Iceland's competitiveness, achieving wide cooperation on the market between consumers public institutions and ministries, policy-making in electronic communications, achieving efficient use of capital and maximising the positive impact of electronic communications on economic growth and quality-of-life, achieving harmonised prioritisation and policy where the prioritisation would be based on assessment of needs for remedial action in the country as a whole and in specific regions.

70) Some of the main objectives of the electronic communications plan and those that are related to the main subjects of this market analysis concerned the distribution of fibre-optic networks and the connection of high speed networks to homes.

71) In the four-year electronic communications plan it was among other things stated that a common platform for cooperation between stakeholders shall be used to elaborate proposals for improvements that will facilitate renewal and development of fibre-optic and access networks across the whole country, that market failures in electronic communications shall be identified, along with remedial action to be taken by the authorities, that the Telecommunications Fund shall perform the current status analysis, needs analysis and prioritisation of existing and potential projects and shall ensure equal access for electronic communications companies to transmitters outside urban areas and shall support fair pricing for such access.

72) The objectives aimed at in the 12 year electronic communications plan include:

- Development and renewable of the domestic fibre-optic backbone network shall take into account government objectives and the needs of consumers for data transmission at any given time.
- A countrywide fibre-optic backbone connection should reach a minimum of regions with and built up areas with over 5000 and 1000 inhabitants respectively.
- Built up areas with more than 50 inhabitants will be connected with fibre-optic.
- Nationally important electronic communications locations will be defined and connected to electrical and fibre-optic networks.
- 90% of homes and places of work will have the option of a 30 Mb/s connection by 2014 and 100% by 2022.
- 70% of homes and places of work will have the option of a 100 Mb/s connection by 2014 and 99% by 2022.
- 98% of homes and places of work will have the option of high speed mobile networks by 2014 and 99.9% by 2022.
- 98% of homes and places of work will have the option of high speed mobile networks by 2014 and 99.9% by 2022.
- 80% of the country and the coastal waters will have the option of a high-speed mobile network in 2018.
- An efficient regulatory framework on the electronic communications market shall support progress and competition.
- The regulatory framework shall support investment in electronic communications and balance with respect to competition aspects.
- The price of electronic communications services shall be comparable with the best in Europe.
- Competition shall be maintained and supported along with own investments in electronic communications systems by parties to the market on the basis of a regulatory framework and the allocation of public resources.
- Sharing in existing and new electronic communications systems shall be supported, where there are not considered to be conditions for competition in electronic communications networks.

73) It is perfectly clear that these objectives cannot be reached without the introduction of next generation networks. Just as elsewhere in Europe very strong emphasis is placed on the introduction of NGA systems and this is considered a pre-requisite for a state being able to maintain its competitive position.⁵⁶

⁵⁶ See electronic communications plan: <http://www.althingi.is/altext/140/s/0418.html>.

2.1.6 Digital television (IPTV)

2.1.6.1 General

74) Digital broadcasting of television channels using IP technology (Internet protocol) and interactive television services such as rental of film material (video on demand VOD), which have the collective name IPTV, commenced in Iceland when Siminn began to offer such services in 2005 on its ADSL system. The Siminn IPTV service is extremely popular and at the end of 2013 a total of about 50,000 users had decoders (Set-Top-Box, STB) from the company and this service is available to most of the country's citizens today⁵⁷. Vodafone opened its own IPTV system a little later, around 2008/2009 and at the end of 2013 there were about 31,000 homes with IPTV STB's from Vodafone⁵⁸. In the Vodafone annual report for the operational year 2011 it is stated that about 90% of homes could have access to the company's IPTV system at the end of 2011. The company has conducted a major marketing campaign in the provinces in 2011. Subsequent to it having been able to commence use of the NATO fibre-optic cable at the beginning of that year. Tal had about 4000 customers in IPTV service at the end of 2013. Tal resells Siminn IPTV service on the basis of a wholesale agreement.

75) The importance of digital television broadcasts has increased in recent years and consumers increasingly rely on such broadcasts as the main or only way for the home to receive TV programmes. With the increase in bandwidth of connections, users with IPTV decoders increased even more and at the end of 2013 a total of 73% of all users (residential and non-residential) had an online decoder to receive TV broadcasts by bitstream through the local loop⁵⁹. TV reception through standard Internet connections (Over the Top, OTT) such as Sarpur RUV, Netflix⁶⁰, to some extent through websites like YouTube and other analogous possibilities on offer over the Internet, have increased significantly in recent years. In 2011 the media company called 365 mostly discontinued analogue TV broadcasting over the air, with the exception of a few transmitters in the south-west of the country. The 365 analogue broadcasts were finally closed on 21 September 2012. One can also mention that before that for some months before that time, various other 365 channels had only been available in digital format. Various other TV channels are also only available through digital systems. It is planned to close all analogue TV broadcasts within a few years and the EU proposed to member states that such TV broadcasts should be ended in 2012. In the Icelandic government telecommunications plan it is planned that all citizens should be ensured digital reception of the state broadcasting company TV channel.⁶¹ In July 2012 the PTA gave the state broadcasting company notice until 2014 to discontinue analogue TV broadcasts and this is in line with the electronic communications plan and the state broadcasting company plans to change entirely to digital broadcasting in that year. TV channels on the domestic TV market will thus be only available in digital form in the near future.

⁵⁷ Mila or example intends that the company's Ljósveita (VDSL system) will reach 87% of the population at the end of 2014.

⁵⁸ PTA statistics archive

⁵⁹ PTA statistics archive

⁶⁰ Estimated that 20,000 Icelandic households pay Netflix subscription according to MMR survey for Viðskiptablaðið. Viðskiptablaðið, 7 ed. 21. year, 20 February 2014, p. 8

⁶¹ See electronic communications plan: <http://www.althingi.is/altext/140/s/0418.html>.

76) Access for parties who distribute digital TV material⁶² to electronic communications networks and/or bitstream service that fulfil their needs for secure broadband and other requirements for quality, is necessary for them to be able to provide their services.⁶³ The must carry obligation for television content rests on electronic communications companies pursuant to Article 44 of the Media Act no. 38/2011.⁶⁴

77) Because of the position of IPTV distribution as one of the main distribution channels for digital TV and the only one that offers interactive TV on the Icelandic TV market, it is important for those that own and operate electronic communications networks and/or bitstream access to have IPTV distributors on their networks. The must offer obligation on electronic communications companies for television content is stipulated in Article 45 of the Media Act no. 38/2011.⁶⁵ In addition to this there is a special provision in Article 15 of the Settlement between the Skipti Group and the Competition Authority on the obligation for Siminn to provide wholesale access to its IPTV service, see CA Decision no. 6/2013. The fact that the CA dealt specifically with this issue in the Settlement underlines the importance of IPTV service as part of the service offer provided through bitstream connections.

2.1.6.2 Decisions by the Competition Authority regarding mergers of companies in the electronic communications and media markets in the year 2005

78) In the year 2004 Siminn informed the Competition Authority about the company's purchase of Íslenska sjónvarpsfélagið (Skjárin), which was the country's third largest TV station. The Competition Authority investigation on the company's merger was concluded with Decision no. 10/2005. The measure first and foremost impacted the TV market (media market) and the market for TV distribution (electronic communications market). Furthermore, the Competition Authority considered that if one took into account development and integration of the media and electronic communications markets, particularly with respect to transmission of TV material through Internet connections and the possibilities thought to be brought by this, the merger would impact the markets for Internet connection and Internet services. Finally, the merger would impact the market for purchase of TV material. The case in question was one of the vertical connection between main markets that is to say that the TV market is vertically connected with the electronic communications market. The merging of the companies constituted vertical connection between companies in differing but related markets and the purpose was to guarantee material for Siminn for distribution in the company's distribution systems.

79) The Competition Authority came to the conclusion that the merger disrupted competition and that intervention by the authority was necessary. The merger would inevitably strengthen Siminn's dominant market position on the electronic communications markets that the case related to and there was therefore a risk that it would significantly restrict Siminn's competitors in providing competition. In those instances where an electronic communications company with market dominance assured for itself access to material for distribution, the situation could arise where the entry of new parties to the market would be

⁶² Distributors of digital TV collect channels and content from content providers, transmit through distribution systems and operate decoders.

⁶³ ITU defines IPTV in the following manner: "IPTV is defined as multimedia services such as television/video/audio/text/graphics/data delivered over IP based networks managed to support the required level of QoS/QoE, security, interactivity and reliability", see for example ITU-T Recommendation Y.1901 (01/2009).

⁶⁴ See further discussion in Section 2.1.6.7

⁶⁵ See further discussion in Section 2.1.6.7

inhibited in two ways. In the first case that the position of new and smaller parties on the electronic communications market would be made less tenable as their access to material for distribution through their networks would not be the same as that of the company with market dominance. In this way, Siminn could sell electronic communications services, such as Internet service and connect it with material that the company had gained access to. In the second case, the merger carried the risk that access of other providers of material, for example on the TV market, to distributors could be limited as they did not have access to the distribution network of the company with market dominance. Vertical merging of a company with market dominance and a provider of material on the TV market could also have a direct impact on consumers as consumers' choice of electronic communications company influenced their access to TV material. The risk could thus be created that the merger would limit future options.

80) A settlement was negotiated in the case and Siminn accepted sixteen specifically defined conditions⁶⁶ that were to obviate barriers to competition that would otherwise have resulted from the merger. The fifth condition was that Siminn was unauthorised to make it a condition for the sale of some company service that a Skjárinn service must be included in the package or that Siminn bundled the company's services through pricing or terms of business in such a manner as to be equivalent to such a condition. According to the seventh condition Siminn was to provide others than Skjárinn access to its television distribution system, according to a special tariff that was based on material and objective criteria.

81) According to the eighth condition Siminn was to authorise Internet service providers to sell on the company's ADSL connections at the same price and terms of business enjoyed by the Siminn Internet service department. According to the ninth condition Siminn was to ensure that the ADSL point of service equipment provided by Siminn ADSL service with its TV service was compatible with the Internet service of all those Internet service providers that fulfilled material conditions to provide service through the Siminn ADSL system.

82) According to the tenth and eleventh conditions, Skjárinn should accede to all reasonable requests from Internet service providers and from companies in digital TV distribution for distribution of the company's TV signal, should such distribution be technically possible and where it fulfilled the company's material requirements for quality of image and sound. Skjárinn and/or Siminn were authorised to make the condition for distribution of TV channels to the parties providing digital TV distribution and related parties that they offered reciprocal distribution of their own TV channels, including through Siminn's fibre-optic and copper networks. According to the twelfth condition, Skjárinn was authorised to make the condition to companies operating as Internet service providers and those that distributed digital TV, that the TV signal should be distributed through the decoding equipment (TV box) provided by Skjárinn to its subscribers until 1 July 2007.

83) Finally, it was stated in the fourteenth condition that in order to assure non-discrimination between competitors on the TV market and on the market for distribution of TV signals, Siminn should provide Skjárinn's competitors on the market with access to information relating to Siminn's base electronic communication and distribution services on the TV market that had business significance, that is to say information on planned changes to pricing, planned new services, distribution, test broadcasts and technical issues. Skjárinn

⁶⁶ Competition Authority Decision no. 10/2005. Merger of Landssími Íslands hf. and Íslenska sjónvarpsfélagið hf., pages 18-22

should also provide other distributors with access to programmes on TV channels operated by the company, in the same manner as Siminn.

84) In the Competition Authority Decision no. 12/2005 the Authority made the same requirements of Fjarskipti ehf. (Vodafone) and 365 miðlar ehf. (365) for a merger in an analogous case. In the case in question Vodafone acquired the media company 365, which has operated Stöð 2 which was been the second largest TV channel in Iceland after the state broadcasting company (RÚV). In that case, there were 11 conditions⁶⁷ which were largely analogous to the conditions imposed on Siminn and that have been described here above, such as the banning of the bundling of services, the obligation on Stöð 2 to allow companies other than Vodafone to distribute their TV signal, a ban on making it a condition for distribution companies or for customers of TV services that they point of service equipment and/or decoding equipment of Vodafone/Stöð 2 should be used and non-discrimination with respect to the provision of information.

85) With the acquisition of the companies in question Siminn and Vodafone assured their supply of TV material for distribution through their electronic communications networks. Both mergers were considered to result in, or strengthen, market dominance of the merged companies. With the mergers two groups of companies came into existence, each of which was comprised of electronic communications companies and media services providers. The company groups in question controlled by far the largest part of all desirable foreign television material on offer to the privately operated stations and in addition to this they shared between themselves the largest part of the Icelandic electronic communications market. It was the conclusion of the Competition Authority that the mergers would lead to very significant concentration on the markets that they influenced. The concentration could lead to the exclusion of competitors from the relevant markets and could damage the interests of consumers, particularly with a view to the long-term, by the companies combining and bundling varied media and electronic communications services and by discriminating against others operating on the market. As previously stated, the Competition Authority authorised the mergers with conditions. The conditions for the merger of Siminn and Skjárinn were among other things that Siminn offered transport of TV material to other companies and that Skjárinn provided other companies with access to TV material. The conditions for the merger of Vodafone and 365, where among other things, that 365 provided other companies with access to TV material, but, but no obligation was stipulated for Vodafone to transport television broadcasts for other parties.

86) The company groups could both by virtue of their size offer comprehensive solutions for homes, including digital TV channels, sound and image services on demand fixed line telephone, Internet connection, mobile phone and whatever other service would be developed in the future. Siminn is in an advantageous position with a powerful electronic communications system and ownership of media services provider which offers subscription TV (Skjárinn), retransmission of foreign channels and video on demand. The media company 365 was previously owned by Teymir hf., along with Vodafone. 365, has for many years had a very strong position on the multimedia market and operates several TV channels and also has sole rights to popular foreign TV material, including sports material. In 2009, 365 was sold out of the group. There is thus no longer any ownership relationship between Vodafone and 365. On the other hand agreements have been in force between the companies for

⁶⁷ Competition Authority Decision no. 10/2005. Merger of Og fjarskipti hf., 365 ljósvakamiðlar ehf. and 365 prentmiðlar ehf., pages 18-21.

Vodafone distribution of the 365 TV channels. The last agreement was made in April 2011 and is for a term of 6 years.

2.1.6.3 The decision by the Competition Authority will respect to the Siminn infringement in 2009

87) In the Competition Authority Decision no. 41/2009 from 18 December 2009, the Competition Authority came to the conclusion that Siminn had breached the fifth and sixth conditions of the above specified Competition Authority Decision no. 10/2005 and Siminn was made to pay a fine of ISK 150,000,000. The case concerned Siminn's alleged breach on the market for ADSL connections and Internet service to the effect that there was alleged bundling of the company's ADSL connections and TV material from Skjárinns and in addition to this Siminn's alleged access barriers to the markets in question. The case was initiated, subject to a complaint from TSC ehf. which is a small local electronic communications company on Snæfellsnes which sells broadband Internet connections and Internet services.

88) With respect to the alleged breach of the fifth condition, TSC maintained that Siminn had bundled the sale of the company's ADSL connections with TV material from Skjárinns in breach of the above specified Competition Authority Decision from 2005. This had been done by providing Skjárinns TV with material and transmission of this material without charge, along with the ADSL connection for Internet service throughout the whole country. The Competition Authority accepted this and stated that the bundling had distorted possible price competition in Internet services to the advantage of Siminn and had thus damaged competition. It was considered clear that the Siminn price for ADSL connection included transmission of the Skjárinns services from Múlastöð in Reykjavík to separate locations in the country and had included distribution of this material to customers who had an ADSL connection with Siminn. This had had a particularly damaging effect on the operational basis of smaller Internet service providers that were developing their own electronic communications networks like TSC and that did not have the same access to TV material for distribution through their networks. The conditions in question that had been imposed for the merger of Siminn and Skjárinns should have led to access for competitors to the markets being facilitated and should have assured non-discrimination on the relevant markets.

89) The factors on which the Competition Authority had based its decision in the year 2005 applied equally now. With the bundling of ADSL connections with TV services by Siminn in one price and without taking into consideration whether the TV services were used or not, Siminn had breached the conditions in question and thus had distorted competition on the Internet service market. Siminn could not cite specific technology used for offering TV services to customers and use this to maintain that this was not an instance of bundling. Siminn has decades of technical experience on the electronic communications market and should arrange technical implementation, such that it does not contravene instructions from the Competition Authority and thus distort competition. The Competition Authority decided to add to the conditions in question an obligation on Siminn to publish an itemised tariff for the company's prices for ADSL connections, Internet service, TV service and point of service equipment (router and TV box).

90) With respect to the alleged infringement of the seventh condition which stipulated that Siminn was obliged to provide others than Skjárinns with access to its TV distribution systems, according to a specific tariff, TSC maintained that Siminn had erected abnormal business barriers as a result of the TSC request to distribute the TV material in question. TSC had

repeatedly tried to get prices for transport of Skjárinn TV material from Siminn, which indicated that Siminn had not fulfilled the condition of compiling a tariff for access to its TV distribution system and of publishing the tariff in an accessible manner. After considerable effort, TSC finally received an offer from Mila.

91) In the Siminn case it was stated that in the company's television distribution system, all television channels were handled through multicast in Múlastöð. After that point there was no reprocessing until the channels were decoded in the TV box located with the user in question. For this reason, the whole distribution system was defined as an access network and it was not possible to deliver television channels in telephone exchanges for other uses. Reference was made to the definitions of the varying transmission networks for television channels in the PTA analysis of Market 18 in the ESA Recommendation from 2004. In the Competition Authority case it was stated that in this connection, Siminn had named the feeder network and the access network, but had omitted mentioning the trunk network, which is the part that transmits TV signals from the feeder network to the access network which then connects to the end user. The distribution frame part of the network normally had a very large carrying capacity and was usually a fibre-optic or wireless connection. An access network for TV distribution was normally defined as the route from the last exchange to the end user, in this case from the exchange in Grundarfjörður to the end user. With reference to the Competition Authority Decision no. 10/2005, distribution always constituted the transmission of a signal from its origin to the user and this could take place with various kinds of technology. A distribution system for television channels thus comprised a contribution network, feeder network, trunk network and access network, according to the PTA definition of Market 18. This case concerns only the last two parts.

92) It was the opinion of the Competition Authority that, as Siminn considered the company's distribution system for television channels in its entirety to be an access network from Múlastöð to the end user, wherever he might be in the country, this would be a barrier to entry, which explained the refusal of sale experienced by TSC in its transactions with Siminn, with respect to the distribution of Skjárinn TV material in Snæfellsnes. For Siminn to fulfil the fifth condition, then Skjárinn TV material and its transmission and distribution through ADSL connections could not be included without charge with the ADSL connection for Siminn's Internet service. This had been one of the main reasons for the conditions in question having been imposed for the merger, where the interests of other potential distributors of TV material had been specifically taken into the equation. Despite this, Siminn had bundled Skjárinn material with the company's ADSL connection, which had been sold with Internet services and in this manner had breached the conditions in question. This practice by Siminn had for example been significantly problematic for TSC and had seriously limited the company's possibilities of competing with Siminn in the field of Internet services.

93) In the opinion of the Competition Authority it also needed to be assessed whether Siminn had raised entry barriers against TSC and prevented access by TSC to the company's distribution system and thus breached the seventh condition. It was stated that before the merger had taken place, TSC had distributed Skjárinn material and that this had been an addition to the company's main activities. After the merger, TSC had repeatedly requested to be allowed to continue this distribution, but had not received a reply for many months. Regardless of how one views this matter, whether Skjárinn should deliver the signal or Siminn and where this delivery should take place, one cannot avoid the fact that TSC faced very significant entry barriers in its attempts to acquire the Skjárinn TV signal for its customers. One cannot conclude otherwise than that Siminn had rewarded its customers in

competition with TSC on for example the Internet service market on Snæfellsnes by offering them transmission of Skjárinn TV material without a special charge, along with the company's ADSL connection, which was also bundled with the Siminn Internet service in one single price. TSC had repeatedly tried to get prices for transport of Skjárinn TV material from Siminn, which indicated that Siminn had not fulfilled the condition of compiling a tariff for access to its TV distribution system and of publishing the tariff in an accessible manner as is stated in the condition. After repeated requests TSC finally received a price offer from Mila. Despite this transmission cost the Siminn retail price for an ADSL connection for Internet services had been the same at all locations in the country, even though the TV service had been included in additionally. TSC had however been made to pay a high amount in order to be able to offer its customers TV programmes and competed with Siminn on high speed connections and Internet services. Siminn had thus not practised non-discrimination, as is stipulated in the condition in question.

94) Then it was stated that Siminn maintained that the cost of the Siminn TV service was included in the price of the ADSL connection and was not added when Internet services were sold. The Competition Authority said that the Siminn TV service used interactive transmission speed to and from users for VoD (video on demand) and transmission speed was always significantly greater to users, both for Internet and TV services. Necessary transmission speed for TV channels through Siminn ADSL connections was 4.3-4.5 Mb/s, which was a greater speed than had been provided in some of Siminn's Internet subscriptions. For those subscription packages, it would therefore have been necessary to increase transmission speed for the customer to be able to receive an adequate ADSL connection for Internet service with TV. The increased transmission speed had not been priced separately or in other Siminn Internet subscriptions. Siminn had thus not taken into account the cost of transmission and distribution of TV material in the price for an ADSL connection for Internet services. At the same time it was not normal that Internet service providers that purchased ADSL connections from Siminn in order to provide Internet service on the market should pay for the distribution of Siminn TV services.

95) Finally, it was the conclusion of the Competition Authority to impose the following obligations on Siminn in the seventh condition: *"Siminn shall ensure that other electronic communications companies that so request can receive the Siminn TV signal for distribution at the same location in Siminn's distribution system, in the same manner and on the same terms as Siminn ADSL services receive the signal for distribution through its ADSL connections at any location in the country. Siminn shall provide those electronic communications companies that so request or their customers with a router and TV box for Siminn television services in the same manner, on the same terms and with the same services as offered to Siminn ADSL service or its customers at any location in the country. Should an electronic communications company choose to use its own router then Siminn shall provide the necessary technical assistance to connect the router of this electronic communications company to the Siminn TV service. In addition to this Siminn shall publish and locate at an accessible location on its website a list of those electronic communications companies that offer Siminn TV service, whether through Siminn ADSL system or through the system of another electronic communications company."*

2.1.6.4 Ruling by the Competition Authority Appellate Committee 2/2010 in a case concerning Siminn

96) With the Decision of the Competition Appellate Committee no. 2/2010, dated 28 April 2010, the Competition Appellate Committee confirmed the above specified ruling of the Competition Authority number 41/2009 on the breach by Siminn of the fifth and sixth conditions of the Competition Authority ruling number 10/2005 in the main. The Committee did however reduce the Siminn fine from ISK 150 million to ISK 50 million and removed the conditions that the Competition Authority had added to the appealed ruling as it was considered that there was no legal basis for them as a reservation had not been made for the review of the conditions in the ruling from 2005 and nor were there conditions in the Administrative Procedures Act for hearing the case again. In addition to this, the Competition Appellate Committee considered that the Competition Authority had not adequately investigated the part of the case that related to Siminn being obliged to deliver the TV signal to TSC at Grundarfjörður. The Committee, however, confirmed that part of the case that related to delays by Siminn, lack of action and discrimination with respect to cost. According to the seventh condition Siminn had been obliged to provide TSC, without unnecessary delay, with fair access to its distribution systems for TV to the extent allowed by technical knowledge and without discrimination. This condition had been independent of whether TSC was a provider of material or not. Such a service had not been offered, as was a requirement and nor had it been shown that it was not possible to provide the service for technical reasons. Furthermore non-discrimination had not been practised with respect to a fee for transmission of TV material to Siminn customers who had the company's bundled ADSL service.

2.1.6.5 Judgement of the District Court of Reykjavik and of the Supreme Court in the case of Siminn versus Competition Authority

97) In the judgement of the District Court of Reykjavik from 27 January 2012 (Siminn versus Competition Authority)⁶⁸, the judge confirmed that Siminn had breached the fifth condition of the Competition Authority Decision no. 10/2005, but considered that the company had not breached condition seven of that Decision. The judge considered that it could not be seen that the Competition Authority condition in question had constituted an obligation on the part of Siminn to provide other electronic communications companies with access to the company's TV distribution system, but only material providers that possessed TV material. In the opinion of the judge, the items in question did not cover requests from electronic communications companies, like TSC for co-location at Múlastöð, even though the company intended to use the facility to transmit the Skjárinn TV signal by fibre-optic to Snæfellsnes. And it certainly did not cover requests of such electronic communications companies to receive this TV signal at telephone exchanges outside Reykjavik for distribution on their own networks.

98) In the judgement of the Supreme Court no. 218/2012 from last 6 December the above District Court judgement was confirmed in all respects other than that the fine was increased.

⁶⁸ See case number E-6395/2010.

2.1.6.6 Market 18 according to the ESA Recommendation from 2004

99) With the decision of the PTA no. 31/2008, dated 8 December 2008, which was made subsequent to market analysis of the wholesale market for broadcasting transmission services to users (Market 18 according to the ESA Recommendation from 2004), the Administration came to the conclusion that there was active competition on the markets for TV distribution. So no obligations were imposed on the company on the relevant markets. The markets defined by the PTA were: 1) broadcasting services for analogue sound broadcasts on wireless networks, 2) broadcasting services for analogue TV broadcasts on wireless networks, 3) broadcasting services for digital sound and TV on wireless networks, 4) broadcasting services for digital sound and TV on networks at a fixed location and 5) broadcasting services for digital sound and TV by satellite.

100) The market that is significant in this instance is the market for broadcasting services for digital sound and TV on networks at a fixed location. The conclusion of the 3 criteria test on that market was that the market did not fulfil the third criterion as general competition law was considered not to be able to resolve problems that might arise on the relevant market.

101) With respect to the first criterion, that is to say significant entry barriers, it was stated that significant costs needed to be incurred when establishing a proprietary network at a fixed location. Networks at fixed location were more expensive to develop than wireless distribution systems but the potential income from such networks was greater as they allowed the offer of more varied services. Nevertheless it was unlikely that it would be economical to develop such systems at locations where such a system already existed. Here in this country, traditional cable systems have not achieved large numbers of users. It was not until the arrival of TV through ADSL that TV reception through networks at fixed location had become widespread and such TV service became more popular in Iceland than in most other countries. The popularity of ADSL TV meant that companies that wish to enter the TV distribution market did not necessarily need to lay their own earth cables but could lease access to the Mila copper local loops and set up their own ADSL service and TV distribution on top of that. Despite the fact that this lessened the need for investment and the risk of sunk costs for new parties to the market, it seemed that the costs were nevertheless so substantial that companies had difficulty entering the market. Gagnaveita Reykjavíkur (GR) was developing a fibre-optic network that would, among other things, be possible to use for TV distribution. Vodafone was beginning to provide such a service on its network. The development of that network was however rather slow as it was a major investment. Legal barriers on this market were not substantial. No frequency licenses were required, but companies that wish to transmit their own programmes needed to apply for a licence to the Broadcasting Rights Committee (now the Media Committee). The PTA believes that there were access barriers to the relevant market. The main reason was the costs related to setting up a TV distribution system.

102) With respect to the second criterion, that is that the market tended towards active competition, it was stated that competition on this market could be expected in the near future, despite the fact that there were substantial costs related to setting up a TV distribution system through ADSL. Companies other than Siminn had set up equipment to provide ADSL services. The PTA considered there to be considerable likelihood that these companies would try to increase their service offer in the near future and would begin to offer TV distribution, among other things in order to improve the competitiveness of their ADSL services. Competition would also come from fibre-optic networks in the future, but the development of such networks in recent years had been so slow that it was not possible to expect that such

networks would have much market share within the life cycle of this market analysis. When more possibilities are offered on this market, it should be relatively easy for users to switch service provider. The maximum contractually binding period shall be six months and consumers normally do not invest in reception equipment themselves, but rather the cost of such equipment would be included in the charge for the connection. Despite the fact that the PTA considered it very likely that there would be competition on this market in the future it was not possible to predict accurately when this competition would become active. For this reason, the Administration considered it appropriate to also examine whether general competition law would suffice to remedy possible problems on the market until active competition became a reality.

103) With respect to the third criterion, it was stated that when it was assessed whether general competition law would suffice to remedy failures of the market, it was necessary to keep in mind whether major measures would be required, whether frequent and immediate intervention would be required and whether special measures were required to create legal predictability on the market. Major measures would mainly be necessary when a company that controlled critical facilities refused to provide access to other parties and where the authorities needed to establish access with decrees to the company in question or perhaps by organising the nature of access through intervention in pricing and with other conditions. Siminn, which controlled the largest digital distribution system in a fixed line network here in this country, had granted access to its distribution system to unrelated TV stations and no complaints concerning this had been received by the authorities. GR also provided access to its fibre-optic network among other things, to enable companies to be able to offer TV distribution. GR did not however operate its own TV distribution system on the fibre-optic network. Vodafone was the only company that offered its own TV distribution on the GR fibre-optic network today. It was thus not possible to see that the access for content providers to TV distribution systems through fixed line networks was limited today. Obligations had not been imposed on TV distribution systems, pursuant to the Electronic Communications Act up to that point in time. Despite this fact, access to distribution systems had been established. There had only been one instance of a request for intervention by the PTA for access to TV distribution system on a fixed line network. The PTA therefore considered that to be no reason to impose special obligations on this market given the current circumstances and in the light of experience of past years.

104) It was also stated that the distribution systems' need for content and the content providers' need for substantial distribution meant that both parties had a certain negotiating power and it was likely that they would be able to come to an agreement on access and distribution without the need for imposing special obligations on them, pursuant to the Electronic Communications Act. In the Competition Authority Decision no. 10/2005 certain conditions had been imposed that related to access to the Siminn TV distribution system. The Competition Authority conditions were equivalent to an obligation for access to the distribution system, on transparency and an obligation for non-discrimination. After the publishing of the Competition Authority Decision, most Icelandic TV and radio stations had been included for distribution through the Siminn distribution system. Siminn had published a tariff for digital TV distribution. In the tariff, prices were specified for distribution of closed and open TV programmes and for VoD. According to Article 55 of the Electronic Communications Act it was authorised to impose an obligation on electronic communications companies to disseminate certain broadcast programmes (TV and radio) when a significant proportion of users used their network to receive such transmissions. This provision could for example be used to achieve the objective of radio broadcasts to all citizens. The provision was

not restricted to a company having been designated as having SMP subsequent to market analysis. No TV station had demanded that this provision be exercised and this indicated that there was no significant problem with respect to access to distribution systems.

105) The market in question is no longer in the 2008 ESA Recommendation on the relevant market, nor in the Directive from the EU Commission on the same subject from 2007. The justification from the EU Commission for the removal of the market in question was to the effect that reception of TV was increasing steadily with the advent of digital transmissions and thus the market was tending towards active competition. One could also leverage the must carry provision to ensure user access to television programmes where public interests required this.

106) Finally, it was stated that the PTA planned to closely monitor developments on the markets in question and should circumstances change significantly, the Administration would consider whether a new analysis needed to be made of these markets.

2.1.6.7 The Media Act from 2011

107) In Section VII of the Media Act no. 38/2011. There is discussion on the rules on transmission of content. Rights and duties for transmission of television broadcasts are stipulated in this Chapter, based on Article 31 of the EU Universal Services Directive no. 2002/22/EU from 2002. The provisions of Article 22 of the Broadcasting Act no. 53/2000 and Article 55 of the Electronic Communications Act on the duty to broadcast radio programmes were repealed with the coming into law of the Media Act. The provisions in question of the Media Act were intended to support user access to varied TV material without having to connect to many electronic communications networks and to limit the impact of vertical ownership of media and distribution systems. The provisions are thus intended to prevent companies or groups of companies that control both TV content and electronic communications networks to abuse their position by tying the offer of content to a specific electronic communications network. The provisions apply to digital electronic communications networks that can transmit TV broadcasts, whether through a wireless network or a network at fixed location.

108) In the comments to the Bill for the Media Act it was stated that Siminn and Vodafone then had agreements on distributing TV broadcasts, each with the other. It had not however been until after the Competition Authority's had imposed conditions for the merger of the companies with media service providers in 2005 that agreements on reciprocal distribution were reached. It was therefore necessary to ensure that transmission of television broadcasts of unrelated companies would continue to be on offer and it was not least necessary to consider the possibilities for new media service providers to reach users with their broadcasts. The situation must not be allowed to arise where users were faced with a situation where the choice of media services provider or electronic communications company limited their access to content. It would be an extremely desirable situation where the above could be achieved with free negotiation. It would however be injudicious to trust that this could generally be resolved on the basis of agreements. Nor would it suffice, in order to assure these objectives on a permanent basis, to rely on the above specified decisions from the Competition Authority which were only directed at specific companies in specific situations and in addition to this they only imposed on Siminn the duty to transmit. It would therefore be necessary to introduce rules into law on transmission rights and transmission duty as it is desirable that there should be a clear distinction between the distribution of TV content on the one hand and

production and sale of the content on the other. It was important that consumer access to TV content was not tied to the distribution systems of specific parties.

109) Then it was stated that the rules on duty to transmit had generally been interpreted in a narrow manner in this country and in Europe, where first and foremost the concern had been to ensure that media offering TV content for the benefit of the public, such as state TV companies, had access to closed distribution systems, such as cable or ADSL. Keeping in mind the situation that had pertained on the Icelandic market, it was considered necessary that the duty to transmit did not only cover media working for the public interest, but also all media working on the delivery of visual content here in this country. Such provisions would assure access to distribution for small media service providers and thus access to the market. If new media service providers needed to make major investments in electronic communications networks to enter the market, then the entry barrier would be so high that it would be almost impossible for them to introduce content to the market. It was considered necessary that the rule worked in both directions and for this reason it was proposed that electronic communications companies would be enabled to acquire the content they chose. The other side of the coin thus concerned the position of small distribution systems, with respect to larger media service providers. As viewers chose content and the technology and distribution channels were of lesser importance, it was necessary for electronic communications companies to access to content for them to be at all competitive with their distribution channels (may carry).

110) Article 44 of the Media Act discusses the must carry obligation for television content. There it is stated that an electronic communications company operating an ordinary digital telecommunications network, which is used to transmit television broadcasts shall be obliged to comply with normal and reasonable requests by media service providers to transmit television broadcasts, having fulfilled specific conditions. The first condition is that the content is a television broadcasts by a media services provider which is established in Iceland that is to say an Icelandic broadcast. Secondly that this is a television broadcast transmitted in real time with standard digital quality. It is not an obligation to transmit deferred TV broadcasts or TV broadcasts in HD or in other formats that require significantly greater bandwidth. The final condition is that a significant number of users in the country or in a specific region, use the electronic communications network in question to receive TV broadcasts. Even where the above three conditions are fulfilled an electronic communications company is only obliged to transmit TV broadcasts that require up to one third of transmission capacity of the electronic communications network in question. If requests for transmission are in excess of the capacity of the electronic communications network the electronic communications company shall transmit those television broadcasts that have the highest viewing figures. Television broadcasts by the national broadcasting service (RÚV) shall, however, always be transmitted if requested. It is finally stated that a media service provider shall arrange for the broadcasting signal to be delivered to the electronic communications company's contact point in the appropriate format. The provision can apply both to electronic communications networks that are used solely for TV broadcasts and networks that serve a wider purpose such as networks used in parallel for Internet services and for other media services.

111) Article 45 of the Media Act stipulates the "may carry" right for TV content. There it is stated that a media service provider is obliged to comply with normal and reasonable requests that an electronic communications company be permitted to carry television broadcasts on its digital electronic communications network where specific conditions are fulfilled. It is among

the conditions that transmission of TV broadcasts to users through the electronic communications network in question are of adequate quality and with sufficient security to protect the legal interests of the holders of copyright of the material transmitted. In the case of closed programmes it shall be authorised to use access control necessary to close and open subscription TV. Secondly, the material must be an Icelandic TV broadcast from a media service provider based in Iceland or a foreign TV broadcast where an Icelandic media service provider has made an exclusive agreement to broadcast the content or a broadcast of specific events that do not constitute an entire programme schedule, such as sporting or artistic events. The transmission right does not however cover non-linear audio-visual media services on demand as the TV content is not transmitted according to a programme schedule. Finally it is stated that the provisions in agreements with copyright holders of content that were made prior to the coming into force of the Act shall not prevent the content being transmitted through an electronic communications network. Provision on the right to transmit also applies to deferred TV broadcasts and TV broadcasts in HD or in other formats that require significantly greater bandwidth. Finally, it is stated that a media services provider is unauthorised to direct their business from customers to related telecommunications companies.

112) Article 46 of the Media Act discusses case procedure and application with respect to transmission obligations and transmission rights. It was decided that instead of the Media Commission which is responsible for administrative procedures according to the Media Act, it would be the PTA which handled administrative procedures, pursuant to Chapter VII of the Act. The reason for this was that within the PTA there was very substantial knowledge and experience in treating cases with respect to access to electronic communications networks and the pricing of such service. When making decisions on the transmission of television programme schedules it is prescribed that similar methods will be applied as when the Administration deals with access for other service providers to electronic communications networks on the basis of the Electronic Communications Act. Where an agreement is sought for the transmission of a TV broadcast, the media provider and the electronic communications company shall conclude the agreement as quickly as possible. When making such an agreement care shall be taken to practise non-discrimination in the transmission of TV broadcasts and in the implementation of the agreement. Counterparties shall be subject to the same conditions, including price in analogous transactions and service and information shall be supplied with the same conditions and with the same quality as are provided to related parties or cooperating parties. The PTA is not expected to be involved in the above negotiations, except in the case of impasse, and either party can refer the case to the PTA which decides the dispute, having received the opinion of the Media Commission. Should the PTA authorise transmission, the Administration can stipulate which party shall be responsible for access control and whether the parties have a right to recompense. Decisions on access to electronic communications networks can take some considerable time, particularly if a cost analysis needs to be made to decide a reasonable fee. Circumstances can arise where a delay in a decision can cause considerable financial damage to a party. For this reason, the PTA is authorised to make a temporary decision in disputes.

113) Article 47 of the Act provides more detailed provisions on the considerations to be applied by the PTA when deciding whether a party should receive recompense and when deciding the amount of the recompense in those instances where transmission rights or transmission duties are accepted and it is clear that a decision on recompense is an extremely important factor in elaborating such a decision. Paragraph 1 specifies the factors that may be taken into consideration when deciding price. The provision is very similar to the rules that

apply on PTA price decisions on the basis of the Electronic Communications Act. The objective is that a normal and fair price is paid for transmission and for content. Pricing may not hinder competition but at the same time, it must be justifiable in view of the original investment by the owner of the facility and the risk taken in making the investment. In some instances a media services provider requires a service which is not directly considered to be transmission or closely related to transmission and is perhaps not available from parties other than the telecommunications company in question. This could for example be a case of connections to the electronic communications network, processing of the broadcasting signal and access control. According to Paragraph 2, the PTA can decide the price for such service and shall use analogous methods as used in deciding price for transmission.

2.1.6.8 Final words on digital TV (IPTV)

114) Despite the Competition Authority obligations on access to the Siminn TV distribution system, which *nota bene* do not cover other electronic communications companies making requests to distribute the Siminn IPTV system on their own networks, subsequent to the above specified judgement of the Supreme Court and despite the arguments of the EU Commission that the TV distribution market is tending towards active competition and the expectation of the PTA with Decision no. 31/2008 (Market 18) that General competition law would resolve competition problems on the relevant market, the reality was that for a long time electronic communications companies did not receive access to the Siminn IPTV system, but with the Settlement between CA and the Skipti Group from March 2013 Siminn is obliged to offer wholesale access to its IPTV service. Siminn made an agreement with Tal in the year 2011 on its wholesale access to the Siminn IPTV system. According to Siminn this offer is open to other electronic communications companies. However Siminn has denied requests from other electronic communications companies to be allowed to distribute the Siminn IPTV system through the networks of other electronic communications companies. It should be noted that the Tal wholesale purchase of Siminn IPTV is provided through Siminn's network system in parallel to bitstream which Tal receives wholesale from Siminn. In this respect, in the case of Tal, Siminn IPTV is provided through the Group's electronic communications network and not through a third party network.

115) In addition to the instances that have already been discussed, the PTA is aware of more instances where service providers and network operators have requested to be allowed to distribute the content in question. Hringiðan ehf. maintains that it has repeatedly tried to acquire Siminn IPTV on a wholesale basis but has not been successful. The PTA has also received a letter from Gagnaveita Skagafjarðar (GS), dated 24 February 2012, where GS wishes to inform that it was not successful in acquiring permission to distribute Siminn IPTV on the GS fibre-optic system. In the Decision of the PTA no. 38/2012 the PTA came to the conclusion that the access obligation imposed by the PTA on Siminn with the Decision no. 8/2008 (then Market 12) covered multicast which is among other things used to distribute TV content. Siminn was thus obliged to accede to the Vodafone demand and provide Vodafone with Access Option 1 in bitstream with multicast capability. Vodafone can thus develop its own IPTV system on the Siminn/Mila networks.

116) Despite advances in technology and greater variety in content, the market for TV distribution has thus not tended sufficiently in the direction of freedom in recent years. Factors related to the Siminn IPTV system (and possibly Vodafone) have been the main competition problems on the bitstream market. The Competition Appellate Committee and the courts have weakened the Competition Authority Decisions on the retail market for TV

distribution in such a manner that the PTA is now considering whether the Administration should adopt Market 18 again. It has yet to be tested whether the new offer from Siminn to electronic communications companies for their resale of the company's IPTV system and the agreement between Skipti and the CA will be considered adequate to resolve the competition problems in question.

2.2 Description of the relevant service markets in Iceland

2.2.1 Retail market related to Markets 4-5

117) The two markets now under discussion, the market for network infrastructure access provided at a fixed location and the market for broadband access are wholesale markets that have a related retail market. These markets are vertically integrated and one can say that Market 5 is superimposed on Market 4. Market 4 covers to a large extent the infrastructure while Market 5 covers the service, which is closer to the end user. For this reason, the PTA considers it proper to discuss jointly the retail market for these two markets.

118) There is now a considerable choice of methods of connecting to broadband on offer in retail in this country where many companies provide such service and are located at many places in the country. The differences between services and connections is quite significant and mainly involves differing speeds and amount of data that is included with the connection. Some service providers and utility providers offer various additional services such as special subscriptions to TV broadcasts, virus protection and data storage, to name but a few.

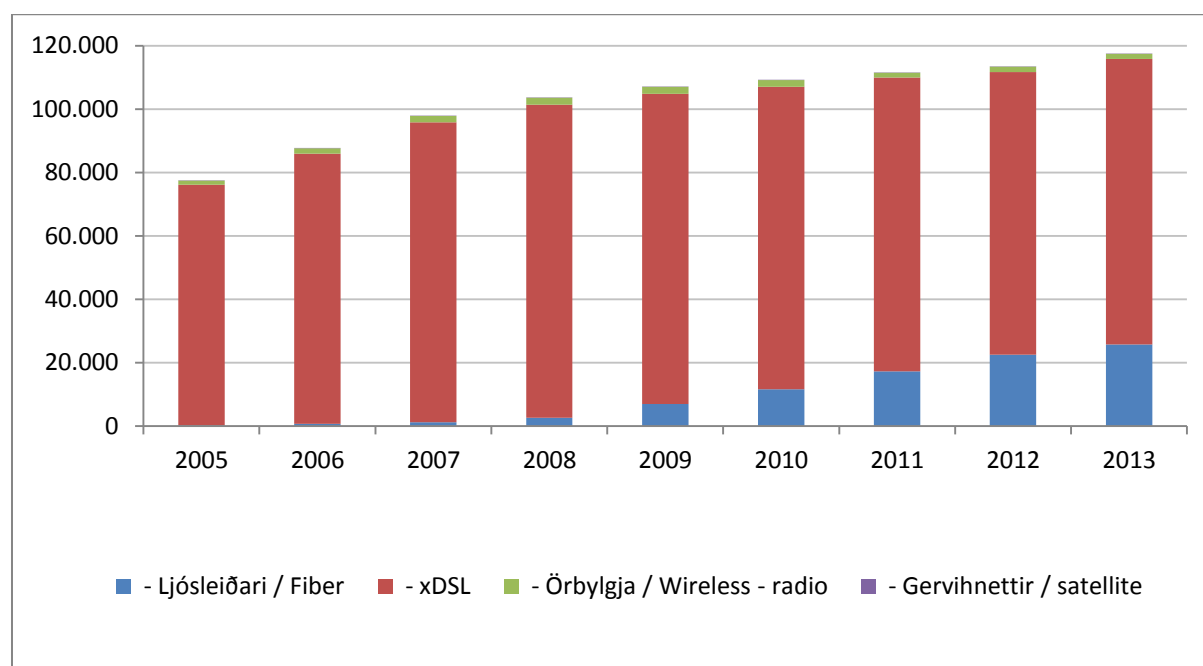
119) Almost all citizens in Iceland now have the option of a broadband connection and the vast majority have taken advantage of this and are connected at home. As an indication of this fact, one can note that there were more than 117,000 Internet connections in Iceland at the end of 2013 (see figure 2.3). Most of these connections used the xDSL standard, that is to say about 90,000, while about 26,000 were through fibre-optic. Fibre-optic connections have increased steadily since 2007 but prior to that year they were almost unknown. Other connections in use are radio (about 1600 connections) and satellite (60 registered connections). Surveys show that there is very substantial use of broadband connections by Icelanders and not only to browse the web or for download, but also for other uses, such as for example television viewing.⁶⁹

120) When one considers developments of recent years, one can see that the growth of DSL fixed line connections started to decelerate after 2008 and in 2010 there has been a decrease for the first time. One can consider that currently the market is showing symptoms of saturation though there is visible growth in the total number of connections. The main changes on the market in recent years are first and foremost an increase in fibre-optic connections at the cost of copper local loops but there are however indications that there is a deceleration in the increase in fibre-optic local loops. It is important to keep in mind that DSL technology has been undergoing steady development during the same period. VDSL

⁶⁹ See for example Hagtíðindi, Year 95, Edition 60 issued by Statistics Iceland. Use of computers and the Internet by households and individuals in 2010 and Capacent survey for the PTA may/June 2010. Review groups were used their and they were asked to discuss their experience of Internet service companies and their attitudes to these companies and to other matters. Then it came to light that the use of the Internet for TV broadcasts is uppermost in consumers' minds and that they find it difficult to be without the Internet if it is down for some time (for example when switching between service companies).

connections have recently increased rapidly and this development will undisputedly have an impact on the development of the market and figures from the end of 2013 indicates that xDSL solutions are again growing in number. Figure 2.4 shows the division of fixed line connections as they were at the end of 2013, where about 36% of connections were provided using VDSL technology. At the end of 2010 they were just about 2% and one can certainly assume that VDSL technology will have a significant impact on the development of the market during the period of validity of the analysis.

Figure 2.3 number of Internet connections by type from 2005 to end of 2013

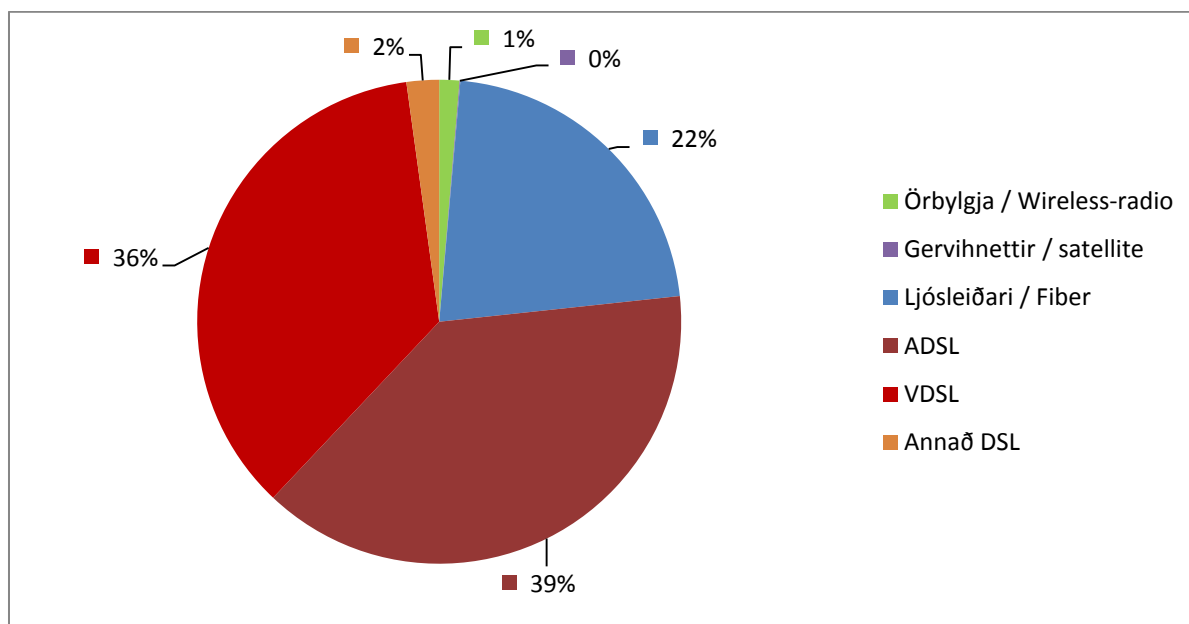


Source: Post and Telecom Administration.

121) Fibre-optic to the home (FTTH) in this country is mostly owned by Gagnaveita Reykjavíkur ehf. (GR). GR does not sell broadband service in retail, but sells specific service providers access to its systems, who in turn offer this service in retail to the public while GR collects charges for access to connections with users. At this point in time there are four companies that perform this retail function: Vodafone, Tal, Hringiðan and Hringdu⁷⁰ all offer varying packages to individuals and companies, for example with respect to foreign download and performance capacity. There are smaller fibre-optic systems being operated in other parts of the country, but they are local and do not cover large or heavily populated areas. This will be discussed later.

⁷⁰ <http://www.gagnaveita.is/Heimili/Thjonustaibodi/> (03.10.2011)

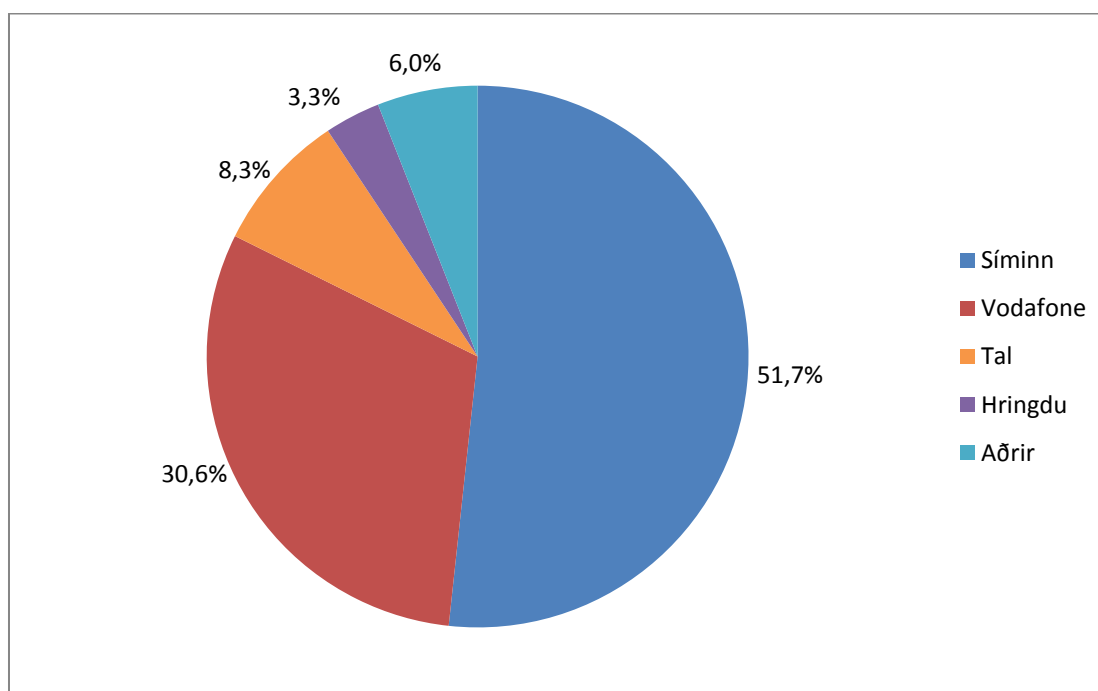
Figure 2.4 number of Internet connections by type at end of 2013



Source: Post and Telecom Administration.

122) The retail market is very concentrated and there are just three parties that control over 91% of the market, Síminn, Vodafone and Tal. The proportion held by the largest companies has remained relatively unchanged in recent years and fluctuates little. There are also smaller companies on the market whose share totals about 9%. They are among others Hringdu, 365, Hringiðan, Símafélagið, Snerpa and Netsamskipti. These companies are usually rather local and they do not have a major distribution. All companies that are service providers for Internet access are to some degree or other on the Míla network, as Míla has the only network system that covers the whole country.

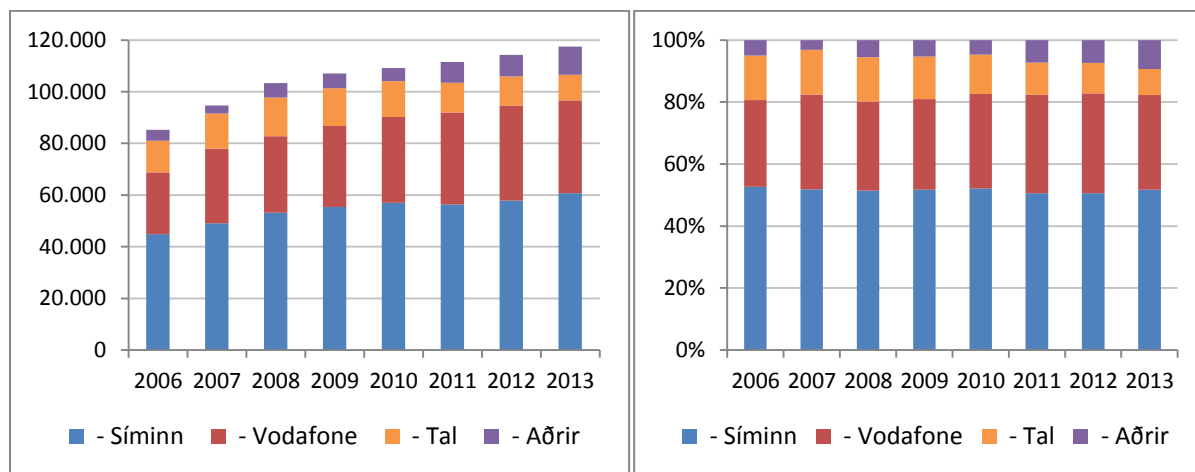
Figure 2.5 Number of retail bitstream connections by company at end of 2013



Source: Post and Telecom Administration

123) Figures 2.6 and 2.7 show that even though high speed connections have increased by 30% during the past 6 years, the relative proportion of market share between service providers has remained similar. Vodafone has gained 3 percentage points, while the total fluctuation of Síminn market share is just over 1%. Tal and its predecessors have also maintained their share though there are some indications that the company has been losing market share during the last 2 years. Other service providers are too small for them to have a significant impact on market share.

Figures 2.6 and 2.7 Internet connections in retail by company from 2006, to end of 2013 ⁷¹
Total number and proportional division

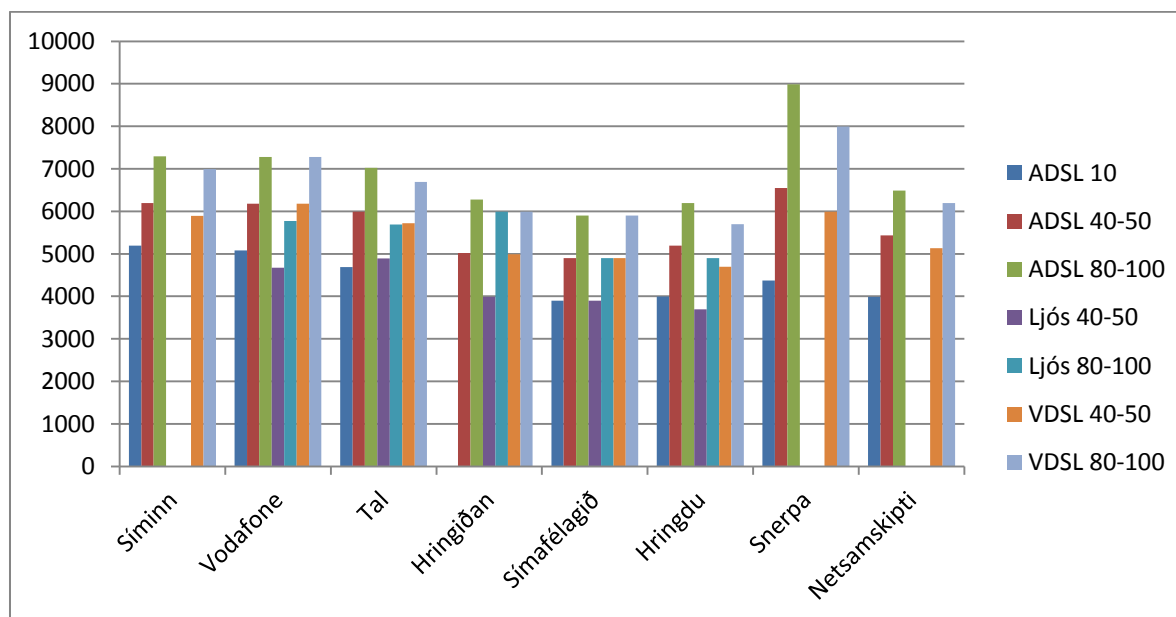


Source: Post and Telecom Administration

124) The price of comparative broadband services is similar between the companies on the market, but comparison is somewhat problematic as there are many service configurations and the services on offer with each company vary. One can however gain a rather clear picture of the market (figure 2.8) by comparing price of the companies' most common subscription offers. No difference can be found in the price of services, according to where in the country the customer/end user is located.

⁷¹ Until 2007 market share for Hive and SKO is considered to be Tal market share. Until 2008 fibre-optic connections are not included as they were a very minor part of the market.

Figure 2.8 the price of the main service offers of Internet companies, October 2013



Source: Post and Telecom Administration.

Notes: Numbers refer to included foreign download. Domestic download is in all instances unlimited. Foreign download is not the same in all instances, but it was rounded to the most common offers. Hringiðan has 20GB and not 10GB download in ADSL and the performance through fibre-optic is on the one hand 40Mb/s and on the other 80Mb/s. Hringdu offers 100 Mb/s connection through fibre-optic. Snerpa has 100 GB and not 80GB download in ADSL. Netsamskipti has 20GB download and not 10 GB and 100 GB and not 80 GB download. In addition to the cost for network connection, an amount in the range of ISK 1692 - ISK 2950 is paid for access to the fixed line connection in question which can in addition to Internet connection, serve fixed line telephone, TV service etc.

125) Broadband connections increased by 14,000 connections between 2008 to the end of 2013. There is a great increase in fibre-optic connections during this period, about 23,000 connections, while xDSL connections decreased during the same period by just under 9000 connections from the year 2008 when their number peaked. The impact of the Siminn introduction of VDSL was just beginning to be felt at the beginning of 2011, but there are indications that the VDSL standard will influence the number of xDSL connections in the coming years. There is already evidence that xDSL connections increased between 2012 and 2013 and this is the first time since 2008 that they have increased. When taking into account the number of connections to homes it is clear that broadband service is widespread in this country and almost all citizens have the option of a high-speed connection. 92% of citizens have an Internet connected computer in their home while about 95% of citizens have used the Internet sometime during the last three months.⁷²

126) Consumers seem to have a choice from a varied group of Internet service providers, but three of the largest Internet service parties have a dominant position with about 91% market share and the largest has on its own over 50% (Siminn). The total proportion of the three largest Internet companies has also changed very little in the past years (see figure 2.6). The cost of Internet service in retail is similar between individual companies when one takes into account the varying service offers and it is the same at all locations in the country.

⁷² Hagtíðindi year 97 edition 33. *Use of computers and the Internet by households and individuals 2012*, page 1.

2.2.2 Wholesale market for access to fixed access networks (Market 4)

127) From the time that the last market analysis on the relevant market was published on 21 December 2007 there has been a substantial change in the market. The Mila copper network is still the largest and most widespread access network in the country but in recent years the fibre-optic network have been installed at many locations in the country. The most worthy of mention here are the installations by Gagnaveita Reykjavíkur (GR) in South and West Iceland and there are other companies installing local fibre-optic local loops at various locations in the country.⁷³ Sometimes these electronic communications companies are related to utilities in the municipality in question, but not in all instances. It has also become increasingly common that municipalities have taken the initiative and funded introduction of fibre-optic in their areas.

128) In this country there is only one access network system that covers the whole country and that is the Mila system. The Mila network is first and foremost a copper network, which was built up to a large extent during the period when Landsiminn had a monopoly for all telephone services. The strong position of the Mila copper network is first and foremost thanks to the company's history, as up until 2005 Mila was owned by the state under the name Landsiminn. First the lines were overhead and around 1940 underground telephone cables were virtually limited to a radius of 100 km from Reykjavík.⁷⁴ During the following decade the task of transferring the main lines to underground cables was tackled and at the same time telephone connections to members of the public were increased considerably. Not all farms had telephone connections until around 1960 and at that time many lines still remained to be transferred to underground cables.⁷⁵ The copper network now owned by Mila, not forgetting the large number of telephone exchanges and other infrastructure that were installed at the same time as the excavations, was under development for a significant part of the last century.

129) Mila is Siminn's sister company and prior to that it was part of Siminn and before that part of the Post and Telephone Administration while that institution existed and the company had a monopoly on telecommunications. In 2007 Mila was separated from other Siminn operations. Today both companies are operated as subsidiaries of Skipti hf. Mila handles the operation of the network system and sells wholesale access to the system but is not responsible for the sale of bitstream or Internet services to individuals and companies which is handled by Siminn. Siminn commenced a major introduction of VDSL in 2010, first in the capital city area and then the plan is to connect most built up areas in the country by the end of 2016.

130) Mila has, as previously stated, national coverage with its copper line distribution. Mila and Siminn have in recent years concentrated on development of the VDSL system through Mila copper lines. Siminn DSL and GPON systems have now been moved to Mila in accordance with the Settlement between Skipti and the Competition Authority⁷⁶. VDSL and fibre-optic connections are now offered by Mila under the trade name "Ljósveitan". Ljósveitan is an open access network to which all electronic communications companies on the Icelandic market have access. Initially the development of the VDSL system was mainly

⁷³ For example Tengir, Gagnaveita Skagafjarðar and Fjarskiptafélag Öræfinga.

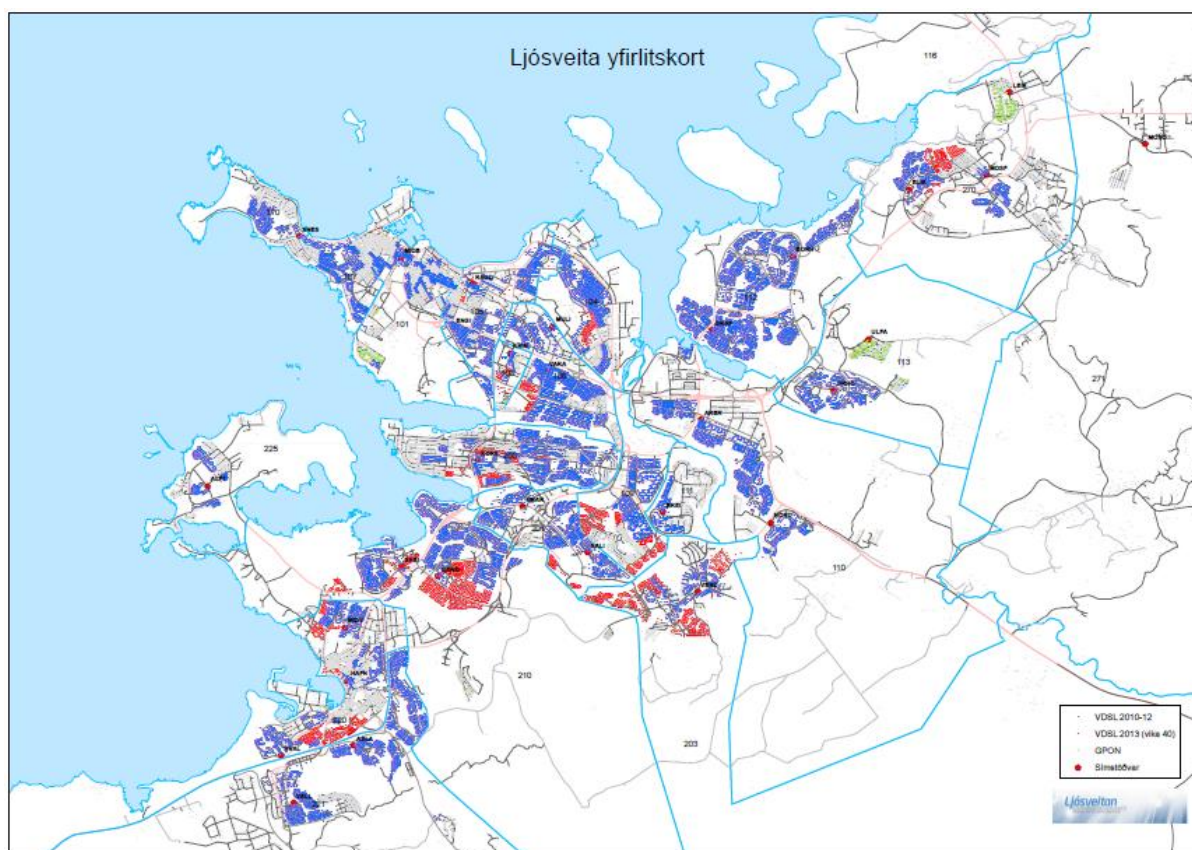
⁷⁴ Heimir Þorleifsson: *Söguþræðir Símans, Þróunarsaga íslenskra símamála. (sources for history of Icelandic telephone service)* Rvík 1986 pages 174-177.

⁷⁵ Heimir Þorleifsson: *Söguþræðir Símans, Þróunarsaga íslenskra símamála. (sources for history of Icelandic telephone service)* Rvík 1986 pages 244-246.

⁷⁶ Decision of the Competition Authority no. 6/2013 „Amendments to organisation of the Skipti Group and other measures to strengthen competition on the electric communications market.

in the capital city area and in January 2013 about 62,000 households were able to connect. At the same time, Siminn⁷⁷ (now Mila), published a plan for a major increase in distribution of VDSL and fibre-optic connections throughout the whole country where the new Mila plans allow for about 105 to 110,000 households being able to connect to VDSL at the end of 2014 (see figures 2.9 and 2.10). In March 2014 an article was published in the magazine *Sóknarfæri, frumkvæði og fagmennska í íslensku atvinnulífi* (Opportunities, initiative and professionalism in the Icelandic employment sector) which dealt with the Mila Ljósveita. There it is stated that the company intends to increase the number of households that have access to a high-speed network by 15% in the year 2014 and in this manner to reach 87% of households in the country by the end of 2014. Then it was stated that Mila had already connected just under 90,000 households throughout the whole country and that each month approximately 1000 households were added to the number who had the possibility of accessing Ljósveita. It is planned that Ljósveitan will reach all households in urban areas by the end of 2016⁷⁸.

Figure 2.9 Mila local loops with VDSL connections in the capital city area

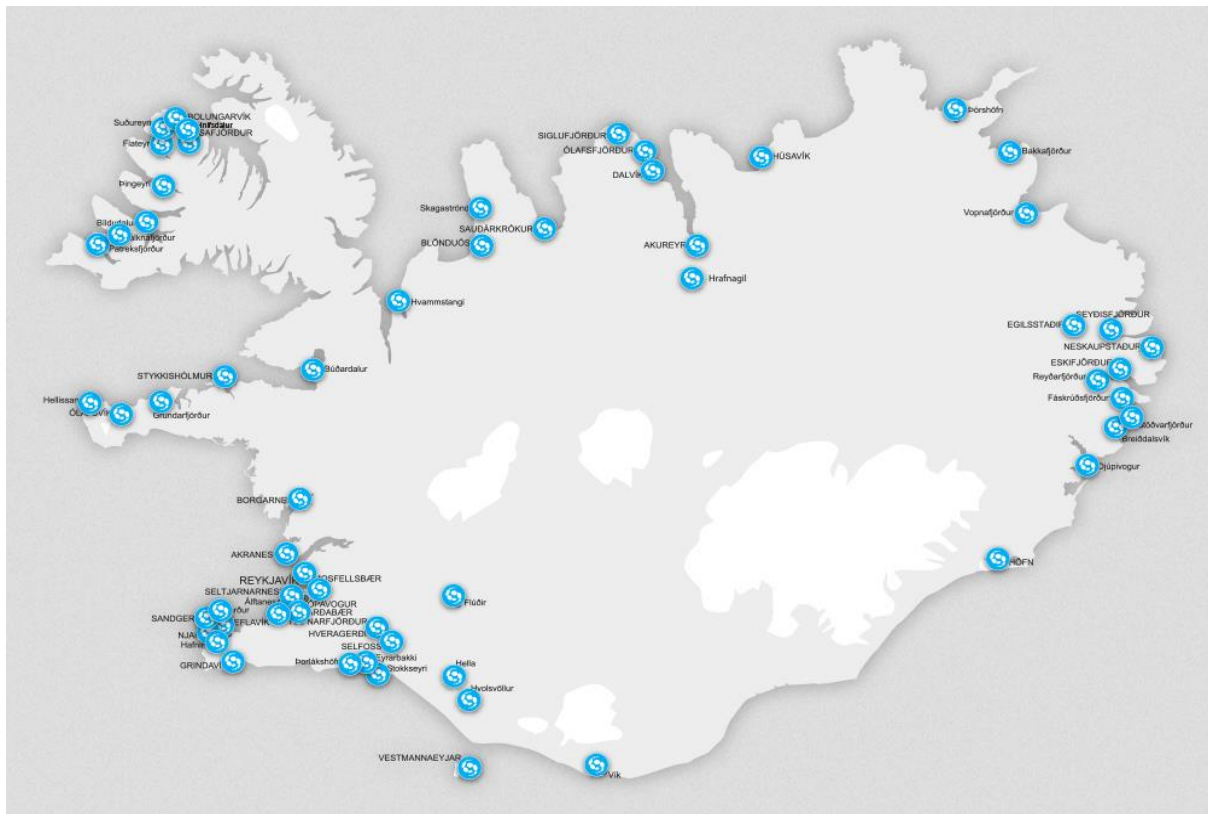


Source: Mila.

⁷⁷ <http://www.siminn.is/um-simann/frettasetur/nanar/store63/item227830/> (06.02.2012)

⁷⁸ It is stated in the article in question that Ljósveitan is based on a fibre optic system as the backbone of the system, but from the street cabinets the existing copper lines are used with VDSL2 technology for the last metres to the home. Maximum distance from a street cabinet to end user is 400 m. Street cabinets have been set up in the capital city area and in larger urban areas outside South Iceland in the year 2014, such as in Akureyri. In smaller urban areas in the countryside the Ljósveitan equipment is set up in a telephone exchange and homes located within 1,000 m line can use the service. Currently Ljósveitan is available from telephone exchanges in most urban areas in the country. The remaining locations are on the schedule for this year. The Mila plan is to start by connecting all urban areas from the exchange and then the system will be extended with street cabinets to reach the remaining homes.

Figure 2.10 Existing and planned distribution of Mila VDSL system until 2014



Source: Mila.

131) Gagnaveita Reykjavíkur, which is fully owned by Orkuveita Reykjavíkur (OR),⁷⁹ has developed a fibre-optic network in recent years in the area served by OR. On 1 January 2014 about 58,000 homes had the possibility of connecting and GR estimates that by the end of 2014 about 63,000 homes will be connected.⁸⁰ About 40% of the homes that have the possibility of fibre-optic connection in the GR area of operations now receive their bitstream through the GR network, which is more than 23,000 homes at the beginning of 2014. The GR distribution area is first and foremost Reykjavík, but also other municipalities in the vicinity and in South and West Iceland.

132) The GR network is still being developed and the plan is to conclude the introduction of fibre-optic in the areas that GR has undertaken to supply by 2015. The GR development plans in question only however address in a small way to the large municipalities in the capital city area, such as Hafnarfjörður, Garðabær, Kópavogur and Mosfellsbær. The development of the network is such that there are no clear boundaries between areas that are connected to fibre-optic and those that are still waiting (with however, certain exceptions, for example the whole of Seltjarnarnes has been connected to fibre-optic and there is a high distribution of connections in Akranes and in Hvolsvöllur. See the following figures (2.11 and 2.12) for a map of the GR operational territory on the one hand and for the fibre-optic connections in the capital city area as of the end of 2013.

⁷⁹ In October 2012 Reykjavík city council agreed to authorise the OR board to prepare the sale of a 49% holding in GR. The sale of the holding is expected to take place in 2013.

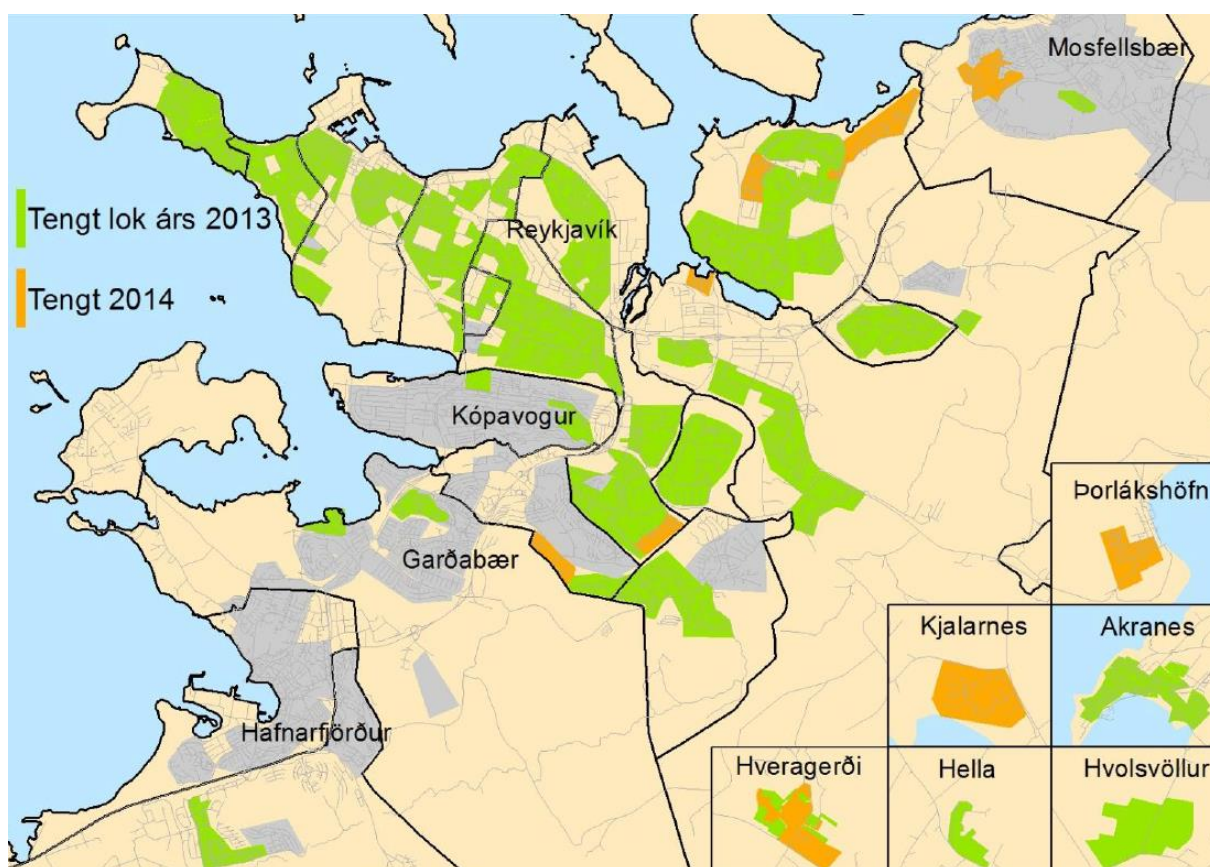
⁸⁰ This area is particularly bound with Reykjavík. In addition to this GR has agreed with the following municipalities on development of fibre-optic network: Seltjarnarnes, Akranes, Hveragerði, Hella and Hvolsvöllur.

Figure 2.11 GR operational territory



Source: Gagnaveita Reykjavíkur

Figure 2.12 GR fibre-optic connections in the capital city area 2013



Source: Gagnaveita Reykjavíkur.

133) GR operations are covered by both markets discussed in this analysis, as the company owns, installs and operates fibre-optic local loops to both companies and homes, builds its data transfer system on these fibre-optics and sells access and bandwidth in these systems. The company collects fees directly from end users, both companies and individuals, for the local loop connection. Most GR local loops are used by the company itself for its own data transfer system. GR transactions with outside parties are thus part of Market 5 but the company has not been as visible in transactions with outside parties in market for up to the present time and the GR local loop lease to outer parties is restricted to some tens of companies that are not electronic communications companies. GR collects a fee directly from the consumer, but the PTA does not consider GR to operate directly on the retail market as the a household does not decide to buy services from GR independently. The household does so by entering into a contract with a service provider of retail telecom services, such as internet access or VoIP. The service provider then initiates and drives the process of connecting the home to GR's fiber. A technician from GR visits and installs relevant fiber optic termination equipment. A technician from the service provider installs the end user equipment such as router, Wi-Fi, fixed line VoIP telephony and IPTV Set Top Box. The customer is then billed separately by both GR and the service provider. GR bills a monthly fixed access fee that is irrelevant of services used and the service provider bills for the services provided. The service provider then pays GR a wholesale fee for each of the services used by the customer. PTA is of the opinion that GR is not operating as a retailer in the relevant markets 4 and 5 as the company does not independently market or sell products to end users. Even though the access fee is billed directly to the end user, no end-user service is attached to the fee.

134) Tengir is a company was founded in Akureyri in 2002 by Norðurorka hf., Lína net hf., Fjarski ehf. and Íslandssími hf. The purpose of the company was and is to handle electronic communications in the Eyjafjörður area. The largest Tengir project has been to connect all homes in Akureyri with fibre-optic. Tengir has also installed fibre-optic between Dalvík, Ólafsfjörður and Siglufjörður the task that was completed in December 2011 and between Akureyri and Grenivík. Tengir only offers wholesale access to its networks and now it is Vodafone, Siminn and Tal, that offer broadband connections on the Tengir fibre-optic.⁸¹ Now there are more than 1700 homes connected to the Tengir system and a total of 4500 homes have the option of connecting to the company's system. Plans estimate that 500-1000 new apartments will connect to the system each year. It also has plans for a wide distribution of cables in Eyjafjörður and Siglufjörður.

135) Gagnaveita Skagafjarðar (GS) is a company that was established in 2006 and its owners are the municipality of Skagafjörður, Kaupfélag Skagfirðinga, Fjölnet and the Institute for regional development, along with a number of smaller parties. The GS aim is to develop a high-speed data transfer network in Skagafjörður. Connecting Sauðárkrókur to fibre-optic is the first objective. On 1 August 2012 about 55% of the ca. 1000 homes the GS network will reach had the possibility to connect to fibre-optic in Sauðárkrókur and in Akrahreppur, which was a 10% increase from the same time in the year 2011. Of those homes that had the possibility of connecting about 55% have already connected (in Akrahreppur the proportion is much higher, nearly 100%).⁸² Because of difficulties in operations and problematic access to patient capital, the company did not foresee being able to complete the distribution of the fibre-optic network in Sauðárkrókur or in the neighbouring areas in the near future. In November 2013 a purchase agreement was signed for the Mila purchase of GS which will be a part of the Mila electronic communications network. In parallel to the acquisition GS will

⁸¹ <http://www.tengir.is/?modID=1&id=62> (04.10.2011).

⁸² Source: Gagnaveita Skagafjarðar

go through a process of financial restructuring. Mila will continue the GS planned development of a high-speed network in Skagafjörður.

136) Fjarskiptafélag Öræfinga has installed a fibre-optic network, which reaches all farms in Öræfasveit and a few farms at Hali í Suðursveit in south-east Iceland. That network was installed with a communal effort from all inhabitants in the area and was formerly taken into use on 3 September 2010. The installation commenced when the electricity utility RARIK was installing 3 phase electricity in Öræfasveit. RARIK laid the fibre-optic cable along with the earth electricigy cable, which was the reason why it was possible to connect the municipality with fibre-optic. Now there are 45 customers connected to the Fjarskiptafélag Öræfinga fibre-optic network.⁸³ Vodafone provides the inhabitants in question with electronic communications services through the named fibre-optic network.

137) In Skagatrönd, RARIK will install pipes for fibre-optic to all buildings, about 190 connections, in 2013 in parallel to the laying of a new distribution network for hot water. The municipality provided the pipes and owns them. The installation of the pipes was in the tender description for the above specified project. Mila has taken over the project and will own and operate the fibre-optic network in the municipality.

138) In Skagabyggð, which is a rural area reaching north from Blönduós to Skagatá, the municipality has taken the initiative for the laying of fibre-optic to about 50 households in the area. Project completion is scheduled for mid-2014 and it is planned that services at that time will be provided through the part of the network that was first laid. Mila will take on the operation of the network.

139) In 2012 a fibre-optic cable was laid in the municipality Skeiða- og Gnúpverjahreppur. Cables have been laid to all farms in the municipality and to the walls of all homes where people have legal abode (and in addition to this other parties such as summer house owners will have the opportunity of connecting by paying for the local loop themselves). The project was implemented at the expense of the municipality and the Internet connection was opened on 12 January 2013.⁸⁴ There is a total of 500 and inhabitants in the municipality Skeiða- and Gnúpverjahreppur and there are connections to 240 homes and summer houses.⁸⁵

140) Hvalfjarðarsveit municipality has developed a network which today reaches about half of the 190 local loops in the municipality and project completion for connections to all households is estimated as mid-2014. Service is starting on the network to those households that were first connected.

141) Skútustaðahreppur is building a fibre-optic network which will reach 120 to 140 local loops. The work is well underway and it is hoped that the cable laying will be completed in 2014 and that service will be available to the first households in the middle of the year.

142) In Mýrdalur a company was founded for the introduction of fibre-optic in the municipality which will reach about 50 local loops and work has commenced on laying the network cable. Project completion is also planned for 2014 and service should be available on at least part of the network by mid-2014.

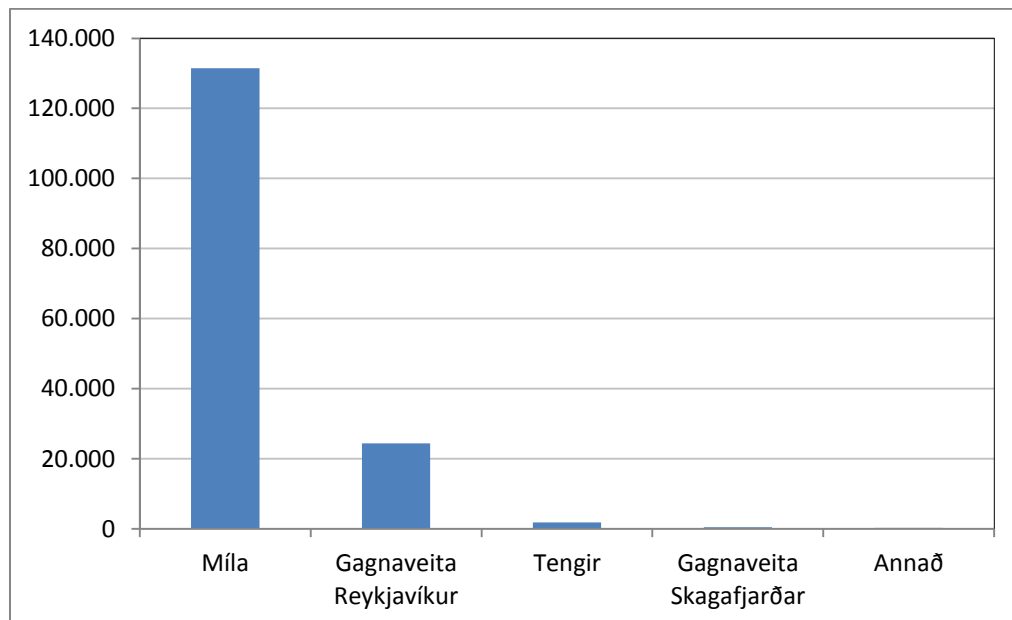
⁸³ Öræfanetið, special supplement distributed with Bændablaðið (farmers weekly) 23.09.2011.

⁸⁴ <http://www.skeidgnup.is/frettir> (07.02.2013).

⁸⁵ Statistics Iceland

143) Figure 2.13 shows an overview of local loops in use by company and it can be seen that by far the most are still on the Mila network. Gagnaveita Reykjavíkur has been growing in recent years, but still has a long way to go to approach the Mila network with respect to size and scope.

Figure 2.13 Number of local loops in use by company at the end of 2013



Source: Post and Telecom Administration.

144) When one looks at the networks that have been installed in Iceland it can be seen that the Mila copper network is still the only one to cover the whole country. There was a total of 158,000 local loops in use in the country at the end of 2013. Mila has most local loops in use, a little over 87% of all local loops in the country. GR market share is over 15% while other companies have a joint share of under 2%. It is thus clear that despite the increase in new local loops from the previous analysis that Mila still has super-dominance with respect to the number of local loops on the relevant market.

2.2.3 The wholesale market for broadband access (Market 5)

145) The wholesale market for broadband access has changed somewhat in this country since the previous market analysis was published on 18 April 2008, particularly because of the introduction of fibre-optic by GR during recent years and the advent of VDSL connections at Siminn. When the previous analysis was made in the years 2007 and 2008 the share of fibre-optic was negligible and ADSL connections dominated. Subsequent to the introduction of fibre-optic in recent years a number of smaller local network operators have entered the market and they are now an option for service providers in the locations in question.

146) With the previously referenced PTA Decision no. 8/2008, dated 18 April 2008, Siminn was designated as a company with SMP on the wholesale market for broadband access. In the decision it says, among other things that Siminn shall accede to fair and normal requests for access and that the wholesale tariff shall be cost analysed. Electronic communications companies shall have the possibility to deliver bitstream at various locations in the network

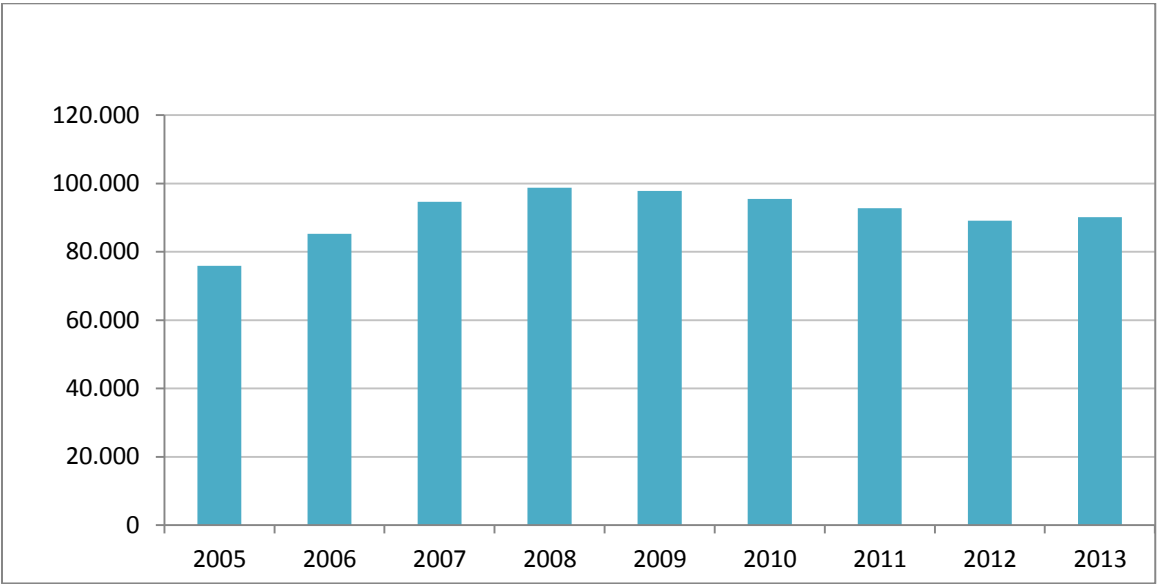
and shall have the option of changing possibilities for delivery as required, see methods 1-4 here below.

1. In DSLAM or equivalent equipment at the place where the copper local loops connect to the telephone exchange distribution frame. (Option 1)
2. After ATM/IP transmission in the Siminn backbone network, that is that Siminn handles transmission of signals from DSLAM to the connection point of another electronic communications company with the IP/ATM backbone network. (Option 2)
3. After transmission with ATM/IP on the Siminn backbone network to the connection point of another electronic communications company with the previously mentioned network. (Option 3)
4. With resale of Siminn’s broadband service in the form of Internet connection. (Option 4)

The above decision has had the impact of supporting the development of the wholesale market for broadband connections and achieving a reduction in wholesale prices for access to xDSL connections at Siminn, which is the only DSL system with national coverage.

147) The increase of fixed Internet connections has been rather slow and stable during the past 4 years but was rapid during the years prior to that (see figure 2.3). Nearly all types of connections are now either xDSL or fibre-optic. This represents a significant change from 2007 when fibre-optic connections were hardly measurable. Now network connections through fibre-optic are about 22% of all Internet connections and are increasing rapidly. The number of Internet connections using the xDSL standard has however fallen during recent years, but between 2012 and 2013 they increased again because of the increase in VDSL connections (see figure 2.14).

Figure 2.14 number of Internet xDSL connections 2005 to 2013



Source: Post and Telecom Administration.

148) As can be seen there seems to be a certain saturation in the growth of xDSL connections in this country and fibre-optic connections have been the bulk of the increase in

fixed line connections, that is taken place in recent years. One must nevertheless keep in mind that the DSL network is still the only one with national coverage and that the service providers that wish to offer the service to most of the country's inhabitants need to be able to offer DSL services.

149) A total of 78% of all Internet connections were on the xDSL standard at the end of 2013⁸⁶, even though there has been something of a decline in recent years, but the impact of the VDSL system is beginning to show in the share held by xDSL technology. The VDSL standard is part of the next generation of access networks (NGA) which are now coming into use.⁸⁷

150) If one considers the development of the introduction of fibre-optic it comes to light that the increase in Internet connections in use based on fibre-optic local loops has been significant in recent years. There are however indications that the proportional increase⁸⁸ has decelerated and that in the future it will be linear, even all the fibre-optic incursion is still fairly new and the market still in the development phase. Figure 2.14 shows the development in the number of fibre-optic connections in use.

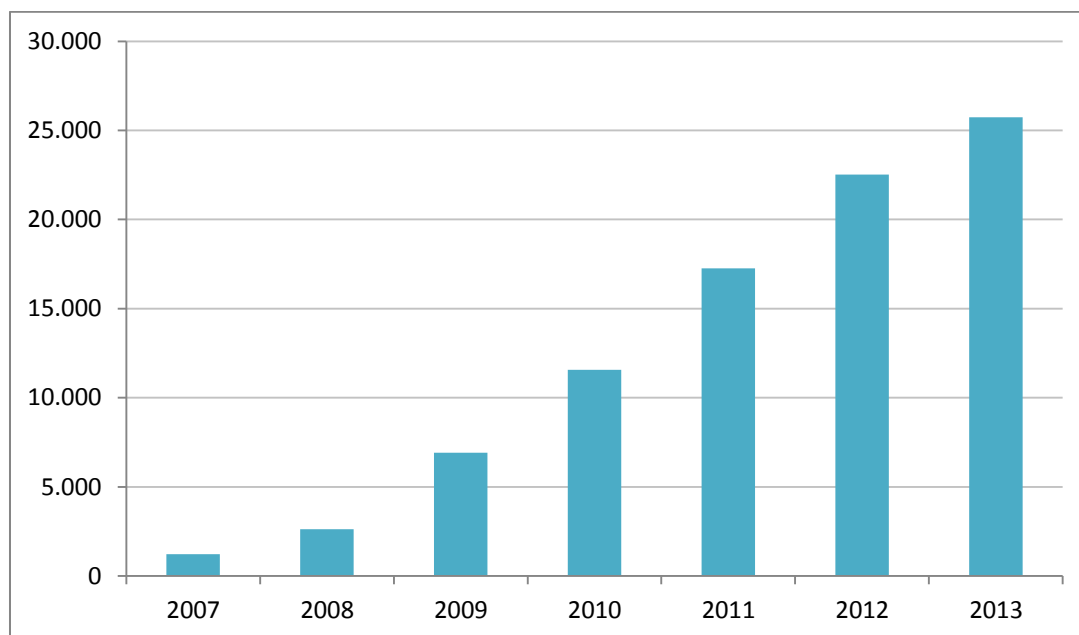
151) Vodafone fibre-optic connections on the GR network have recently increased very significantly at the cost of Vodafone xDSL connections on the Mila network and this has had an impact on market share of network operators. Further to this Tal has been increasing its business with Siminn (now Mila) and Tal has decided to move all of its wholesale business from Vodafone to Mila. The transfer of Tal customers to Mila was mostly completed in the beginning of 2013. The Mila market share of the wholesale market for bitstream connections has therefore correspondingly increased at the cost of Vodafone market share.

⁸⁶ Source: Post and Telecom Administration.

⁸⁷ See for example Commission Staff Working Document, accompanying document to the Commission Recommendation on regulated access to Next Generation Access Networks (NGA) 20.09.2010, pages 6: "The NGA Recommendation concerns regulatory reactions to the roll-out of optical fibre networks to the street cabinet (Fibre-to-the-node FTTN / VDSL) or all the way to the end customer (Fibre-to-the-home FTTH)."

⁸⁸ Source: Post and Telecom Administration.

Figure 2.15 Number of Internet fibre-optic connections in use from 2007 to the end of 2013



Source: Post and Telecom Administration.

152) Mila (previously Siminn) is, among other things on the basis of the strong position of the Mila copper network owned by its sister company Mila, the largest party on the wholesale market for broadband access and has about 65% market share. GR comes next with about 21% market share. Vodafone has a little less than 13% market share while others have a total of less than 1%. This refers both to the companies' internal and external sales.

153) The total uptake of broadband and a national level has remained very high during recent years and now about 95% of households in the country have Internet access, according to the latest survey conducted by Statistics Iceland.⁸⁹ The domestic broadband connections have increasingly been used for other kinds of digital services, particularly TV services using IP technology (IPTV). Iceland enjoys quite a unique position in Europe, with respect to general distribution of IPTV as use of this technology is nowhere greater than in this country. As is stated in Section 2.1.6 here above, where for the sake of context there is discussion on the market for TV distribution through their networks at a fixed location, various problems have arisen related to electronic communications markets (markets for TV distribution through their networks at fixed location, Internet connections and Internet services) and media markets (TV market) and the intertwining of these markets. The proportion of broadband users in Iceland that have an IPTV decoder is extremely high in Iceland about 73% at the end of 2013 and has increased from 47% from the end of 2007. There is still a significant year to year increase in IPTV service.

154) As stated above, more than 73% of all broadband users also had IPTV at the end of 2013. It seems that the integration of telephone, Internet and TV services for the same connection (triple play) is necessary for service providers to be able to compete on the retail markets for electronic communications here in this country. Smaller service providers, who first and foremost offer Internet access and Internet services are thus in a very sensitive

⁸⁹ Hagtíðindi year 96. 45. edition 6. -- September 2011 page 6. See also: <https://hagstofa.is/lisalib/getfile.aspx?ItemID=12638>

position against the larger parties, Siminn and Vodafone, who operate their own IPTV systems.

2.3 Evaluation of access technology and substitutability on the relevant wholesale markets in Iceland

155) As is stated in Section 1.4.2 on the delineation of the product and service market the market is defined as a sales territory of products or substitute products and/or a sales territory for service and substitute service in Article 4 of the Competition Act no. 44/2005.⁹⁰ Substitute products and services are defined as products or services that can, wholly or to a significant extent, take the place of other products or services not only on the basis of the objective characteristics of the product in question, the purchaser's intended use of them and their price, but also with respect to competition requirements and/or conditions relating to supply and demand.

156) There it is also stated that substitutability is generally assessed from demand substitutability or from the extent to which customers consider it easy for a product to substitute another product. There are various ways to assess substitutability such as what is called the SSNIP⁹¹ test where the effect of a small but significant and non-transitory increase in price has on the sales of the product for which substitutability is assessed. One may not however give too much credence to a simple all-encompassing test and it is also necessary to look at the circumstances on a market in each instance and at the services consumers are mostly looking for.

2.3.1 Evaluation of access technology and substitutability on the market for access to fixed access networks (Market 4)

2.3.1.1 Introduction

157) In its analysis of Market 11, which was published with the PTA Decision no. 26/2007, dated 21 December 2007, the PTA defined the relevant market as the: *wholesale market for access to copper local loops*. This definition is furthermore based on the definition in the ESA 2004 Recommendation taking into consideration the Explanatory Note to the EU Commission Recommendation then in force from 2003. As is stated in Chapter 2.0 here above the definition of this market is not materially changed in the new ESA Recommendation from 2008. In the prior recommendation the market was limited to copper local loops, but is now defined as technically independent so one must take into account all possible access networks at fixed location that are on offer in this country.

158) The PTA however considers that it is necessary to investigate whether there have been changes in the circumstances on the market in this country, including changes with respect to the service offer that could call for changes to the definition or whether new services have emerged based on new technology that fall within the scope of the market. One must keep in mind that market definitions in competition law cannot be precise and is only used for reference, see among other things the decision of the Competition Appellate Committee in case no. 8/2008 *Fiskimarkaður Íslands hf. versus the Competition Authority*.⁹²

⁹⁰ See here: <http://www.althingi.is/lagas/137/2005044.html>.

⁹¹ The Hypothetical Monopolist or Small but Significant Non-transitory Increase in Prices.

⁹² <http://www.samkeppni.is>.

159) Local loop is the name used for a line that connects the connection point from the user to the distribution frame of a telephone exchange or analogous equipment. Various kinds of technology are used for this purpose, but local loops in this country are divided almost entirely into two categories. On the one hand there are copper local loops and on the other hand fibre-optic local loops. As has been previously stated, copper local loops are first and foremost on the Mila network while fibre-optic local loops are on offer with more companies (among others Mila), which all have smaller distribution than on the Mila copper local loops. It is important to discuss the technology and the infrastructure existing in instances of both of these connection options.

160) These are not the only solutions that can be on offer and abroad it is common that cable systems are used in competition with copper. These are cable systems for TV mostly based on coax cable. Here in this country the Siminn Broadband is based on coax cable. The installation of Broadband commenced in 1994 and the system reached approximately 45,000 users at its height at the turn-of-the-century. Its development and construction stopped about the same time and it has now been withdrawn from service.

161) The development of Broadband has however been useful for Mila to the extent that in many instances fibre-optic lines were laid to street cabinets to connect with the coax cable. These fibre-optic cables are now used in the development of the Mila VDSL system. This represents a significant investment as the Mila copper system has now had a new lease of life.

162) Fixed wireless access have been common abroad in certain areas but in this country it is seldom used apart from in a few areas in South Iceland mainly in connection with summer house areas.

2.3.1.2 Copper local loops

163) Copper local loops are in most instances two or four wire copper lines where each wire services one customer. Earth cables that lie from telephone exchanges can have up to 1000 copper lines, or more in certain instances. The largest Earth cables are laid from the telephone exchanges and as the distance from the exchange increases the cables are normally split into smaller cables where the final segment from the street cabinet and into the building uses cables with only a few lines except in the case of companies, institutions or large apartment blocks.

164) Initially, copper local loops were first and foremost used for access to fixed line telephone services. In some instances, copper local loops in companies and institutions were also used for telegrams, telex or lease lines. Then the fax machines arrived and the need for local loops in commercial properties increased and in some instances also in residential properties. In certain cases the same local loop was used for both telephone and fax machine but usually these were separate lines. The introduction of computers into commercial operations was the next step, which demanded separate lines for computer connections and connections with public data networks.

165) Households were provided with computer connections with dial up modems via the same local loop as was used for the fixed line telephone which is in some ways still the case today. It was possible to integrate voice and data transfer in ISDN service where two 64 Kb/s channels were transmitted on a copper local loop, one for voice and the other for data, including an Internet connection and it was also possible to use both 64 Kb/s channels for data

or for voice. After that, DSL technology was adopted, which made it possible to divide bandwidth of the local loop between voice and data transfer, which was often an Internet connection and later TV broadcasts were sent through ADSL connections via the local loop in addition to voice and Internet. This development was based on the use of technology that compressed information into smaller bandwidth. The functions of copper local loops have thus increased with the years and their importance is still very significant. In recent years VDSL connections have become prominent and they are based on the same technology and give the possibility of sending a greater volume of data than has been possible using the ADSL standard. The limitations are however that the distance of the user from the connection equipment needs to be shorter than is generally the case with for example the ADSL standard, which is still the most used in this country, because performance deteriorates proportionately more rapidly as the copper local loop lengthens. The connection equipment is therefore usually in the street cabinets and not in telephone exchanges and a fibre-optic is connected from the street cabinet to the telephone exchange.

166) All connections based on DSL technology were included in Market 12 in the previous analysis, even though access to bitstream using the VDSL standard had not been offered generally for sale, but the PTA Decision no. 12/2010 on changes to conditions of the Siminn reference offer for bitstream access and the Decision no. 38/2012 on Access Option 1 from Siminn confirm this even further. The market was not restricted to a specific DSL standard, such as ADSL, but covered all possible DSL standards, including for example VDSL standard.⁹³

167) When one has in mind the enormous cost of installing a copper local loop network in a built-up area, it is difficult to see how it could be an economic proposition to install new copper local loops parallel to those already in place. In addition to this, an electronic communications company today would rather install fibre-optic than copper local loops. In its operations Mila thus enjoys economy of scale and in addition to this enjoys the benefits of having established itself on the market through historical reasons.

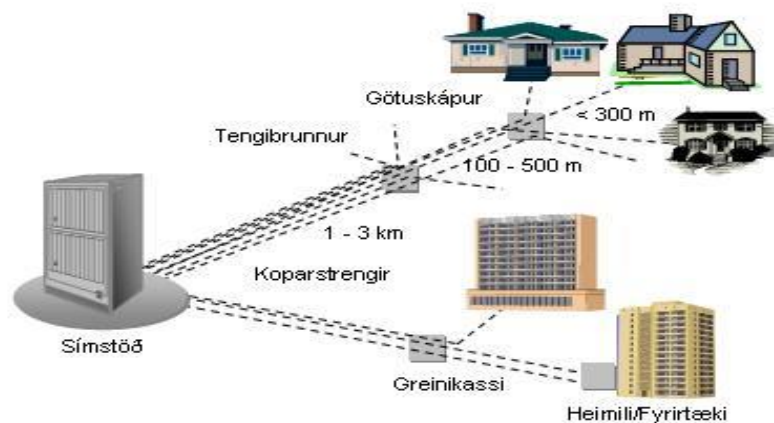
168) On the opening of the electronic communications market when new electronic communications companies began to offer fixed line telephone services and Internet connections to users, their competitive position was difficult in that they did not have access systems in the form of copper lines. It takes a long time and requires very significant investment to build up a comparable facilities and during this period the former monopoly holders had a dominant position on the market for local loops. The authorities thus considered measures that would support the levelling of the competitive position of electronic communications companies after the lifting of the monopoly such as local loop unbundling. Later, with the new DSL technology, which was previously mentioned, the possibility emerged to share local loops between two service providers where one of them provided fixed line telephone service and the other data transfer service. This arrangement is called shared access to the local loop.

169) Copper lines that form the local loop are generally connected to the distribution frame in the telephone exchanges. Different earth cables in the local loop system are joined together in duct access pits and street cabinets as is shown in figure 2.16. Distribution frames are divided into two parts where one part is connected to the copper lines in earth cables and the other part is connected to various equipment in the telephone exchange depending on the

⁹³ Other DSL standards are for example SDSL and G.SHDSL but they are much less common on the market in this country.

service being provided through the local loop. Normally a connection is made between the parts of the distribution frame so that for each line in the earth cable, there is normally a connected line into the exchange. It is possible with this arrangement to connect copper lines with equipment from a competitor so that he can provide the relevant user with a service. This arrangement depends on the competitors being able to get space for the equipment in the telephone exchange and access to it, which often proves problematic. Another possibility is to install equipment that provides access to various frequency bands that can be handled by the local loop and then make it possible to provide fixed line telephone services and Internet services simultaneously from each service provider. Equipment called digital subscriber line access multiplexer or DSLAM collects bitstream from many local loops and can connect it as a composite signal to the backbone network.

Figure 2.16 Example of copper local loops



Source: Post and Telecom Administration.

170) As has been previously stated, the historical position of Mila is strong and Mila owns all copper local loops that are on offer on the wholesale market. Subsequent to the passing of the Electronic Communications Act no. 107/1999, which contained in Article 20 a provision for an obligation to provide access to local loops, an agreement was finally reached at the end of 2000 between electronic communications companies on access to the Siminn local loops (now Mila). In 2002 an EU regulation on unbundled access to copper local loops was introduced into Iceland and the first reference offer for open access to copper local loops (RUO) was ready in May 2003. Apart from Siminn, Vodafone is the largest of Mila's customers on the local loop market. A number of smaller companies have also leased local loops.

171) The VDSL service which is currently being introduced is not new technology but is in fact an upgrade from ADSL and is a change in level, but not a change in nature, despite its hugely increased performance. VDSL and ADSL are different standards, but they both fall under the heading of DSL technology. In order to upgrade from ADSL to VDSL one needs to install DSLAM equipment in a street cabinet which is connected with fibre-optic to the telephone exchange, while in the case of ADSL service such DSLAM equipment is located in the telephone exchange or nearby.

172) The advent of the VDSL service has increased the data volume available to users. Download using the VDSL standards on offer here in this country can be up to 70Mb/s⁹⁴ while it is generally no more than 12Mb/s using the ADSL standard. The performance of download through local loops connected with the VDSL standard is comparable to the normal performance of fibre-optic local loops. The performance of upload is lower on the VDSL standard than the download and in this respect it is different from what applies to fibre-optic local loops.

173) The introduction of VDSL has been rapid in recent months and there are plans that in the coming years it will reach 87% of homes in the country by the end of 2014. This development will take place in urban areas in the country and will thus duplicate the fibre-optic local loop networks that already exist and that will be installed in the near future. Users at many locations in the country will thus have the option of connections of up to 70 Mb/s or more through both copper and fibre-optic local loops. The Siminn introduction of VDSL has thus recently significantly increased the competitiveness of the copper network.

174) As the VDSL standard is operated on local loops it can be difficult to provide shared access similar to that provided using the ADSL standard. Space in street cabinets (to which the last leg of the fibre-optic connection from the telephone exchange normally lies) is often in short supply⁹⁵ and there is a risk of crosstalk. It has proven difficult to get shared access to such street cabinets, among other things, for this reason.

175) Because the VDSL system and connections are generally built from street cabinets and not from telephone exchanges, as are corresponding ADSL systems and connections, then it can be difficult to install the necessary equipment in available street cabinets, particularly if more than one party wishes to develop a VDSL system. In such circumstances there are two possible ways to go, on the one hand to install a new street cabinet beside the existing one or to enlarge existing cabinets. Both of these ways are quite costly. In addition to this, it is not certain that permission will be granted from planning authorities for the necessary increase or enlargement of street cabinets.

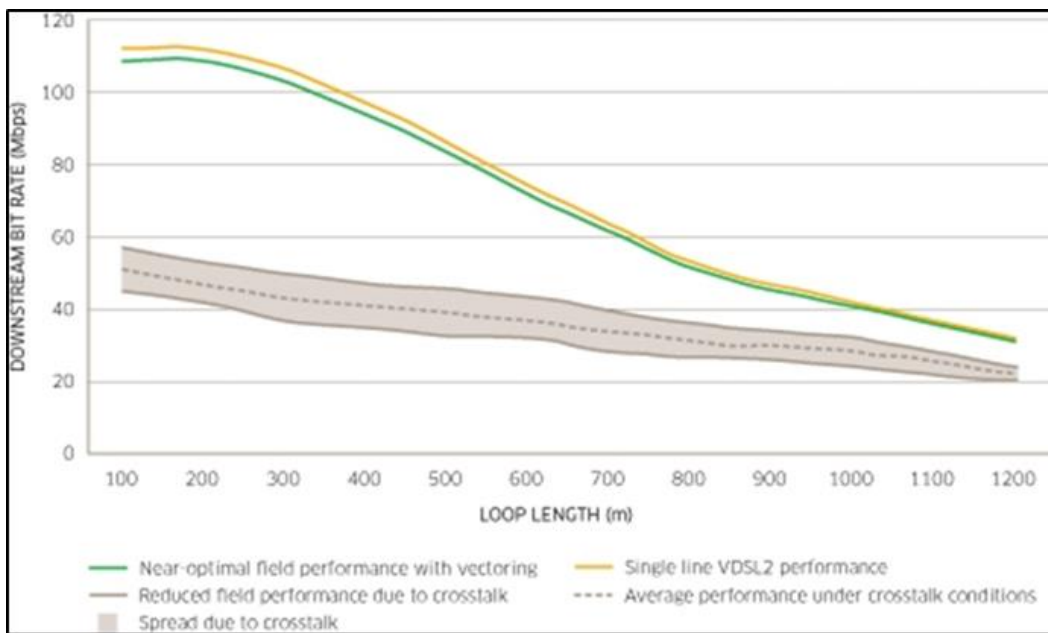
176) Even where the enlargement or increase in number of street cabinets could be implemented and was financially viable it is not clear how technically effective such a solution would be. The current situation is that the more users of xDSL service on the same multi-pair cable, the greater the crosstalk problem. This does not apply to the same extent in the ADSL system as the crosstalk problem is so minimal that it does not noticeably affect quality of service for the end user. In the case of the VDSL system, a higher frequency is used, which makes VDSL more sensitive to such problems. To mitigate this it is possible to use vectoring which combats crosstalk.

177) Vectoring works by listening to all VDSL lines in the same multipair cable, identifying the crosstalk and in real time the interference factor is regenerated and sent on a VDSL line out of phase, which thus subtracts the interference element.

⁹⁴ Mila intends to offer 100 Mb/s connections at selected locations already this year with the help of vectoring and bonding technology. According to Mila, development in DSL technology will continue and within a few years the technology known as G.fast will emerge which will enable speeds of up to 1GB/S on shorter copper lines.

⁹⁵ As previously stated Mila (previously Siminn has) installed its VDSL equipment at many locations in the company's street cabinets.

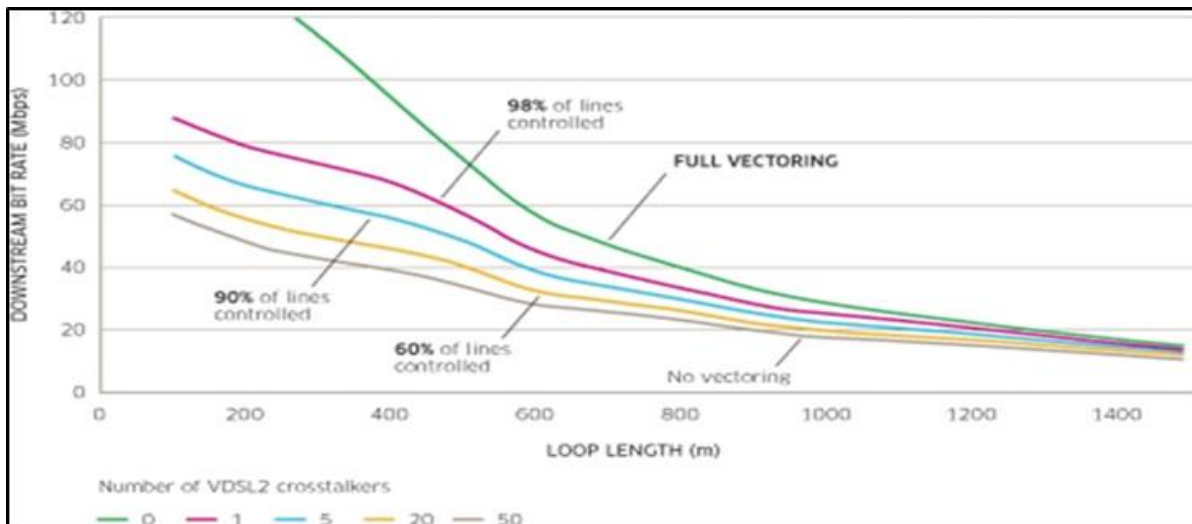
Figure 2.17 The effect of vectoring on a multi-pair cable of VDSL 50 lines



Source: TechZine⁹⁶

178) To be able to use vectoring then all lines in the same multi-pair cable need to be with the same VDSL system operator. Because of crosstalk it is likely that if more than one VDSL system operator operates DSLAM equipment in the same street cabinet, then this will cause interference that will limit service quality for all users.

Figure 2.17 Impact of crosstalk on VDSL lines



Source: TechZine⁹⁷

179) In order for copper local loops to become technically and performance competitive with fibre-optic local loops, DSL technology has had to develop significantly. With the introduction of the VDSL system the performance capacity of copper has increased and it is

⁹⁶ „VDSL2 Vectoring in a Multi-operator Environment – Separating Fact from Fiction“ by Dr. Stefaan Vanhastel and Paul Spruyt, Alcatel Lucent

⁹⁷ „VDSL2 Vectoring in a Multi-operator Environment – Separating Fact from Fiction“ by Dr. Stefaan Vanhastel and Paul Spruyt, Alcatel Lucent

foreseeable that it is still possible to increase this even further. The methodologies that are foreseen for this use are the previously mentioned vectoring and channel bonding in local loops. Bonding of lines is based on the fact that in general, there is more than one copper wire pair in each local loop line. One can put a VDSL connection on more than one line-pair and combine the connections so that the customer receives in one service connection, the performance of many VDSL connections. As channel bonding increases the proportion of VDSL lines in the multi-pair cable, the advantages of vectoring are leveraged to an even greater extent where bonding is implemented. In the future it is planned that there will be an even greater increase in capacity of copper local loops with Phantom and G.fast DSL.

180) When one considers the life cycle of the analysis one can assume that services through copper local loops will suffice for all general electronic communications services for homes and companies. This applies to fixed line telephone services, data transfer, Internet service and IPTV. Fibre-optic connections will be an option instead of copper local loops during the life cycle of the analysis. Today there is generally not much demand for connections faster than 50 Mb/s. Normal households only use part of this capacity and to give an example land Internet games usually do not require more than 0.5 Mb/s and the same can be said for music providers like Spotify. Netflix or Apple TV or other video streaming services require only 3-5 Mb/s. Demand will doubtless change as development in recent years has shown.

2.3.1.3 Fibre-optic local loops

181) Fibre-optic is being introduced in most regions of the world, even though conversion to fibre-optic technology itself is still in its infancy in most countries. The EU Commission believes that fibre-optic and the next generation of access networks (NGA) have the potential for being a driving force for economic growth and innovation in Europe. Investment in fibre-optics is a key issue in what is called the European digital agenda which is the cornerstone of the EU 2020 policy objectives for smart and sustainable growth.⁹⁸

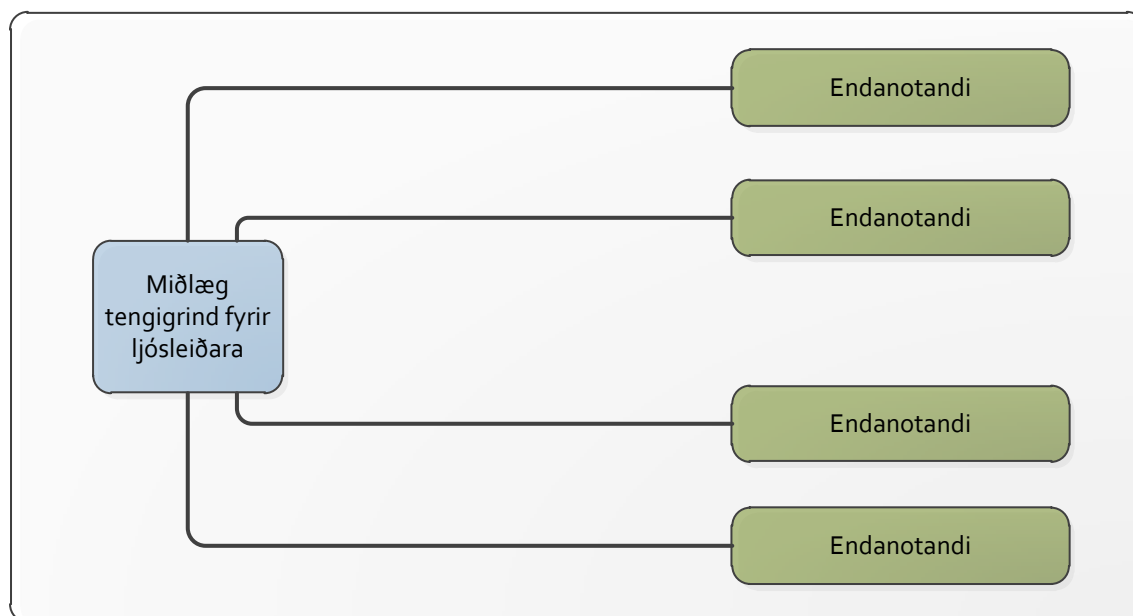
182) Fibre-optic itself is a transparent thread, often made from glass, but also from various plastic compounds. A fibre-optic thread, which is a similar diameter to human hair, is used to transmit light signals over long distances. Data transmitted with these light signals is at a higher frequency rate than is usually case with data transmission. There are various advantages in this kind of data transmission, but first and foremost, one must consider that the amount of data that can be carried by fibre-optic is far in excess of that which can be carried by copper lines.

183) There are many ways to develop a fibre-optic network. The main difference lies in the arrangement used in the last segment into a building and how sharing en route from the core to the user is structured. The main ways are Point to Point⁹⁹, or Point to Multipoint, Active Optical Network (AOM) and Gigabit Passive Optical Network (GPON). These systems are further explained in figures 2.19-2.21.

⁹⁸ See for example [Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks \(NGA\)](#) Page 4.

⁹⁹ PtP.

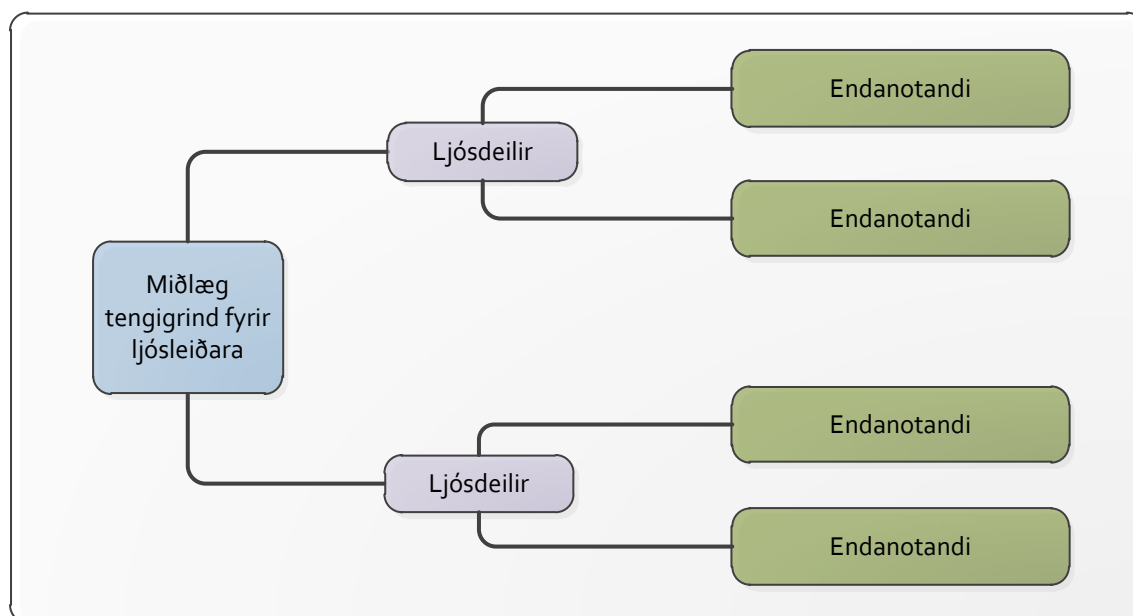
Figure 2.19 Example of architecture of Point to Point network



Source: Post and Telecom Administration

184) In point to point network architecture each end user has a dedicated fibre-optic thread in his local loop. The thread ends in a kind of distribution station which contains active network equipment. In this country the GR network system is an example of this type.

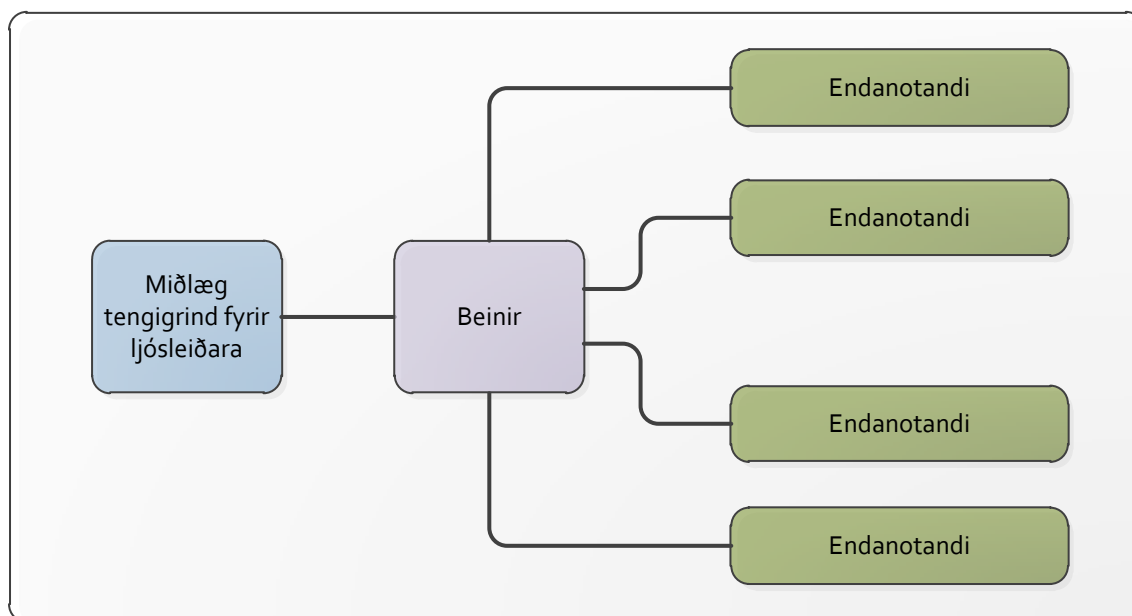
Figure 2.20 Example of architecture of GPON network



Source: Post and Telecom Administration

185) In the GPON network architecture, a shared fibre-optic thread leads from the distribution station to the street cabinet (usually) where a passive optical splitter divides the fibre-optic signal over to the last part of the local loop to each end user that is connected to the street cabinet in question. The number of end users is usually in the range of 32-128 for each street cabinet. In this country Mila uses fibre-optic local loops owned by Mila and Tengir to transmit data in this manner.

Figure 2.21 Example of architecture of AON network



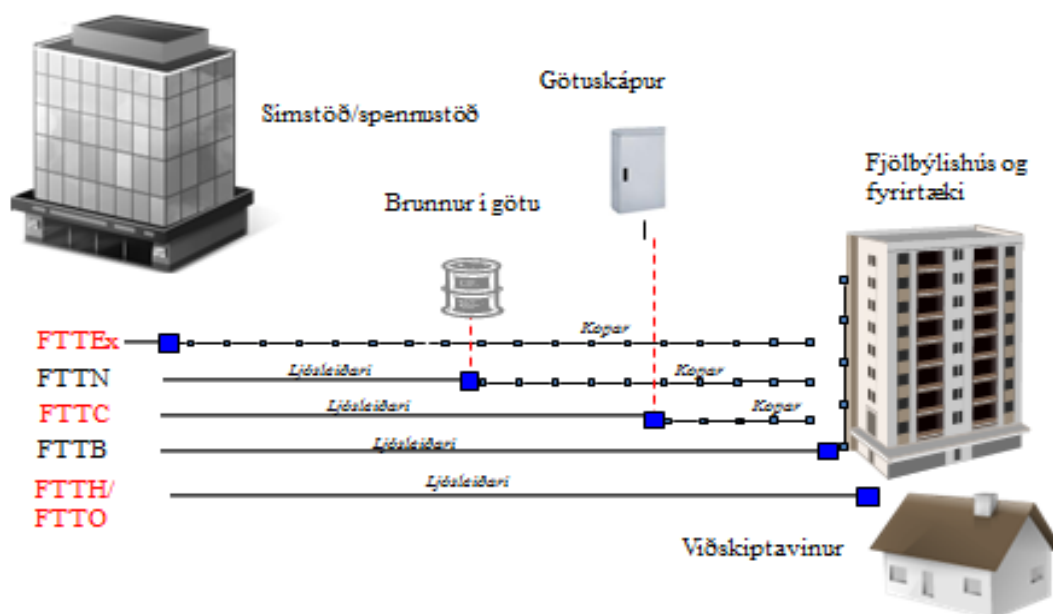
Source: Post and Telecom Administration

186) AON architecture is similar to PON, except that the equipment in the street cabinet that divides the light for the last part of the local loop is active and not passive as in PON architecture. The main difference between active and passive equipment is that the active one is driven by electricity and can control data flow between end users and the central distribution frame. The passive equipment simply connects and distributes data stream and makes no active decisions on data flow, not unlike a prism which splits light into colours. In a network that uses active equipment the network operator can control and define services and capacity for the requirements of each user and can alter the definitions as requirements change. In a network that uses passive equipment such definitions are less flexible and all end users that are connected to the same splitter, share capacity and quality definitions.

187) Fibre-optic lines can be installed in the same manner as copper lines and they can also operate in parallel to the copper. Fibre-optic can be laid from a telephone exchange to the connection point, for example in a duct access pit and the connection then continued through copper to the connection point (FTTN – Fibre To The Node), in a street cabinet (FTTC – Fibre To The Cabinet) to the building (FTTB - Fibre To The Building/Basement) or directly to the home or company (Fibre To The Home or Fibre to the Office), see image 2.21. In this country the VDSL system usually uses FTTC technology.¹⁰⁰ Now a fibre-optic cable is normally laid to buildings (FTTC) in all greenfield building areas. In addition to this GR, GS, Tengir, Fjarskiptafélag Örfinga and Fjarskiptafélag Skeiða- og Gnúpverjahrepps have in recent years connected fibre-optic into homes in Reykjavik and neighbouring municipalities, in Sauðárkrúkur, Akureyri, Örfasveit and in Skeiða- og Gnúpverjahrepps. In addition to this there are developments underway in Skagaströnd and Skagabyggð, Hvalfjarðarsveit, Mýrdalur, Skútustaðahreppi and in other municipalities.

¹⁰⁰ This is however not always the case and at some locations VDSL services provided from a conduit access pit or even from the telephone exchange.

Figure 2.22 Example of fibre-optic network



Source: Post and Telecom Administration.

188) Potential data volume by fibre-optic, as previously stated, is significantly greater than through copper. GR generally offers 100 Mb/s¹⁰¹ to its customers and it is technically possible to offer up to a gigabit to each home which is however not economically feasible under current circumstances. It is thus quite clear that the data volume which a fibre-optic network can carry is in excess of general needs and will be so, given no major changes, during the life cycle of this analysis.

189) There are now fibre-optic local loops at many locations in the country and their distribution has increased very significantly since the last analysis. Gagnaveita Reykjavíkur (GR) has been the largest of the companies that provide the service. The company's development has first and foremost been in Reykjavik and in neighbouring municipalities in South and West Iceland. Gagnaveita Skagafjarðar offers fibre-optic connections at many locations within Sauðárkrókur and in the surrounding area in North Iceland.¹⁰² Tengir offers fibre-optic connections at many locations in Akureyri and surrounding areas¹⁰³. Fjaraskiptafélag Örfæinga has laid fibre-optic in Örfæisveit and Skeiða- and Gnúpverjahreppur municipality has laid fibre-optic in its area. More municipalities are considering measures in fibre-optics and development has already commenced in Skagaströnd, Skagabyggð, Hvalfjarðarsveit, Mýrdalur og Skútustaðahreppur. Míla has installed connections in greenfield areas and follows the policy of connecting buildings in new districts solely with fibre-optic. This means that Míla now no longer installs copper local loops in new districts. The building of new districts has however been rather slow since the bank crash in Iceland in 2008 and

¹⁰¹ In limited areas customers can upgrade to 400Mb/s connections.

¹⁰² <http://www.skv.is/gagnaveita/> (06.01.2011).

¹⁰³ <http://www.tengir.is/?modID=1&id=4> (06.01.2011).

there have few indications of change in this situation, except possibly very recently. Forecasts suggests that new builds will increase in the coming months and years.

190) Unlike other fibre-optic providers, Míla has normally not operated a data transmission service, but simply leases fibre-optic threads to such parties between the technical space and end user, without any equipment at either end. Mila also leases facilities in the technical space so that the system operator can install necessary equipment. In addition to this such a system operator can lease a backbone line from Mila in order to connect the technical space with his system production. Subsequent to these settlement between Skipti and the CA Mila took over the GPON bitstream equipment and related services from Siminn and now sells wholesale bitstream service.

191) As has been previously stated it is possible to transmit much more data to and from users than has been seen before. In this country up to 100 Mb/s is being offered to users. Fibre-optic connections still have rather limited distribution and about 52,000 homes could connect to the GR fibre-optic network at the end of 2012. At the end of 2012 there were about 19,000 users already connected. In some smaller municipalities, homes and companies are entirely or almost entirely connected by fibre-optic, such as in Seltjarnarnes, Akranes and Hvalsöllum. In the capital city area and the possibilities for connection are generally available, but this particularly applies to neighbouring municipalities to Reykjavík, such as Kópavogur, Garðabær, Hafnarfjörður and Mosfellsbær. The same can be said for certain districts in Reykjavík or parts of districts. GR however plans to complete connections almost all households in Reykjavík in the year 2015 where more than 90% of homes were connected at the end of 2013 and it was estimated that about 97% of homes in Reykjavík will be connected at the end of 2014. One could assume that more than 20,000 homes¹⁰⁴ of a total of 75,000 in the greater Reykjavík area do not fall within the GR plans in the near future. GR considers however that the municipalities in question are within its service territory and that they will be connected to fibre-optic but no goal dates have been set for such plans as yet. The GR plans allow for 63,000 homes being connected by fibre-optic local loop at the end of 2014 and there are homes in Akranes, Hvalsöllum and Hella among others included in this number.

192) Work is in progress on developing the fibre-optic network and it is planned that the homes that can avail themselves of the service will increase significantly in the coming years. It is expected that this increase will take place first and foremost in Reykjavík and surrounding areas, as well as in Skagafjörður and Eyjafjörður. Smaller municipalities in the less populated areas have been investigating the possibilities of setting up their own fibre-optic system similar to that of Öræfasveit and the company Fjarlskiptafélag Skeiða- og Gnúpverjahrepps began offering its services on 12 January 2013. Development has also been commenced in Hvalfjarðarsveit, Skagatrönd, Skagabyggð, Skútustaðahreppur and in Mýrdalur.

193) The fibre-optic connection that households get from GR can offer 100 Mb/s performance but not all service providers choose to offer Internet services with such capacity. If this is compared with the Mila VDSL network that is being developed in the capital city area then there is no difference in the general download capacity. One should however note that the fibre-optic upload has greater capacity than can be achieved with the VDSL system.

¹⁰⁴ Heimild : Póstnúmeraskrá Íslandspóst http://www.postur.is/desktopdefault.aspx/tabid-453/90_read-160/

194) For the general user it is not easy to see the difference when using, for example a connection with 12 Mb/s 50 Mb/s or 100 Mb/s, among other things because the largest part of Internet services does not require so much bandwidth and in addition to this as service providers' broadband international connection does not give the same increase in service as the increase of bitstream over the local loop does. In addition to this, general TV broadcasts allow for users not needing more powerful connections than are generally offered through the ADSL system. It is not foreseeable that this will change much during the period of validity of the analysis. One can mention that broadcasts of HDTV, which have commenced at many locations worldwide, require increased capacity, but it is not certain that TV channels in Iceland will generally be broadcast in HD during the period of validity of the analysis. The state broadcasting company RÚV has started to broadcast HD channels but a minority of the material is actually HD. 365 has also broadcast sports material in HD. One must see these broadcasts as the first step. General distribution of HD is dependent on three factors, that is to say the content itself, the distribution of high-speed connections and the replacement of decoders of a large majority of television viewers.

195) Siminn and Míla behaviour also supports this. Míla is concentrating on developing VDSL rather than developing a fibre-optic network to homes (except in greenfield areas) or negotiating with Gagnaveita Reykjavíkur on access to that company's fibre-optic network.

196) In addition to this, the price is similar to consumers and is mostly structured in the same way regardless of whether one is using ADSL, VDSL or fibre-optic, though it is certainly possible to find differences between the technical implementations. The main difference there is probably that users pay separately for fibre-optic connections with GR and thus pay both the network operator and the service provider.

2.3.1.4 Coax cable

197) Coax is cable of the type usually used for aerial cables. In most places where cable TV systems have been installed they are based on coax cables, at least the local loop part of the systems. In many places where there is wide distribution of cable TV, the systems have been upgraded to deliver Internet connections. This is no longer the situation here in Iceland. Bitstream was previously transmitted through the Siminn cable system (the Broadband) but this was discontinued when ADSL achieved wider distribution.

2.3.1.5 Fixed wireless access (FWA)

198) In those areas where local loops have not been installed with the Earth cables and in places where xDSL is not offered, fixed wireless access has in some instances been installed. A number of smaller companies offer wireless broadband connections in specific areas. Companies that offer wireless access for Internet connections are, Ábótinn ehf., which operates in the rural areas in Árnes- og Rangárvallarsýsla municipality, eMax operating in rural areas at many locations in the country, Snerpa in the West fjords, TSC on Snæfellsnes, Hringiðan on Snæfellsnes and in July 2012 iCell ehf. was issued a frequency licenses for the 35 GHz frequency range, which was limited initially to South Iceland and to specific locations in West Iceland. The performance of such systems is usually considerably less than would be normal with fixed lines. It is not unusual for a maximum capacity to be about 1-4 Mb/s. At many locations there has been dissatisfaction among customers with respect to price, capacity and quality of such connections.

2.3.1.6 Summary

199) It is established that although there is a number of technical possibilities. One can only say that local loops belonging to the market in this country are either copper local loops on the one hand or fibre-optic local loops.

200) Other systems, such as radio systems and connections by satellite have the disadvantage that the bit speed offered to users is not comparable with local loops. In addition to this bit speed is variable, depending on how many users are in the system at any given time. This may act as a barrier for users that are accustomed to a certain bandwidth or bit speed. In addition, systems such as this have limited distribution in Iceland.

201) Furthermore, bit speed is generally less on wireless systems while connection costs to users are usually much higher. In addition to this the amount of data included is not comparable, particularly with regards to domestic data.

202) Coax cables are not in use in this country. Siminn broadband was transmitted by coax cable, but this has now been discontinued. Coax local loops are thus not a part of the relevant market.

203) Copper local loops are mainly used to carry ADSL and VDSL services. The PTA believes that ADSL and VDSL are related services and that there is substitutability between them, even though VDSL is an upgrade of the ADSL system. Technically, the upgrade from ADSL to be DSL seems to be possible in most locations without significant barriers as the copper local loop generally seems to be able to carry this additional transmission capacity. But one has to keep in mind that in the ADSL systems more than one service provider can set up his own DSLAM equipment without lack of space in the telephone exchange or in its facility making this problematic. The customer line is then connected to the equipment of the service provider that the customer has chosen to purchase services from.¹⁰⁵ In the case of VDSL it can be difficult for more than one service provider to install DSLAM equipment in the same street cabinet, both because of lack of space and also because of possible interference that this could cause. Installing new cabinets side-by-side with the existing ones must also be considered a significant undertaking. The extension of the backbone network from DSLAM is also a significant measure where the network radiates from each cabinet instead of being built up from each telephone exchange.

204) Performance of services provided through fibre-optic is usually greater than service provided through copper (regardless of whether this is ADSL or VDSL), particularly upload. The service that goes via fibre-optic local loop is, however, similar to the service provided through copper local loops and the PTA believes that during the period of validity of this analysis, the difference between connection through fibre-optic copper is not such that these connections belong each to their own market.

205) The reasons for this view are among other things, the fact that a popular service, such as IPTV does not require greater capacity than ADSL. There is no difference in nature in the foreign download and increased download capacity is not of particular significance in this instance. There is also little difference in the nature of the service offer of companies depending on the type of connection and in addition to this price and payment arrangements are similar when services between these two connections are compared.

¹⁰⁵ See further information in Section 2.3.2.1 on copper local loops.

206) The PTA assumes that the services through fibre-optic and copper local loops are similar with respect to price and quality of service. Fibre-optic and copper local loops, therefore, both belong to the same definition and a part of the wholesale market for access to networks at a fixed location. Other methods of connecting to access networks at a fixed location are not considered to be substitute products and are thus not part of the relevant market in this country.

2.3.2 Assessment of access technology and substitutability for broadband access (Market 5)

2.3.2.1 Introduction

207) In its analysis of Market 12, which was published with the PTA Decision no. 8/2008, dated 18 April 2008, the PTA defined the market: the wholesale market for broadband access. This definition is based on the definition in the ESA Recommendation from 2004 that was then in force, taking into consideration the Explanatory Note to the EU Commission Recommendation from 2003. As is stated in Chapter 1 here above, the definition of this market is not materially changed in the new ESA Recommendation from 2008. The new ESA Recommendation thus does not call for the prior PTA definition to be reviewed. PTA considers that the prior definition still applies and refers to the arguments for the definition in the previously mentioned market analysis. According to this definition this market covers bitstream access which can be used for broadband data transmissions in both directions and it also covers access using other technology that is sold in wholesale, if it is analogous to bitstream access. It also covers the market for "network access and special network access." which is mentioned in Item 2 in Annex 1 to the Framework Directive.¹⁰⁶

208) The PTA however considers that it is necessary to investigate whether there have been changes in the circumstances on the market in this country, including changes with respect to the service offer, that could call for changes to the definition or whether new services have emerged based on new technology that fall within the scope of the market. One must keep in mind that market definitions in competition law cannot be precise and are only used for reference, see, among other things, the decision of the Competition Appellate Committee in case no. 8/2008 *Fiskimarkaður Íslands hf. versus the Competition Authority*.¹⁰⁷

209) In Section 2.3.1. It is stated that there were three possible methods for Internet connection, dial-up connection, broadband access (for example FDSL, fibre-optic, coax cable, radio) and lease lines.¹⁰⁸ Each one was examined separately.

210) In accordance with the discussion in chapter 2.3.1 the relevant market covers bitstream access provided through the local loop in a fixed network. The market is not tied to specific technology and allows for an offer of high speed bitstream through connections at over 128 Kb/s.

¹⁰⁶ Page 8 in the ESA recommendation: "*Wholesale unbundled access (including shared access) to metallic loops and sub-loops for the purpose of providing broadband and voice services*".

¹⁰⁷ <http://www.samkeppni.is>.

¹⁰⁸ Explanatory Note Accompanying document to the Commission Recommendation of 17 December 2007 on Relevant Product and Service Markets page 29.

211) As the market is technically independent it is not tied to one specific technical implementation (as long as the technology is comparable in bitstream in the relevant technical implementation) and one must keep in mind the methods on offer and that have been used in this company for the transmission of high speed bitstream.

212) As a wholesale market for broadband access has only existed to a very small degree in this country and for rather a short time, it is necessary to assess substitutability from possible conditions for transactions at wholesale level and from supply and demand of broadband access at retail level. In order to assess the relevant access technology one needs to examine possible substitute service and to assess whether it belongs to the relevant market. It is also necessary to examine what technical solutions are on offer on the broadband market in this country and at the same time to determine what companies are operating on the market.

2.3.2.2 Copper network

213) In Iceland most broadband connections are based on digital user lines, that is to say DSL standard, through copper local loops and they are available at most locations in the country (with few exceptions).

214) As has been stated previously the copper local loop network was first and foremost installed for fixed line telephone service and this was done mainly while Landssími Íslands was owned by the state and had a monopoly for all fixed line telephone service. These local copper loops are now owned by Mila, a subsidiary of Skipti. The cost of building a copper wire network is first in the earth cables, secondly in excavating for the cables and thirdly the installation in streets, pavements and up to buildings. The cost of excavating earth cables is so high that in general, it does not pay to excavate cables that are no longer used. The cost of building such a network is thus not only very significant, but also these costs are mostly sunk. Síminn is the largest customer of its sister company Mila, with Fjarskipti ehf. (Vodafone) being the next largest and in addition there are some smaller companies that lease access to the copper local loops.

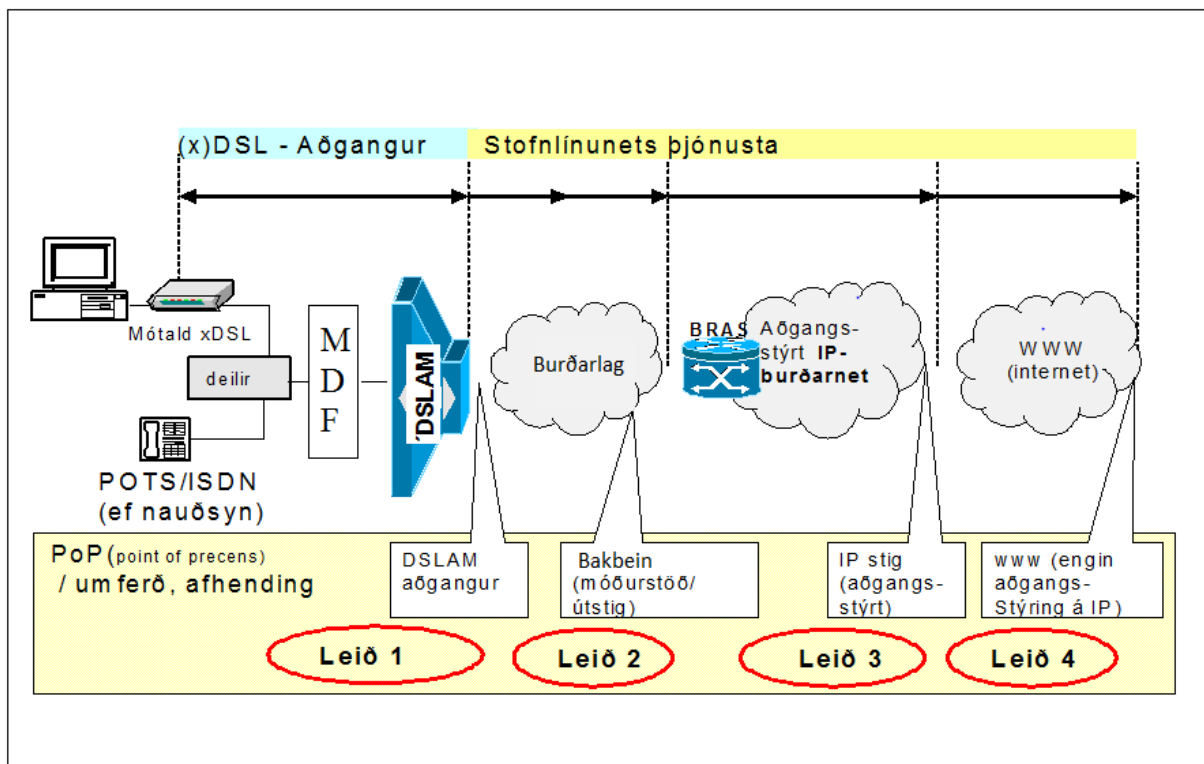
215) Mila operates xDSL service which was previously owned by Síminn, in accordance with the Settlement between Skipti and the CA from March 2013. This means that Mila owns and operates DSLAM equipment that is located in telephone exchanges or in street cabinets and that it maintains an xDSL connection through the local loop between DSLAM equipment and user equipment that is located at the place of use, which is often the home of the customer. Another part of DSLAM service is the backbone network, which connects DSLAM equipment, which is at various locations around the country, with the main node point in Múlastöð in Reykjavík. Vodafone operates its own ADSL service, which covers the capital city area and larger urban kernels elsewhere in the country. There are also smaller network operators like TSC, which operates VDSL service in Grundarfjörður. At the end of 2013 there were about 90,000 xDSL connections in the country. This is a slight increase from the year 2012. xDSL connections had increased until the end of 2008. After that there was always a reduction between years until and including 2012, which can be attributed to the increase in fibre-optic connections.

216) xDSL connections are first and foremost possible on the Mila network, which is part of the Skipti Group. This means that all those companies that operate their own xDSL service use Mila local loops for their service. Service providers who do not have their own xDSL service at the relevant places can purchase bitstream access through the xDSL network of a

third party. The access level that service providers purchase from such xDSL network operators do not need to be the same with all these parties. Pursuant to the PTA Decision no. 8/2008 obligations were imposed on Siminn to provide such bitstream access in wholesale which has now been transferred to Mila.

217) According to that decision, the obligation rests on Mila to provide access to bitstream at varying access levels. The access levels at which purchasers can buy DSL services are four and each one gives the purchaser of varying amount of leeway in the providing of services and in this way they can distinguish themselves from their competitors. Figure 2.23 to explains this and the higher the level the smaller the investment the purchaser needs to make and correspondingly the possibilities to distinguish himself from competitors are fewer.

Figure 2.23 Varying access to xDSL bitstream



Source: Post and Telecom Administration

218) As has been stated previously, the capacity of copper local loops is not the same as fibre-optic local loops, but with the advent of VDSL this difference is not so significant with respect to performance during the life cycle of this analysis for the PTA to consider that they are two separate markets. The Siminn and now Mila development of VDSL service and of marketing material directed at consumers to promote this service, strengthen this conclusion.

219) Even though the VDSL technology can be used with copper wires, as for example ADSL does, it gives the opportunity to achieve much greater performance, both in download and upload. The VDSL telephone exchange equipment (DSLAM) is located in street cabinets and the cabinet has to be connected to a fibre-optic backbone network.

220) The shorter length of copper local loops is one of the main reasons for increased data volume that VDSL can transmit compared to ADSL. This increased capacity is not entirely without limitations and the main one is that VDSL technology, rather than ADSL, has the

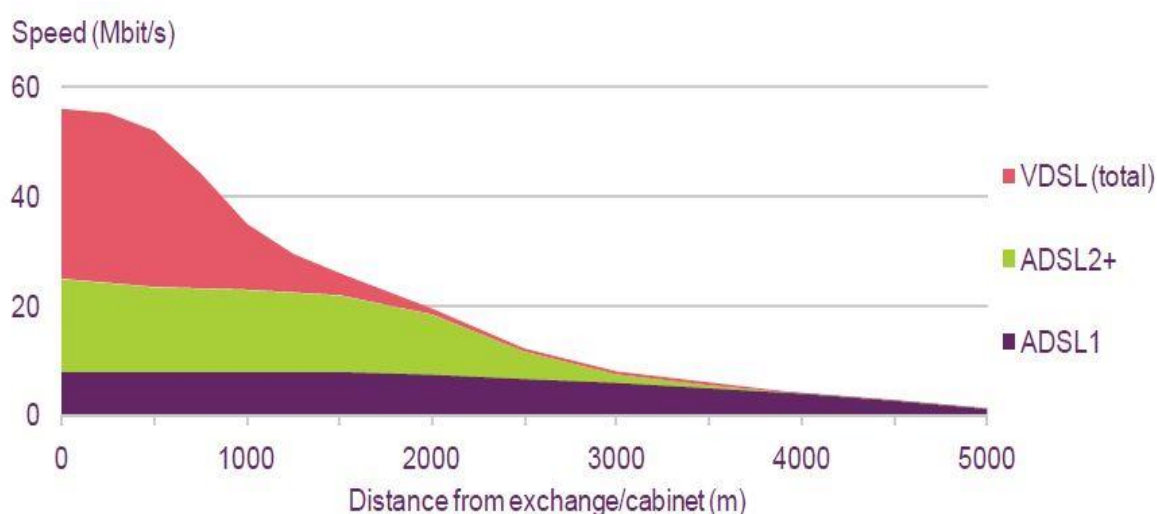
disadvantage that performance diminishes quickly with increased distance from the street cabinet where VDSLAM equipment is generally kept. It is therefore important for a VDSL service provider to have access to street cabinets which can accommodate DSLAM equipment for the VDSL system and also that he has access to fibre-optic ducts (or other high-capacity transmission channels) to the street cabinets in question.

221) It could be problematic to provide more than one VDSL operator access to street cabinets. This is among other things because of lack of space in street cabinets and difficulties and costs involved in either enlarging cabinets or installing more cabinets adjacent to the existing ones. There are also technical problems such as crosstalk where the VDSL signals from different users affect each other such that service quality for all users of local loops in the same multipair cable could be impaired.

222) The quality of copper local loops could also be a deciding factor in the performance of a VDSL system. Corrosion in connections, the diameter of the copper wire, the quality of work in the connections and the choice of material for in-house ducts are among the factors that can impair quality and performance.

223) As the figure below shows, the volume of data possible to transmit by the VDSL standard diminishes rapidly after the first kilometre. Developments in technology are however fast and the possible data volume is continually increasing.¹⁰⁹

Figure 2.24 Relationship between length of copper wires and transmission capacity on xDSL systems



Source: Ofcom¹¹⁰

224) VDSL service is not new technology but an upgrade from ADSL technology and is a difference in level and not in nature. Both VDSL and ADSL are categorised under the DSL name. It is not difficult to upgrade an ADSL network to VDSL network. In order to do this one has to replace equipment in the telephone exchange (DSLAM) and with the users. The

¹⁰⁹ It should be noticed that it has been possible to transmit up to 1Gb/s with DSL technology for short distances in laboratories, for example the manufacturer Huawei in China: <http://gigaom.com/broadband/go-go-physics-huawei-tests-gigabit-dsl/> (16.01.12)

¹¹⁰ <http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/bbspeeds2011/bb-speeds-may2011.pdf> (04.06.2012).

PTA therefore defines VDSL and ADSL as substitute products. It is however important to keep in mind that this technology is related to ADSL and that from the point of view of technology it is not a significant task to install equipment in a telephone exchange or street cabinet. One however has to keep in mind that circumstances can be such that there is no room for DSLAM equipment from more than one service provider in each street cabinet and this means that the Skipti Group has a considerable advantage through being an innovator in this specific market.

225) The configuration of VDSL service now on offer on the market is advertised as having maximum capacity of up to 50 Mb/s.¹¹¹ Mila intends however to offer up to 100 Mb/s connections at selected locations immediately in 2014. This is however first and foremost a case of performance for the local loop itself from the service provider and does not apply to foreign download which may conceivably not achieve this performance because of limited transmission capacity of the submarine cable and other transmission channels. The amount of downloaded data that is offered in the most common subscription packages is general comparable to what is on offer with ADSL and fibre-optic connections.

226) The development of VDSL technology has been rapid in recent years. It can be seen that in the near future VDSL system operators will introduce new technical solutions that will increase the performance of the VDSL standard even further. The main solutions now being examined are vectoring on the one hand and bonding on the other, as was discussed in Section 2.3.1.2.

2.3.2.3 Fibre-optic network

227) The fibre-optic network that connects directly to the user offers the possibility of much greater speed than is possible with xDSL through copper local loops and offers data transmission, that is to say, audio and visual along with traditional voice transmission. The same speed in both directions is on offer, which makes it possible for the user to be a powerful participant in interactive communications.

228) There has been a very significant amount of development in the introduction of fibre-optic in recent years and Gagnaveita Reykjavíkur (GR) has developed a fibre-optic network in a large part of the capital city and in West and South Iceland. Fibre-optic networks have also been installed in Sauðárkrókur, in many locations in Akureyri and in Örfælasveit. Work has commenced on laying cables in Skagaströnd, Skagabyggð, Hvalfjarðarsveit, Mýrdalur and Skútustaðahreppur, to take some examples.

229) Since the last market analysis was made there has been an increase in the number of parties receiving Internet through fibre-optic. At the end of 2013 just over 22% of subscribers were connected through fibre-optic. But they were only 1.6% in the first half of 2008.¹¹² It is therefore clear that the fibre-optic network is finding its place on the market. GR has the most extensive fibre-optic local loop network in the country and the service providers who wish to sell their services through fibre-optic can purchase access to the GR network systems. Companies can thus have access to households that pay a monthly fee to GR. GR provides households with a 100 Mb/s connection and divides this bandwidth between service providers that the households choose to do business with. This also applies to Tengir and Gagnaveita

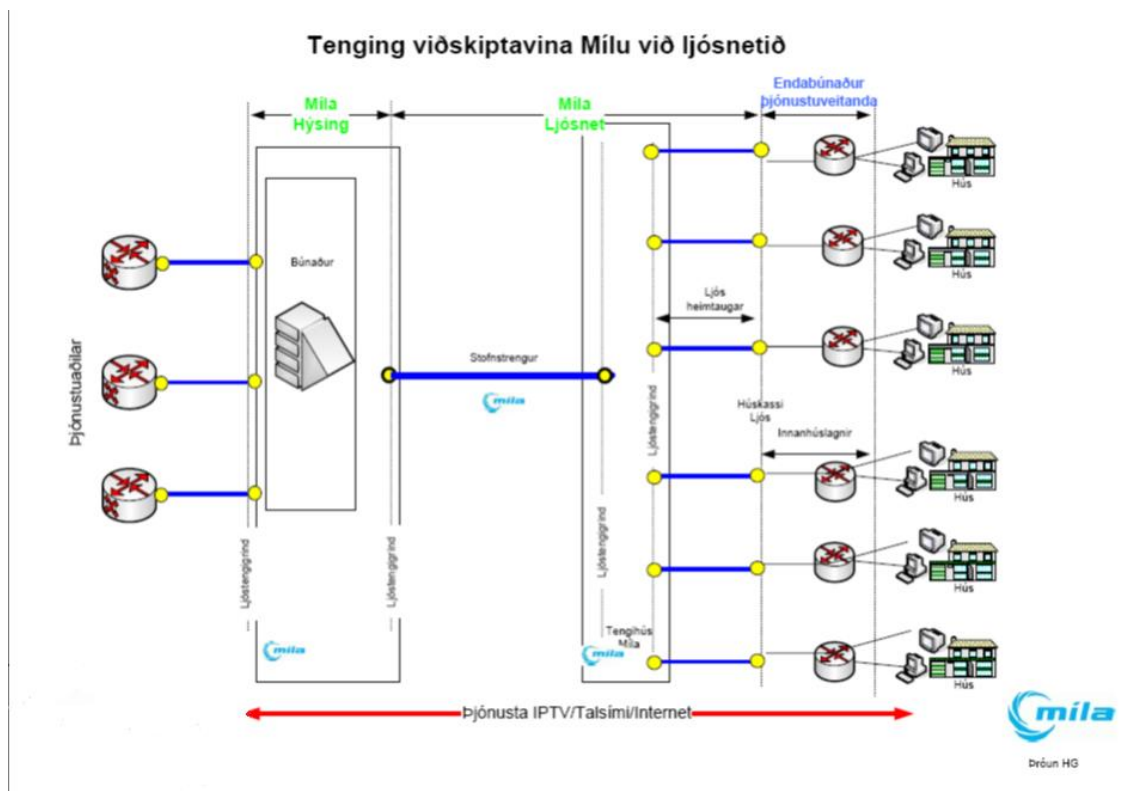
¹¹¹ <http://www.siminn.is/einstaklingar/netid/askrift/> (19.03.2012).

¹¹² Source: Post and Telecom Administration.

Skagafjarðar, though it varies what services are on offer at these locations and from what service providers. Mila has also developed its own system in greenfield districts. Mila leases access to fibre-optic local loops as dark fibre. As has been stated the building development of new districts has been very slow in recent years because of the economic depression though things are now looking up. Mila has also built its bitstream service according to the GPON (Gigabit Passive Optical Network) standard. GPON provides service providers with bitstream access in an analogous manner to that which has been on offer from other fibre-optic providers.

230) The fibre-optic entry point equipment in a home is connected to point of service equipment such as a splitter, a point for wireless network and a decoder. This equipment is comparable to the equipment used in the case of a VDSL connection (see figure 2.25). Customers thus does not perceive any difference between xDSL and fibre-optic connections in this respect.

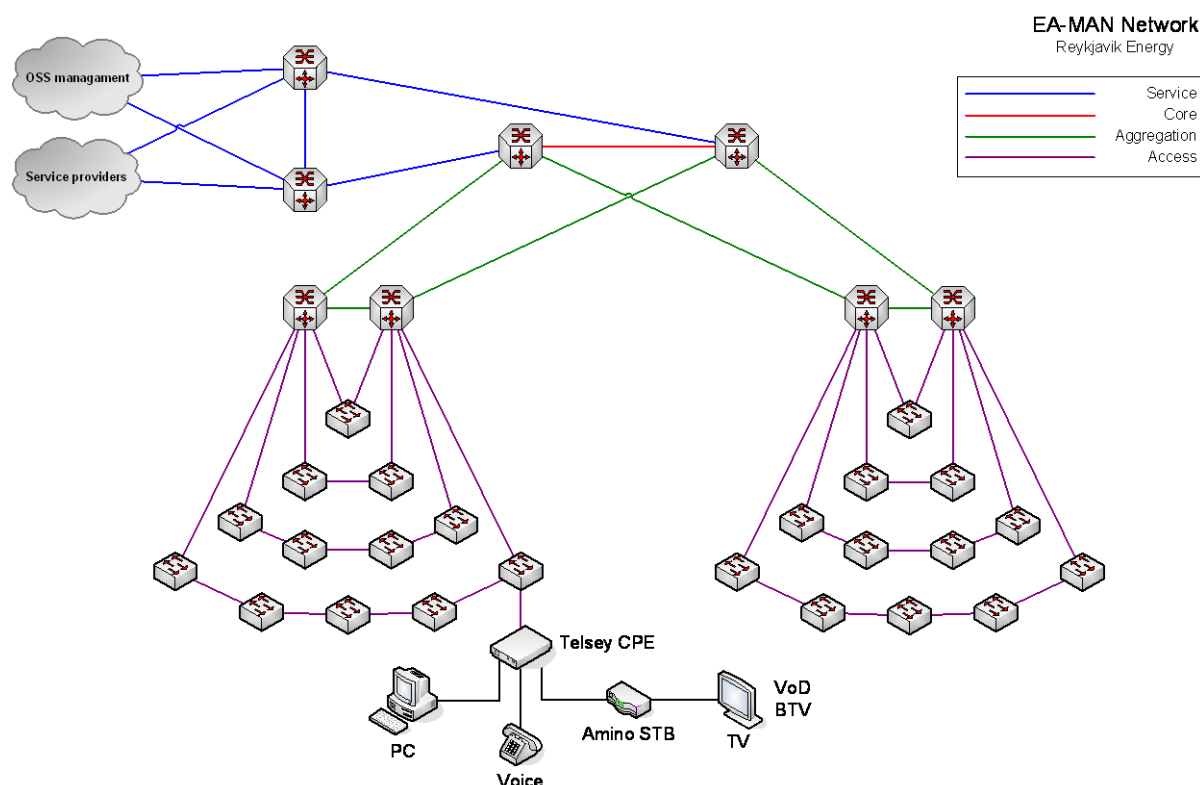
Figure 2.25. The architecture of the Mila fibre-optic network and local loops to users



Source: Míla.

231) The fibre-optic connections now on the market are advertised with maximum capacity of up to 100 Mb/s.

Figure 2.26 Architecture of the GR fibre-optic network and local loops to users



Source: Gagnaveita Reykjavíkur.

232) Though the speed of download through fibre-optic local loops can achieve up to 100 Mb/s in this country at this point in time and up to 50 Mb/s through VDSL connections there is not such a difference between the possibilities to use the connections that is significant for residential use of general Internet service. The main difference between the fibre-optic network and the VDSL system is however that uploading through the fibre-optic network has superior performance, but it cannot be said that this will have a significant impact on the experience of most customers under current circumstances. The PTA considers that bitstream through fibre-optic local loops is a substitute product for bitstream service provided through copper local loops.

2.3.2.4 Cable system

233) A cable system for TV with full duplex modem can be used to provide broadband services. Siminn owned and operated one such cable system, which was called the Broadband. The Siminn Broadband was a cable system for TV, radio and computers with data speed up to 512 Kb/s to users and up to 128 Kb/s from users. Though the cable system could transmit high-speed bitstream it had the disadvantage that it was very problematic to provide shared access to the system.¹¹³

¹¹³ Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services

234) The distribution of the Broadband cable in this country is now negligible, if any. At that time, the distribution was limited to part of the capital city area and to individual locations in other parts of the country. Recently, Siminn has disconnected this service in parallel to developing its DSL service. Siminn was the only company to offer bitstream service through Siminn Broadband and has now discontinued this service.

235) The PTA believes that bitstream services through a cable system do not belong to the relevant market. This is among other things because the service is no longer on offer in Iceland and because of the significant technical difficulties in offering shared access.

2.3.2.5 Fixed wireless access systems (FWA)

236) In those areas where local loops have not been installed, such as in summer house developments and in places where xDSL is not offered, fixed wireless access has in some instances been installed. A number of smaller companies offer fixed wireless broadband connections in specific areas. Ábóttinn ehf. Which operates in the less populated areas of the Árnes- and Rangárvallarsýsla region in South Iceland eMax which operates nationwide, Snerpa in the West Fjords, TSC on the North Snæfellsnes and Hringiðan on South Snæfellsnes. In July 2012 iCell ehf. was allocated frequency licences on the 3.5 GHz frequency range, which was limited initially to South Iceland and specific locations in West Iceland. The number of companies offering this service has dropped considerably and the distribution area has shrunk somewhat in recent months.¹¹⁴ The above development is probably a consequence of the increased distribution of the UMTS¹¹⁵ network in Iceland. Price and performance of wireless access is similar to that of a UMTS connection. A common maximum speed is in the range of 1-4 Mb/s and there is often a ceiling to downloaded data. Connections are thus not comparable with those offered on copper or fibre-optic networks.

2.3.2.6 Satellite

237) Satellite is only used to provide broadband connections in those instances where other technical solutions are not appropriate. In this country this solution is very expensive and performance is not comparable to fixed line connections. This service is first and foremost desirable for ships and boats where other technologies are not available. Síminn, IceCom, Brimrun and Snerpa offer Internet connections through satellite, but the number of subscribers is limited and it seems that this service is generally not on offer for others than ships and boats.

2.3.2.7 UMTS and other mobile network service for access to data transmission networks.

238) Modern mobile phone services have changed enormously and access to data transmission service is now a normal component. With UMTS, or 3G technology, it is possible to access high-speed broadband through a telephone or with what are called network dongles that are either attached to or built into computers and tablets. The performance of the network connection can be from 2 Mb per second to up to 14 Mb per second¹¹⁶. The UMTS

¹¹⁴ The company I sell however plans to develop such a network widely in this country, first in South Iceland and then West Iceland. It remains to be seen whether these plans will be implemented.

¹¹⁵ Universal Mobile Telecommunications System.

¹¹⁶ <http://www.itu.int/ITU-D/ict/newslog/3GUMTS+Mobile+Subscriber+Base+Passes+One+Billion+Landmark.aspx> (17.08.2012)

connection can be received widely throughout the country and at the end of 2013 there were more than 43,000¹¹⁷ network dongles in use in this country. The number of users increased over a period of a few years after the service commenced but has declined somewhat, by about 3000, from the end of 2012.

239) The increase in traffic through the UMTS (3G) system has been very substantial in recent months and the end of this development is not yet in sight. Various projections allow for an increase in data volume through the (3G) system and parties to the market in general plan for manifold increase in use over the next years. Recently a new technology called Long Term Evolution (LTE), known as 4G technology, has been introduced. The performance of LTE is considerably more than UMTS. The PTA held an auction on 4G frequencies on 11 February 2013 and the Administration had issued licences for test transmissions to Nova and Siminn on those frequencies in the years 2011-2012. The conditions of the auction allow for the data transfer rate being 10 Mb per second at the end of the year 2016. The PTA however, does not expect the use of 4G service to become general in this country before in the first instance the end of the period of validity of this analysis. After the above specified auction the companies still have to build their networks though they have started to some limited extent. 4G telephone handsets are starting to appear on the market with service on offer in limited areas. There is no distinction made by service providers that now offer for 4G whether a customer use 3G or 4G technology when he connects to the network. The price and the subscriptions are the same.

240) Because of the performance provided by a 3G/4G connection it is appropriate to consider the question of whether there is substitutability between 3G/4G and general broadband access which is connected through local loops and fibre-optic. There are many reasons for the PTA concluding that one should not consider 3G/4G and fixed line connections to be substitute products, but that 3G/4G is rather an addition for users that are already connected to broadband at home and/or at their place of work.

241) One reason is that the network dongle makes it possible for 3G/4G to access the Internet or email when the user is not home or at work with access to fixed line reception device. In the same manner, one can say that the fixed line connection gives no option of a broadband connection at any location other than where the connection has been installed. One of the most important reasons for users obtaining an network dongle subscription is to be able to make use of broadband access and to receive and send data, without respect to where the person is located at any given time. A fixed line connection is thus clearly not a substitutable for 3G/4G service. An examination of demand-side substitutability shows that the 3G/4G network and fixed line connections are different parts of the market for high speed Internet service that meet different needs to a considerable degree. These two types of network connection thus complement each other and the substitutability between them is thus limited.

242) During recent years, users have increasingly used fixed line connections to view television broadcasts (IPTV) but this is not yet possible with a wireless network. For example TV stations in this country only send a small part of their material in such a manner that it is possible to view it with 3G technology. It is also not certain that the carrying capacity of the system is adequate. At the end of 2013, 73% of users that have a fixed line connection also received their TV service through xDSL or through fibre-optic network. In addition to this 45% of the them also have an IPTV box also and pay for some kind of TV subscription

¹¹⁷ Source: Post and Telecom Administration.

through xDSL or fibre-optic network at the end of 2012.¹¹⁸ A survey by Statistics Iceland from 2011 also shows that 69% of Icelanders were aware of the fact that they had used the Internet to view television broadcasts. It is clear that television viewing is a large part of general Internet usage in this country.¹¹⁹ The impact of 4G has not yet come to light in this respect and it is unlikely that it will be significant during the lifetime of this analysis.

243) Another factor that needs to be discussed is how this product is priced and marketed. If pricing and marketing is similar to that which is practised with Internet services through fixed access networks then this strengthens the view that there is substitutability between these types of services. At the same time it is difficult to see that there is sufficient substitutability between the 3G network and the fixed line network if prices and services are different.

244) In the case of marketing there is a significant difference. Telephone companies seem to market the 3G network in such a manner that provides a convenient facility to view social media sites, email and various websites.¹²⁰ Great emphasis is also placed on being able to access the Internet at any location, through showing a map of the distribution area or through assertions about how convenient the 3G network is.¹²¹ One could say that the companies and the consumers do not see this as the same kind of service as fixed line service. Marketing of 4G seems up to this point in time to be on a similar basis to 3G as the price for the service and the subscription options are the same.

245) The price of the service supports this as it is generally considerably more expensive to connect through the 3G network than with a fixed line connection and in addition to this pricing is structured differently. It is possible to purchase a fixed subscription where specific use is included and it is possible to purchase what is pay-as-you-go where the user purchases a prepaid amount as appropriate. And all use is measured, both domestic and foreign data usage sent and downloaded, which is different from what applies to fixed line connections where only data downloaded from abroad is measured while data sought domestically and all data sent are not measured. In addition to this the amount of data included with fixed line connections is many times that of a similarly priced subscription for 3G data services though it is likely that the difference will gradually diminish in the coming months and years, as in recent months the amount of data included in subscriptions for 3G and 4G has been increasing at similar price points.

246) In general, it can be maintained that neither companies nor consumers will consider broadband access to data transfer through a 3G/4G network to be as substitute service for general broadband access during the life cycle of this analysis and there is therefore no reason to discuss this further in this analysis. The PTA will however closely monitor the development of data connections through mobile networks and particularly with respect to the advent of 4G and will review analysis of Market 5 at an earlier stage should this be considered necessary.

¹¹⁸ Source: Post and Telecom Administration – statistics collection 2012.

¹¹⁹ Hagtíðindi year 95, edition 60 *Use of computers and the Internet by households and individuals in 2010*, page 13.

¹²⁰ <http://www.siminn.is/einstaklingar/netid/netid-i-simanum/?adreferral=3g-simanum-b> (17.01.2011).

¹²¹ For example <http://www7.tal.is/Einstaklingar/INTERNET/Netlykill.aspx> and <http://www.vodafone.is/internet/3gnet/utbreidsla> (17.01.2011).

2.3.2.8 Summary

247) It is nevertheless established that despite the availability of various technology there are only two methods of bitstream transmission that belong to the market in this country and they are on the one hand xDSL through copper network and on the other hand fibre-optic network.

248) The fixed this wireless systems that exist in this country have the disadvantage that the service on offer to users is not comparable with local loops, with respect to bit speed, data volume and price and in addition to this bitstream throughput is variable, depending on how many users are in the system at any given time. This may act as a barrier for users that are accustomed to a certain bandwidth or bit speed. The difference in cost is also significant as the wireless Internet connections are much more expensive and the price of subscription is not structured in the same way as for bitstream service through a fixed line connection.

249) Local loop access through a cable system is not a realistic option because of various technical difficulties, such as being able to offer shared access. In addition to this cable systems are not in use on the market in this country after the Siminn Broadband was closed.

250) Satellite is only used to provide broadband connections in those instances where other technical solutions are not appropriate. In this country this solution is very expensive and performance is not comparable to fixed line connections. This service is first and foremost desirable for ships and boats where other options are not available and it seems that this service is in general not on offer for households or companies. So there is no substitutability available for local loops on fixed lines.

251) Neither the electronic communications companies nor the consumers will regard broadband access to data transfer through a 3G/4G network as substitute service for general broadband access through fixed line during the life cycle of this analysis. What first and foremost decides this is the mobility of 3G/4G connections, differing prices and the lack of IPTV through 3G/4G connections. The use of 4G to provide IPTV service has not yet been introduced and the impact of the technology is not clear. there is no reason to assume that this will change in the lifetime of this analysis.

252) Mainly two kinds of standards are used on copper local loops, ADSL and VDSL. The PTA believes that ADSL and VDSL are related services and that there is substitutability between them, as VDSL is in some ways a type of upgrade of ADSL. Technically, the upgrade from ADSL to VDSL seems to be possible in most locations without significant barriers as the copper local loop generally seems to be able to carry this additional transmission capacity and where Siminn Broadband was installed there were already fibre-optic lines to the street cabinets, and these fibre-optic lines and Street cabinets were used by Siminn (now Mila) for the initial development of their VDSL system.

253) Bitstream access through fibre-optic is becoming more and more common and it has various advantages. For example one can mention that the performance of the fibre-optic network is greater than that of copper (whether with ADSL or VDSL), particularly with upload, but it is the view of the PTA that during the period of validity of this analysis, connections by fibre-optic and by xDSL are substitute products. The reason for this is that the service that is offered in both options is to a large extent analogous for most users, for example there is no difference in nature in performance and quantity and in addition to this

the marketing, prices and payment structure for the services are similar. The PTA assumes that bitstream through fibre-optic and xDSL are part of the broadband market and that they are substitute products and fall under the definition and are a part of the wholesale market for broadband access. Other methods of connecting to bitstream access are considered not to be substitute products and thus not part of the relevant market.

2.4 Summarised PTA conclusions (Markets 4-5)

254) Market 4 is very similar to Market 11 in the prior ESA Recommendation. It is now, however, technically independent but was previously limited to copper local loops. Market 5 is however unchanged from Market 12 in the prior Recommendation.

255) These two markets are closely related but neither of them can exist without the other, with respect to supply of broadband services. The main difference between them lies in the fact that companies on Market 4 are significantly higher in the value chain and have more control of their service offer. On the other hand it is less expensive and easier for companies to enter Market 5.

256) One has to take into account the development towards the next generation of access networks (NGA) which is now in full swing. In Europe the EU Commission has placed strong emphasis on the development of such infrastructure. The Commission has been working towards the removal of legal uncertainty in order to pave the way for productive investment in this sector. The Commission thus recommends that the regulatory institutions in Europe pay particular attention to the imposition of obligations when forming policy and that they pay particular attention to risk inherent in investments related to such networks.

257) On 29, November 2012 the Althingi agreed on an electronic communications plan for a four-year period (2011-2014) and for a period of 12 years (2011-2014) in the form of a parliamentary resolution. Achievable and measurable objectives have been set that are to be met in the coming years and it is clear that the introduction of next generation access networks is a prerequisite for achieving the objectives. The plan is divided into 4 subcategories relating to the objectives for electronic communications, that is to say that they are 1) accessible and fast, 2), economical and efficient, 3) secure and 4) environmentally friendly. It was stated in the 12 year electronic communications plan that the emphasis was placed on development of employment, on improving quality of life, on positive regional development, on ensuring security of public electronic communications networks, on strengthening competition on electronic communications markets, on increasing Iceland's competitiveness, on achieving wide cooperation on the market between consumers, public institutions and ministries on policy-making in electronic communications, on achieving efficient use of capital and maximising the positive impact of electronic communications on economic growth and quality-of-life, on achieving harmonised prioritisation and policy where the prioritisation would be based on assessment of needs for remedial action in the country as a whole and in specific regions.

258) In the retail market for Internet service related to Markets 4 and 5 consumers can choose from a varied group of service providers. Of these there are three that are by far the largest, Siminn, Vodafone and Tal, with about 91% market share. The cost of Internet services to consumers in retail is similar between individual companies when one takes into account the varying service offers and it is the same at all locations in the country.

259) The market for wholesale access to local loops has developed somewhat since the last analysis was published. The main change is that fibre to local loops are entering the market and at the end of 2013 they were about 17% of all active local loops in Iceland. In addition to this, the achievable performance of copper local loops has increased significantly with the advent of new technology in the form of VDSL systems.

260) The wholesale market for broadband access was not very active in this country until recent years. Siminn (now Mila) has offered wholesale access subsequent to obligations imposed by the PTA from the year 2008, but it was not until 2010 that the PTA endorsed Siminn's cost analysed prices for the market in question. It was then not until after the PTA Decision no. 38/2012 dated 14 December 2012 that Siminn agreed to provide Vodafone with what is called Access Option 1 in VDSL with multicast. Mila has now taken over the Siminn bitstream system along with its rights and obligations. Vodafone has been the main competitor on the market with the exception of the company's internal sales and now in recent years GR has been providing bitstream to an increasing number of households.

261) On the wholesale market for local loops Mila has by far the largest number of connections, about 83%, but there has been a significant change in this since the last analysis, where Mila was virtually the only party on the market. At the end of 2013 GR local loops connected to 2,000 households and in addition to this many more users have the possibility of connecting to their local loops.

262) On the wholesale market for broadband connections at Mila still controls 65% of all connections. There has however been very significant development from the time that the last market analysis was made with the main difference being the advent on the market of the GR fibre-optic local loops and of the VDSL system. GR now has 21% of all broadband connections. Vodafone still has significant market share, about 13%, but can not be said to operate in the wholesale market anymore. Others are hardly measurable with a combined share of about 1%.

263) Market 4, has changed considerably with the new ESA Recommendation and is now technically independent and in addition to this, new technology has also changed the landscape on Market 5. For this reason an assessment needs to be made of the access technology existing on the relevant markets and of their possible substitute technology.

264) The PTA has come to the inclusion that both fibre-optic local loops and copper local loops are considered to be part of market for in this country. This is a change from the last market analysis, where there was only discussion on copper local loops.

265) Despite the fact that various technologies are possible for the provision of bitstream access there are, as previously stated, only two possible methods for bitstream transmission that belong to Market 5 in this country and they are on the one hand using the xDSL standard for copper local loops and on the other hand fibre-optic local loops.

3.0 Definition of geographical market

3.1 General

266) A geographical market covers a geographical area where stakeholder companies participate in supply and/or demand of the relevant goods or services where conditions for competition are the same or sufficiently uniform and where it is possible to demarcate the geographical area from neighbouring area where conditions for competition are significantly different. Where competition conditions vary this can impact the designation of parties with SMP. Furthermore, competition problems can vary between different areas which can influence the elaboration of obligations. In assessing demand-side substitutability, it is appropriate to consider customers' taste and geographical purchasing patterns. It is customary to demarcate geographical electronic communications markets with reference to the distribution of the relevant electronic communications networks and to the jurisdiction of the legal framework that applies to the relevant market.¹²²

267) In accordance with the Guidelines one must take into account and define the market as that geographical area where the product in question is offered to customers with similar and sufficiently homogenous competition conditions. When markets are defined geographically it is not necessary for the competitive conditions of electronic communications companies to be exactly the same. It suffices that they are similar or sufficiently alike and for this reason it is only areas where competition circumstances are really "different" that cannot be considered to be the same geographical market.

268) Among the significant factors when assessing the geographical market in question are the nature and characteristics of the product or service in question, possible entry barriers and/or customer behaviour, the number of service providers, a clear difference in market share of companies in the area in question and surrounding areas or a significant price difference between areas. Then one can examine whether there is a difference in marketing and/or quality of service between geographical areas.

269) ERG (now BEREC) has issued Guidelines that constitute a joint position on various aspects relating to the geographical division of markets.¹²³ There it is stated among other things that the increased distribution and increased market share of new electronic communications networks can in some locations have led to conditions for competition being different between particular regions within the same state. Should there be any doubt as to whether a country is all one market, then it is advisable to begin by performing a simple preliminary examination of market conditions, taking into consideration demand and supply substitutability between areas and where the homogeneity of the competition environment is examined with respect to the distribution of new electronic communications networks, pricing and the characteristics of services. If the conclusions of the preliminary examination indicate that they are not different market areas, then there is no reason to perform a detailed analysis.

270) Even where the conclusion is that the country is all one market, it can nevertheless be possible to identify varying competition conditions in individual areas that require varying

¹²² See Section 2.2.2 in the Guidelines.

¹²³ ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies) - October 2008 ERG (08) 20 final CP Geog Aspects 081016.

obligations to resolve varying competition problems. This is examined later in this document in the elaboration of obligations.

3.2 Access to network infrastructure at a fixed location

271) In Iceland the Míla copper local loop network covers the whole country, while other access networks are tied to one region or are smaller. Wholesale to the Míla copper local loop network is offered throughout the country at the same price. Companies at various locations in the country purchase service and their competitive position is in all instances similar. Rules on universal services also require that such connections shall be on offer for all citizens. The GR fibre-optic network is on the other hand limited to Reykjavík and surrounding areas and to a number of locations in South and West Iceland (see figure 2.9), while the networks of other network operators have much smaller distribution, as has been previously shown. Two of the smaller network operators are related to utility companies in the relevant regions and do not plan to offer services outside the areas that they now serve. The same could be said about those municipalities that have developed local fibre-optic networks in their areas. This could mean, strictly speaking, that assessment of supply substitutability indicates that this is an instance of many geographical markets. The fact that the Míla network covers the whole country does however contradict such a conclusion, not least because the company also has a very strong position in the competition areas and has for example more than [...] ¹²⁴ market share in the area where GR has already installed fibre-optic ¹²⁵. It cannot be foreseen that this position will significantly weaken during the lifetime of this analysis.

272) The jurisdiction of the Electronic Communications Act no. 81/2003 is the whole country and authorisation for companies to operate networks provided at a fixed location cover the whole country and are based in all instances on the same laws and regulations.

273) As has been previously stated it is necessary to take into account substitutability of the access networks that are on offer across the whole country, e.g. by using the SSNIP test. It is fair to say that it is very unlikely that a sufficient number of consumers will decide to move house to another market area because of a 5-10% price increase. It is also unlikely that other network operators will embark on establishing their own network subsequent to such a price rise. The SSNIP test could thus lead to many and small markets and would thus neither be realistic nor useful in the circumstances that pertain on the relevant market in this country. ¹²⁶ It is therefore necessary to emphasise competition conditions and to investigate whether they are sufficiently homogenous over the whole country for it to be considered one and the same geographical market.

274) On the other hand it is a fact that clear and stable boundaries can usually not be found between the geographical areas in question on the relevant market in this country. ¹²⁷ The distribution of new access networks is unpredictable and seems to be random in some instances. To this it can be added that some network operators in this country, like e.g. GR

¹²⁴ Removed for reasons of confidentiality.

¹²⁵ PTA collection of information from parties to the market, August 2012.

¹²⁶ Here one can refer to ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies) from October 2008 where it says among other things on page three on geographical units: “they should be small enough that competitive conditions are unlikely to vary significantly within the unit but at the same time large enough that the burden on operators and NRAs with regard to data delivery and analysis is reasonable.”

¹²⁷ See ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies), page 11.

and Tengir plan for greater distribution of their networks, at least within their defined area of operations and for this reason it will be difficult to find boundaries that are stable during the coming next years.

275) It is also a fact that the distribution of new access networks does not seem to follow any particular pattern if one looks at the country as a whole. For example the situation is not that only the most densely populated areas are connected to the new network systems and the others not. Individual municipalities have recently taken the initiative and funded fibre-optic systems in their own areas. It is also the case that boundaries are unclear within certain municipalities. For example new access networks have not been installed everywhere in built-up areas in the capital city area except to a small degree, for example in Hafnarfjörður, Garðabær, Kópavogur and Mosfellsbær. The same could be said for certain districts in Reykjavík. One can even find in many instances, different competition conditions within the same municipality (see for example figures 2.8 and 2.10). As an example one could mention that competition conditions could vary within different districts in Reykjavík and even between adjacent streets. In March 2014, GR had completed distribution of the fibre-optic network to 95% of households in Reykjavík and this development is expected to be completed in the year 2015. The development by GR has for example partly been in step with maintenance and renewal of other kinds of conduits in the company's service area, for example for water or electricity. It is therefore very difficult to draw a clear line between areas on the basis of varying competition conditions because even within areas where fibre-optic is on offer, circumstances can vary which would mean that the areas that needed to be delineated would need to be very many, small and variable, which would involve an excessive burden on the regulatory authority and on the electronic communications companies with respect to collection of data, processing of data and research of the market environment in the many areas. In addition to this, the conclusion of the market analysis would in all likelihood be the same in all areas because of the previously mentioned position of Mila in all areas

276) Almost all citizens are connected to an access network provided at a fixed location. The vast majority is connected through copper local loops but in many locations fibre-optic local loops are also on offer and in addition to this, in the newest districts in the country only fibre-optic local loops have been installed. The distribution of local loops does thus not support the argument that the country should be divided into more than one geographical market. One can also point out that the few households that are not connected to any local loop are not bound to a specific area but they are normally located at what are called peripheral areas in the countryside that suffer from a failure of the market.¹²⁸ Households that cannot connect to the copper local loop are thus spread widely across the country.

277) Mila has a copper local loop network covering the whole country and the obligation to provide wholesale access is not restricted to specific regions. Mila offers local loop access in wholesale at the same price across the country pursuant to obligations to this effect that were imposed on the company with the PTA Decision no. 26/2007 on the market that was then Market 11.

278) The PTA believes that pricing by the market of the service in question strongly indicates that this is an instance of a single geographical market for access to network infrastructure provided at a fixed location. In this country there is nothing to indicate that

¹²⁸ The telecommunications fund was set up in 2005 with the act on the Telecommunications Fund no. 132/2005 and it has had the role of connecting inhabitants at those locations where the market has failed.

other network operators offer prices that vary by region and nor that they vary significantly from the Mila prices on the local loop market.

279) Variation in quality is another factor that needs to be examined as to whether it impacts geographical delineation of the market. The PTA believes that, there is no significant difference in the quality of services by region as the competition conditions are not variable by region in the opinion of the PTA.

280) On the basis of the above specified preliminary examination¹²⁹, the PTA considers there to be no need to make a detailed analysis of geographical circumstances on the relevant market. Competition conditions are not sufficiently heterogeneous between individual regions to justify dividing the country into regional markets and in addition to this, the boundaries in distribution of access networks to network infrastructure provided at a fixed location are unclear. In addition to having a dominant position in the areas where there is no competition, Mila still has a very strong position in those areas where another network is also on offer. It was thus clear that Mila would be designated as a company with SMP on all the geographical markets that would be specified. With the above in mind, it is the opinion of the PTA that the relevant market for access to local loops in wholesale covers the whole country. This is in accordance with the conclusions of 28 states of 31 in the EEA. Only Finland, Hungary and the United Kingdom have divided the market in question into more than one geographical market because of specific historical reasons. In Finland the market in question is divided into 111 geographical markets according to the operational area of regional network operators, in Hungary into 3 markets and in the United Kingdom into 2 markets for the same reasons.

3.3 Broadband access

281) When evaluating the geographical market for broadband access one has to first consider the scope of the access systems here being examined. It is clear that local loops that can transmit broadband bitstream do exist in almost all regions of the country. The PTA believes that, it is possible to serve about 95% of the households in the country with broadband service through fixed local loops, that is to say with xDSL technology through copper local loops or through fibre-optic local loops.

282) The jurisdiction of the Electronic Communications Act no. 81/2003 is the whole country and authorisation for companies to operate networks provided at a fixed location cover the whole country and are based in all instances on the same laws and regulations.

283) As has been previously stated it is necessary to take into account substitutability of the access networks that are on offer across the whole country, e.g. by using the SSNIP test. It is fair to say that it is very unlikely that a sufficient number of consumers will decide to move house to another market area because of a 5 to 10% price increase in broadband services. It is also unlikely that more network operators than now are operating in this country will embark on establishing their own networks subsequent to this kind of price increase on competitive grounds. It is also difficult to say how likely it is that a sufficient number of purchasers will switch service provider after such a price increase. This is mainly because in many places there is only one service provider or because technical difficulties hinder switching (such as lack of space for a VDSL equipment in street cabinets). This has the effect that competitive pressure from those who lease local loops will inevitably be less if they have to accept not

¹²⁹ See ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies).

using their own equipment and instead must purchase bitstream service from the network owner.¹³⁰ The SSNIP test could thus lead to many and small markets and would thus neither be realistic nor useful in the circumstances that pertain on the relevant market in this country.¹³¹ It is therefore necessary to emphasise competition conditions and to investigate whether they are sufficiently homogenous over the whole country for it to be considered one and the same geographical market. It is also necessary to take into account how access will be divided in the future, with particular reference to changed technological solutions that, for example do not support traditional sharing of lines in street cabinets.¹³²

284) The distribution of new access networks does not seem to follow any particular pattern if one looks at the country as a whole. For example the situation is not that only the most densely populated areas are connected to the new network systems and the others not. Also the boundaries are unclear within certain municipalities. A good example is the capital city area where GR is installing a fibre-optic system and Mila is installing a VDSL system. No clear geographical boundaries determine which areas are fully connected to the system is in question and in addition to this, the boundaries change very rapidly and development is unpredictable. One can therefore find in many instances, different competition conditions within the same municipality (see for example figures 2.8 - 2.11). For example new access networks have not been installed everywhere in built-up areas in the capital city area except to a small degree, for example in Hafnarfjörður, Garðabær, Kópavogur and Mosfellsbær. The same could be said for certain districts in Reykjavík. In March 2014 GR had nevertheless completed the distribution of fibre-optic to 95% of homes in Reykjavík and it is planned that the fibre-optic distribution in Reykjavík will be completed in 2015. The development by GR has for example partly been in step with maintenance and renewal of other kinds of ducts in the company's service area, for example for water or electricity. It is thus extremely difficult to specify clear boundaries between areas on the basis of differing competition conditions because even within areas where fibre-optic connections are on offer at the circumstances can vary (for example where VDSL is offered, new districts where copper local loops are not installed and specific regions) and for this reason, the areas that need to be defined would be very many, small and varied, which means that this would be an excessive burden on the regulatory body and on the electronic communications companies.

285) If one considers distribution of the electronic communications networks that are being examined then the PTA considers in the light of the fact that the market in question does among other things, cover xDSL technology through copper local loops, which should serve over 95% of the households in the country and almost all companies, that it is proper to

¹³⁰ *Erg Common position*: ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies) from October 2008 where it says: "If the incumbent operator is phasing out its MDF's, for example, and unbundling of the street cabinet is not economically viable, the competitive constraint from LLU operators may disappear in many areas or these operators will have to make use of other wholesale products such as bitstreaming." Page 18

¹³¹ Here one can refer to *ERG Common position*: ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies) from October 2008 where it says among other things on page 3 on geographical units: "they should be small enough that competitive conditions are unlikely to vary significantly within the unit but at the same time large enough that the burden on operators and NRAs with regard to data delivery and analysis is reasonable."

¹³² See "If the incumbent operator is phasing out its MDF's, for example, and unbundling of the street cabinet is not economically viable, the competitive constraint from LLU operators may disappear in many areas or these operators will have to make use of other wholesale products such as bitstreaming." It is essential to take these developments into account in a forward-looking analysis." *ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies)* - October 2008 ERG (08) 20 final CP Geog Aspects 081016. Page 18

designate the market in question, as the whole country. Fibre-optic local loops reach about 40-45% of households in the country, while active connections reach something over 17% of the country's households. Fibre-optic local loops are in the same areas where copper local loops already exist and so this is neither a case of a separate market because of the distribution of access networks nor is it real substitute service because of the limitations on distribution within the area or at a national level. At the end of 2013 the share of xDSL connections was about 78%, while fibre-optic connections had about 22% of bitstream connections through networks at a fixed location.

286) The PTA believes that pricing by the market should be taken into consideration rather than varying costs in specific areas with providing the service in question. The same tariff for any xDSL service applies to the whole country with Mila, where it is technically possible to offer such service. Other service providers on the market in question offer a tariff independent of the location of the user in their distribution areas. In addition to this, the tariffs for broadband services provided with xDSL technology through copper local loops on the one hand and with fibre-optic technology on the other hand are similar.¹³³

287) When one considers substitutability on the demand side it is clear that taste and purchasing patterns are similar with respect to technology and electronic communications in the capital city area and in the countryside, according to a survey by Statistics Iceland on computer and network usage.¹³⁴ Supply substitutability is less significant and is rather related to assessment of possible existing competition, with respect to bitstream, because of the extensive distribution of copper local loops. Potential competition is dealt with in Section 4.4.1.3.

288) On the basis of the above specified preliminary investigation¹³⁵, the PTA considers there to be no need to make a more detailed analysis of geographical circumstances on the relevant market. Competition conditions are not sufficiently heterogeneous between individual regions to justify dividing the country into regional markets and in addition to this, the boundaries in distribution of access networks to network infrastructure provided at a fixed location where broadband services are offered are unclear and constantly developing this. In addition to having a dominant position in areas where there is no competition between network systems, Mila still has a strong position in those areas where fibre-optic has been installed and the company has almost without exception a market share in excess of 50% in all areas. It should be mentioned that in no region in Iceland are there more than two possible technological solutions for broadband access being offered, with the reservation that broadband access through a mobile network system is not considered to belong to markets 4 and 5 in this country up to this point in time at least. With the above in mind, it is the opinion of the PTA that the relevant market for wholesale broadband access covers the whole country, as it is not possible to delineate areas where competition conditions are considerably different from other areas. This is in accordance with the conclusions of 27 states of 31 in the EEA. Only Finland¹³⁶, Hungary¹³⁷, United Kingdom¹³⁸ and Portugal¹³⁹ have received authorisation

¹³³ See figure 2.5 for more detailed listing of retail prices for broadband access.

¹³⁴ Hagtíðindi year 97. 33. edition 9. -- October 2012 page 13.

¹³⁵ Sjá. ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies). http://www.erg.eu.int/doc/publications/erg_08_20_final_c54p_geog_aspects_081016.pdf.

¹³⁶ Special historical reasons justify the division of Finland into 32 in areas by municipality, as local networks are operated, in the opinion of the Finnish regulatory authority (FICORA). The EU made reservations about the division in question in 2008 and FICORA had planned to withdraw obligations in specific areas. In the year 2009 FICORA notified a revised market analysis. The Commission still did not agree with FICORA about the geographical division but did not block the market analysis in question as the Finnish institution had decided not

from the EU Commission to divide the relevant market into more than one geographical market. The Czech Republic planned to follow this route in 2012 but they were denied this by the EU Commission¹⁴⁰. Then Poland implemented geographical division of the relevant market in 2011, but withdrew this in 2012¹⁴¹ and in addition to this, Italy examine the

to withdraw obligations in specific areas which meant that such division did not impact the conclusions of the market analysis with respect to designating parties with significant market power and nor did it affect the imposition of obligations.

¹³⁷ **Hungary** was divided into three areas in accordance with three local networks in that country and this has historical reasons. There is no difference between the three areas with respect to rules and obligations.

¹³⁸ **The United Kingdom** divided the relevant market into four areas in 2008. The first market was composed of the whole area where KCOM is the only service provider and that company was designated as having significant market power in that area. Another market was composed of telephone exchanges where British Telecom (BT) was the only electronic communications company offering broadband access. The third market was composed of telephone exchanges where two main network parties operated or where three main parties operated and where BT had less than 50% market share. The fourth market was composed of telephone exchanges where four or more main network parties operated or where three main parties operated and where BT had less than 50% market share. BT was considered to have significant market power on markets two and three but not on the fourth market. The EU Commission made reservations to the OFCOM conclusions in question and considered that it was not sufficiently supported by documentation with respect to the form of the market nor with respect to behaviour of parties to the market, such as documentation on entry barriers and on varying marketing or quality of service between markets.

¹³⁹ **Portugal** divided the relevant market into two geographical markets in the year 2009. The first was comprised of a areas where both copper local loops and cable systems were in place and where the cable share was more than 60%. The other market comprised all other areas. Portugal Telecom was designated as having significant market power on the latter market but there was considered to be active competition on the former market.

¹⁴⁰ **The Czech Republic** planned to divide the relevant market into two geographical markets in the spring of 2012. The first market was comprised of a areas where there were at least three technical solutions on offer and where Telefonica Czech Republic (TCR) had less than 40% market share. The other market comprised all other areas. In the Czech Republic, cable systems and xDSL systems are widespread and in addition to this fibre-optic and wireless Wi-Fi systems are on offer at many locations. The Czech electronic communications regulatory body (CTU) judged that there was active competition on the first market and that TCR had significant market power on the second. The EU Commission made reservations with the CTU conclusions and considered that the institution had not provided sufficient proof that the retail offers through cable and Wi-Fi exerted direct or indirect competitive constraints on the wholesale market for bitstream access through xDSL or fibre-optic, nor that such constraints had such an influence on the competition environment on the relevant market that this justified geographical division of the market. The competitive pressure from cable and Wi-Fi was thus over-estimated. It was stated that TCR was the only party that offered a convincing wholesale product at national level on the relevant market. The Commission however indicated that varying obligations between the areas could be justified. In its opinion BEREC considered (see BoR (12)69) that varying competitive conditions between differing geographical markets need to be relatively stable but did not need to be totally homogenous throughout the whole geographical market. BEREC agreed with CTU that the difference in geographical circumstances was mostly attributable to whether there were existing network systems that provided competition to xDSL and that a more appropriate method for dividing geographical markets was to use as a reference the various technical routes rather than the number of service providers in a given area as the small Wi-Fi parties were spread over a wide area. BEREC also stated that the prices of the Wi-Fi parties were considerably higher in areas where only xDSL and Wi-Fi were on offer than in areas where all technical solutions were on offer. It was further added that even where TCR offered a level retail price for DSL products across the country, the company had special offers in areas where all technical solutions were on offer. In addition to this there was the fact that the TCR market share became lower as the technical options increased. It was therefore the conclusion of BEREC that the geographical division proposed by CTU was correct in this instance and in addition to this that cable systems and Wi-Fi were substitute products for xDSL and fibre-optic and were thus part of the relevant wholesale market because of indirect impact of such systems in retail. On 14 August the Commission came to the conclusion that it would exert its veto against the geographical division in question on the Czech market. The Commission thus disagreed with the BEREC assessment. On the other hand the Commission stated that it did not rule out the possibility of applying varying obligations between areas should the CTU support such a measure with adequate documentation and research.

¹⁴¹ The **Polish** regulatory authority (UKE) analysed the relevant market in 2011 and came to the conclusion that 20 municipalities of 3076, including the capital city Warsaw, did not belong to the relevant geographical market.

possibility in great detail in its market analysis from 2011 to implement geographical division of the market, but decided not to do so. It is clear that the situation in Iceland is not comparable to the situation in those countries that have defined more than one geographical market. Technical options in Iceland are too few and network operators that offer broadband access are too few and in addition to this, the Mila position is strong in all areas as there are no areas where the company has less than 50% share of the relevant market.

289) Three countries have prescribed varying obligations by region, even though the geographical market has been defined as the whole country. These are Austria in 2008, France in 2011 and Poland in 2012. It is however the fact that a court in Austria revoked the above decision in 2008, which means that varying obligations by region no longer exist in that country. In the chapter on obligations here below it will be assessed whether it is proper to prescribe varying obligations by region on the relevant market.

The criterion was that Telekomunikacja Polska (TP) had less than 40% market share and that at least 50% of households in the area in question had access to at least three network operators (for example TP, a party that leases access to TP copper local loops and a cable system operator). The EU Commission made reservations with this conclusion as it was not sufficiently grounded with respect to conditions for competition in the municipalities in question not being comparable, stable and different from other areas to the extent that would justify the division into geographical markets. The EU Commission however took no action as UKE was not withdrawing obligations in the areas in question but would have needed to conduct a special market analysis for the areas in question to be able to withdraw them. In 2012 UKE notified a new market analysis for the relevant market to the EU Commission and retracted the above specified division into geographical markets.

4.0 Analysis of the market for wholesale network infrastructure access at a fixed location, including shared or fully unbundled access (Market 4)

4.1 Introduction

290) When a market has been defined then the next step is to analyse competition, keeping in mind the factors that influence market power, and to establish whether the power of one or more companies is significant. The factors that are used to measure market power depend on the characteristics of each market and it is in the hands of the regulatory institutions to evaluate which factors shall be examined in each instance. In the Guidelines on market analysis¹⁴² there is a list of the criteria that can be used when assessing SMP and the criteria that the PTA considers important for this market analysis will be discussed here below. The list published in the Guidelines is not exhaustive and the PTA is authorised to add other criteria to the list that could apply.

291) In the PTA analysis, which was published 21 December 2007 the market was limited to copper local loops, which were entirely owned by Mila. This has changed as has been stated and the market is now technically independent according to the new definition. This change along with a quite considerable implementation of fibre-optic local loops in this country during recent years means that one must take more criteria into account than before,.

292) In this country there are two companies that are by far the largest in development and operation of access networks at a fixed location. They are Mila on the one hand and GR on the other and in addition to this there are a few small local access networks around the country. The Mila access network is mostly based on copper local loops, but the company now installs fibre-optic local loops in greenfield districts. GR also operates fibre-optic local loops. There is not only a difference in technical development of these networks but they also differ in size and distribution, where Mila has a much larger and more distributed access network. The historical position of Mila and of the Skipti Group is very strong as has been shown previously. Mila controls all copper local loops in the country and they reach nearly all citizens and Mila as an access network is considered to have national coverage because more than 95% of households have the option of a broadband connection through copper local loop. Those households that do not have this are variously connected with radio connections at market rates, or they are covered by the Act on the Electronic Communications Fund no. 135/2005. About 1800 households that had not been connected at commercial rates have been connected with the support of the fund.¹⁴³

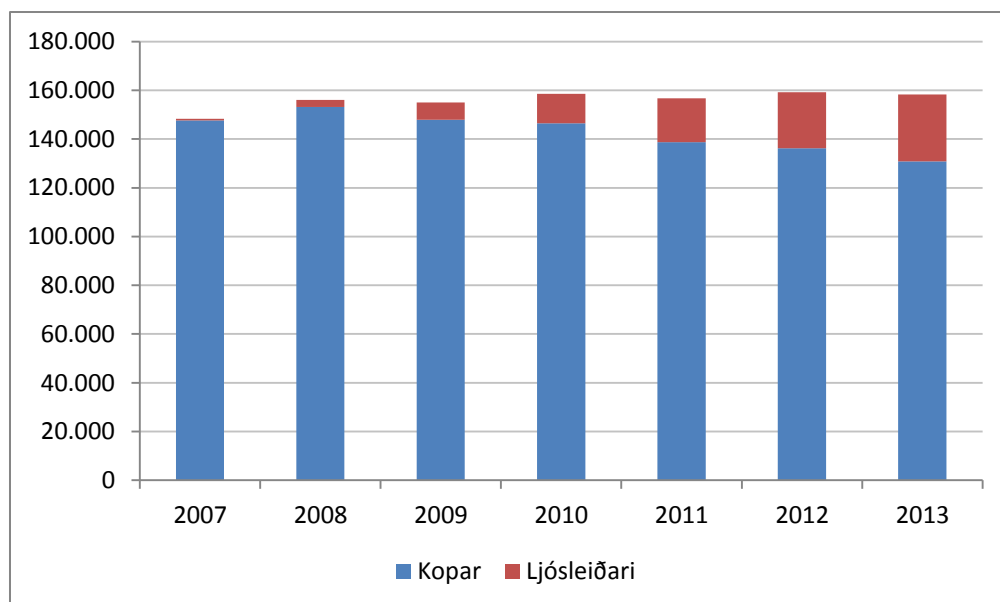
293) As is stated in Chapter 2, Mila (previously Siminn) has long had a strong position on the market with its copper local loops. With respect to wholesale, the PTA has examined possible demand side substitutability in connection with the GR fibre-optic network and networks of some other smaller companies and has come to the conclusion that it does not exist except locally and not sufficiently widespread to be a real option for most customers. With respect to other substitutability possibilities, they are hardly discernible and are subject to substantial limitations. Discussion here will therefore be limited to copper and fibre-optic local loops.

¹⁴² See Chapter 3.1 in the Guidelines.

¹⁴³ <http://www.fjarskiptasjodur.is/>.

294) The recent introduction of fibre-optics has had quite an impact and in recent years fibre-optic connections have increased substantially. Figure 4.1 shows this development well and its impact on the number of active connections through copper local loops.

Figure 4.1 Number of active local loops by type from 2007 to 2013



Source: Post and Telecom Administration.

295) As can be seen in figure 4.1 the increase of fibre-optic connections has been substantial in recent years. In 2007 almost all local loops are on the Mila copper network while at the end of 2013 there were approximately 17% of all active local loops in fibre-optic. During the same period the total number of local loops has not increased correspondingly. Local loops increase up to 2008 and then there is significant deceleration in the increase and then the number remains stable. This happens at the same time as fibre-optic connections increase substantially. One must therefore consider that fibre-optic connections are not simply an addition to the market, but rather that they are replacing existing connections in most instances. The proportional increase in fibre-optic connections in recent months has decelerated somewhat at the same time as the Siminn VDSL service was introduced for sale to the public. In 2013 the number of Mila xDSL connections increased for the first time since service commenced with fibre-optic local loops in 2008. There are thus strong indications that the arrival of the Siminn VDSL system has affected the increase in fibre-optic connections and that it is a strong competitive counterbalance from Mila to the fibre-optic development in question.

296) The market here being examined is the wholesale market. In Section 2.2.1 the retail market connected to the local loop market was covered and it is necessary to understand how these markets are connected and how circumstances on the wholesale market impact the retail market.

297) Here below the competition conditions on the relevant market will be assessed with the main influencing factors in mind. Following this, in Chapter 5 there will be an assessment of whether some company has SMP on the relevant market.

4.2 Market share

298) A company's market share is an important factor in market analysis. It is however not the only factor that decides whether a company is designated as having SMP, but it can give strong indications about whether such a situation exists or not. A very significant market share, that is to say over 50%, is on its own sufficient according to accepted case law, to designate a company as having a dominant position, except in exceptional circumstances. According to the Guidelines, a suspicion that single dominance exists with one company does not arise until market share has reached at least 40%. This depends, however, on the size of the company in comparison with its competitors. In some instances a company with market share of less than 40% can be deemed to have SMP. A company with market share of less than 25% would in all likelihood not be considered to have dominance, except in the case where it had joint/collective dominance with another undertaking.

299) Development of market share over a given period of time is also significant in the assessment of whether the company has a dominant market position. Should a company have a non-transitory high market share then this indicates a dominant market position, while on the other hand a fluctuating or falling market share will indicate the contrary. In new and growing markets a high market share has less indication of market strength than on a mature market with slow growth.

300) In the previous, PTA analysis, which was published 21 December 2007 the relevant market, as previously stated, was limited to copper local loops. At that time Míla was the only network operator that controlled copper local loops (and still is) and thus had 100% market share. Now on the other hand the market is technically independent and fibre-optic local loops belong to the relevant market. It is thus clear that market share has changed quite significantly from the previous analysis.

301) The company Míla is part of the Skipti Group. Míla was previously part of Siminn, but from April 2007 it has been operated as a separate company, which owns and is responsible for the operation of the backbone and access networks within the Skipti Group. The access network is fundamentally based on the copper line network that Landsiminn built at the time. The company was owned by the state and had a monopoly on electronic communications operations. The copper network was built for the fixed line telephone service and as this was a case of a state company with monopoly on the market it was not built entirely on market criteria. The copper network therefore reaches almost all citizens, even though local loops vary in quality and their distance from telephone exchanges varies.

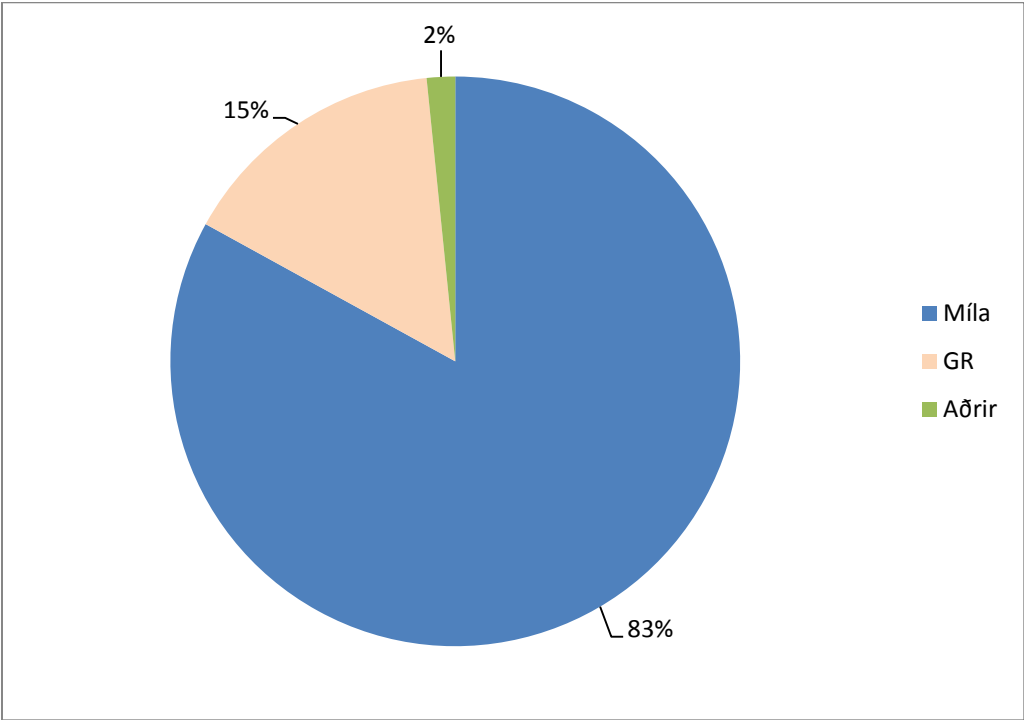
302) Gagnaveita Reykjavíkur (GR) is owned by is owned by Orkuveita Reykjavíkur (OR) and was founded as a private limited company in 2007 but prior to that was a department within OR. The purpose in founding the company was to offer homes and companies access to a high-speed data transmission system with the guiding vision that high-speed data transmission would improve quality-of-life and the competitiveness of the Icelandic nation.¹⁴⁴ GR has mainly concentrated on installing a fibre-optic network in the OR market area and has made agreements with several municipalities in South West Iceland on the development of a fibre-optic network.

¹⁴⁴ <http://gagnaveita.is/UmGagnaveituna/> (13.02.2012).

303) The PTA considers that the best way to give a realistic picture of the position and strength of parties on the local loop market is to use the number of connections in use as a basis for calculating market share in wholesale, rather than turnover figures. For this, there are two main reasons. The first is that the two largest companies on the market (Mila and GR) use different criteria in their service offer and business relationship with users. Mila sells access to local loops without active equipment while GR sells general access to local loops with broadband access. The second reason that it is difficult to examine internal sales, particularly with GR and other smaller provider companies. This would require estimating turnover in wholesale from estimated information and such calculations are subject to uncertainty. Given the above, it is the PTA conclusion to use the number of connections as a reference in calculating market share on the wholesale market as this is a more exact metric than estimated turnover figures from income from internal sales in wholesale.

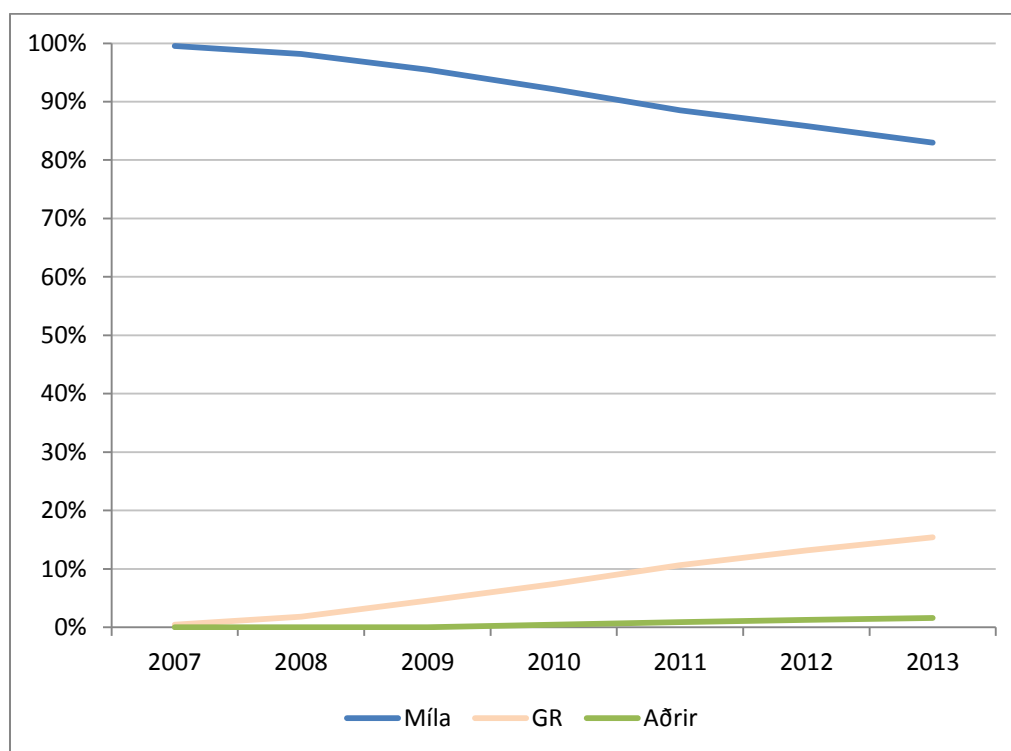
304) Up to the year 2007 Mila and its predecessors had about 100% market share in the relevant market. From 2007 there were however changes and the Mila market share fell and was about 83% at the end of 2013. The most significant factor here is that GR has developed an extensive network in its market territory and now has about 15% market share. Other provider companies are much smaller in scope and have less than 2% of total market share. Even though GR does generally not rent fiber local loops in the relevant market but supplies itself for its own use, the PTA finds it correct to count their number of local loops in use to the wholesale market for access at a fixed location. PTA considers that the fiber optic local loop of GR may exert competitive pressure upon the local loop rental of Mila and a small but significant and non-transitory price increase of Mila may influence the purchase behaviour of Mila’s costumers in the direction of looking more towards GR where applicable. Additionally if GR’s share was not considered to belong the market, Mila would be measured to have an almost 100% share and would continue to do so even though the uptake of GR’s fibre connections would increases in the future. (see figures 4.2 and 4.3).

Figure 4.2 Number of active local loops by company at the end of 2013



Source: Post and Telecom Administration.

Figure 4.3 Number of active local loops by company from 2007 to 2013



Heimild: Post and Telecom Administration.

305) As can be seen in figure 4.3, fibre-optic local loops have significantly increased in proportion to copper local loops since 2007. GR development is the most significant factor here as GR controls the country's largest fibre-optic network. It is also interesting to note that there has been some deceleration in the increase of fibre-optic local loops recently, particularly after 2011. There can be several reasons for this. One is that the increase in fibre-optic local loops from 2008 was so substantial that it is normal that the process should slow down. There is also the possible explanation that the introduction of Mila VDSL is starting to have a significant impact, as Mila xDSL connections increased between the years 2012-2013 for the first time since 2008. The Mila VDSL system can give consumers up to 50 Mb/s download which is comparable, for the purposes of consumer use, to general fibre-optic connections today. Upload is certainly less, but this is generally not as important for normal consumers. Finally, it is likely that capital for major development of the fibre-optic network is in short supply at this point in time because of problems on financial markets, and in addition to this the PTA has in its decisions in recent years endeavoured to ensure that GR is operated in the same manner as any other company independent of OR, in such a manner that the electronic communications arm of OR is not being subsidised by protected activities.

306) There is uncertainty about development in the coming years as GR will complete its scheduled development during 2015 and it is not certain what will happen after that. GR has however said that neighbouring municipalities in the vicinity of Reykjavík are within the companies service territory but plans for introduction of fibre-optic to these areas have not been decided in terms of date. On 19 October 2012, the board of Orkuveita Reykjavíkur authorised the sale of up to 49% of GR¹⁴⁵ as OR is in financial straits because of foreign loans that increased considerably with the fall of the ISK recent years. With the PTA Decision number 2/2004 dated 28 March 2014, the PTA authorise GR to increase its share capital

¹⁴⁵ <http://www.or.is/UmOR/Fjolmidlateg/Frettir/Lesafrett/2388> (07.02.2013)

which would be paid by the parent company OR. This measure is planned to reduce GR debts. It is a measure in the company's financial restructuring before the sale of shares in the company can take place. Also the effect of the previously mentioned VDSL system is an unknown factor and it could significantly impact developments on the relevant market.

307) When market share is examined it is also important to have concentration of the market in mind. A common method of measuring concentration on the markets is the HHI index¹⁴⁶. The HHI index for market share in this country at the end of 2013 is about 0.71, which indicates very high concentration.

308) With respect to market share of companies on the local loop market one can assert that it is characterised first and foremost by two salient features. On the one hand there is the strong position of Mila on the market (with about 83% market share) and on the other hand there is the significant concentration on the market (HHI index 0.71). Development has tended towards a lessening of the Mila market share, particularly in the light of the GR development, but this development is solely in specific areas in South and West Iceland and there is uncertainty about future GR development compared to current scheduled development. Mila has now signed a purchase agreement to acquire Gagnaveita Skagafjarðar (GS) and thus the fibre-optic local loops controlled by GS in Sauðárkrókur and at many locations in Skagafjörður.

309) The PTA believes it to be clear that despite changes having occurred in proportions in local loops where fibre-optic connections have increased significantly in recent years, Mila's market share is still very large and the company's market position extremely strong. Mila still has about 83% of all active local loops in use but although one can expect the company's market share to fall somewhat during the life cycle of the analysis this reduction is not expected to be substantial. The PTA particularly notes that the Mila introduction of VDSL significantly strengthens the Mila copper network in competition with fibre-optic local loops. At the end of January 2013 Siminn, the sister company to Mila, announced that it intended to introduce VDSL in 53 urban areas outside the capital city area by the end of 2014.¹⁴⁷ it was stated by Siminn that 62,000 households could connect to the Ljósnet (mainly using VDSL technology) at the beginning of 2013. the newest Mila plans allow for such connections being available to 87% of households at the end of 2014. Mila has, from and including September 2013, taken over the operation of the Siminn xDSL system in accordance with the Settlement between Skipti and the CA from March 2013. The PTA assumes that Mila's market position will continue to be very strong during the lifetime of the analysis.

4.3 Overall size of a company

310) The size of the company for example on the basis of turnover or of some other metric can be important when assessing SMP. If the company is significantly larger than its main competitors then this can mean competitive dominance. Dominance can be in better production methods, more economic procurement, economic strength, access to capital, distribution and marketing. A company with longer specific experience on the market than that of its competitors has similar dominance, for example in specialised knowledge in technical matters, knowledge of markets and of the legal environment.

¹⁴⁶ Herfindahl-Hirschman Index. The value of the index lies between 0-1. The higher the value the greater the concentration on the market. If the result is less than 0.1 then action is considered unnecessary. If the result is in the range of 0.1-0.18 then there is average concentration and over 0.18 there is significant concentration.

¹⁴⁷ <http://www.siminn.is/ljosnet-simans/> (07.02.2013)

311) Characteristics best suited for comparison are turnover and company revenue on the electronic communications market and economic strength, for example in the form of equity ratio and total assets.

312) Of those companies that are building and/or own fixed access networks, Mila is the largest electronic communications company. The Mila proportion of total revenues of companies operating on the local loop market in 2012 was a little under [...] ¹⁴⁸. GR revenue was just over [...] ¹⁴⁹ of total revenue while other provider companies jointly had less than. [...] ¹⁵⁰ of the revenue. Mila revenue has fallen proportionately from 2007 from [...] ¹⁵¹ while GR income has increased from [...] ¹⁵² for the same period.

313) Mila is part of the Skipti Group, which is the largest electronic communications company in the country. Among the members of this group is Siminn which has among other things, most Internet connections, mobile and fixed line phone subscribers and additionally has a very strong position on the IPTV market. This and the fact that Mila is the largest company on the local loop market can result in competitive dominance for the company. The total turnover of the Skipti Group, that is to say of Siminn and Mila on the Icelandic market was ISK [...] ¹⁵³ billion in the year 2012, which is about [...] ¹⁵⁴ of total turnover on the electronic communications market. By comparison the GR turnover was ISK [...] ¹⁵⁵ billion in 2012 or about [...] ¹⁵⁶ of the total turnover.

314) Competitive dominance is among other things, because Mila enjoys more economy of scale in its operations than other companies. This can among other things, be manifested in more economical procurement, in production methods and in distribution and marketing.

315) Competitive dominance of the largest company can also be in the fact that its access to capital is easier and also because capital can often be acquired at more advantageous terms. This particularly applies to an economically strong company. Circumstances in this country have on the other hand been such that virtually all companies have faced financial problems subsequent to the bank crash in 2008. Companies have been in financial restructuring or are heading in that direction and more often than not such a process involves change of ownership. It is not possible to say that any company on the local loop market enjoys financial strength to the extent that it affords the company a significant competitive advantage.

316) The PTA assumes that the enlargement of the GR local loop network will continue for some time, taking particularly into account the fact that Vodafone has been transferring its customers to the GR network. The PTA does not however expect that the changes will be such that it will threaten the Mila dominant position during the period of validity of the analysis. In addition to this Vodafone had made an agreement with Siminn on Access Option 1 to VDSL and therefore plans to continue using the Mila network, at least when fibre-optic is not available.

¹⁴⁸ Removed for reasons of confidentiality.

¹⁴⁹ Removed for reasons of confidentiality.

¹⁵⁰ Removed for reasons of confidentiality.

¹⁵¹ Removed for reasons of confidentiality.

¹⁵² Removed for reasons of confidentiality.

¹⁵³ Removed for reasons of confidentiality.

¹⁵⁴ Removed for reasons of confidentiality.

¹⁵⁵ Removed for reasons of confidentiality.

¹⁵⁶ Removed for reasons of confidentiality.

317) The PTA has taken into account the size of Mila as a network operator on the local loop market along with the size of the Skipti Group, of which Mila is a part, on the electronic communications market. The PTA concludes that the greater size of Mila and the Skipti Group in comparison with competitors strengthens the Mila position on the relevant market.

4.4 Entry barriers

4.4.1 General comments on barriers to entry

318) Entry barriers is a collective name for various factors that can influence companies' market power. If there are few barriers to market then possible profitability is an attraction for new companies to gain market share from the incumbents. Potential competition from new parties can influence the behaviour of a company with SMP and can diminish its harmful influence on competition. Entry barriers on the other hand weaken or prevent competition.

319) There is a strong relationship between entry barriers and profitability. The more entry barriers that exist, the greater the profitability that can be expected from incumbent companies, which can often be attributed to a lack of competition rather than to efficiency. An ideal situation for an incumbent company is one where there are many entry barriers and few exit barriers. In such circumstances incumbent companies deter new companies from establishing themselves and companies without profitability will soon give up.

320) The objective of the PTA market analysis and possible subsequent measures is to strengthen competition on the relevant market. It is conducted for the purpose of encouraging innovation and development, of enhancing companies' competitiveness and the interests of consumers. One way to achieve this is to limit entry barriers to markets, which can be in varying forms. Here below there is further discussion on the main barriers that are considered to prevent entry of new parties to the market for local loops.

321) The entry barriers that confront companies on the relevant market are on the one hand to a large extent attributable to the strong position of the Skipti Group and of Mila and on the other hand to difficulties encountered by new electronic communications companies in creating infrastructure they need to compete on the market. The former category includes control of infrastructure not easily duplicated, economy of scale, economy of scope, access to capital and vertical integration. The latter category can include sunk costs, restrictions to growth and costs for service systems.

322) Entry barriers usually have their roots in the development and position on the electronic communications market but in some instances there is a risk that a party with SMP could see an advantage in making it difficult for competitors and delaying their entry to the market, for example by refusing requests for space in telephone exchanges, by setting restrictive conditions on access for repairmen to buildings that house leased facilities and so on. It is important to discuss possible entry barriers on the relevant market and take a position on whether these are real barriers or not.

4.4.2 Control of infrastructure not easily duplicated

323) When a company has control over infrastructure that is difficult or expensive for others to duplicate, this can be a significant barrier for its competitors. An example of such

infrastructure is a fixed line telephone network. This aspect must be examined in connection with the discussion on sunk costs in Section 4.4.3.

324) It is possible to reduce investment costs by cooperating on electronic communications structures, that is to say colocation or other sharing of networks. Co-location is for example when new parties locate their equipment in buildings built for that purpose. Savings from this can be significant, particularly in rural areas. Sharing can variously be on the basis of free agreement, agreements reached on the basis of an obligation Pursuant to Article 25 of the Electronic Communications Act or on the basis of obligations imposed for access, pursuant to Article 28 of the Competition Act.

325) The installation of a new local loop network is not just a question of earth cables, distribution frames, street cabinets and in-house installations. Buildings are also required for terminal equipment to which the local loop connects and in urban areas it can be difficult to find a suitable location for such equipment and this often involves considerable cost.

326) It is not given that network operators will be granted permission to excavate for new local loops in urban areas. It is usually necessary to remove existing constructions (such as pavements and roads) before a ditch is excavated. Apart from the substantial costs, this can be inconvenient for inhabitants living nearby. One must consider it doubtful that companies will see the advantage in installing the same kind of local loops that already exist in the areas in question. Certain local electronic communications companies, often owned by local power utilities or municipalities, have nevertheless installed local networks. There is nothing to indicate that such networks have been installed on competitive grounds up to this point in time, rather that funds have been provided for the development in question by the municipality or power utility in question which has not been recouped in full, regardless of what might later transpire.

327) In larger areas such as in the capital city area there is a lack of facilities for electronic communications equipment at many locations. Mila buildings are now filled to bursting point at some locations and there are obligations on the company for access where there is space, according to the prior decision by the PTA on the relevant market from 2007. GR uses to a large extent buildings owned by OR but there are no obligations for access imposed on OR or GR. GR has also used facilities in Mila buildings to some extent against payment.

328) As has been previously stated, access to local loops on its own does not ensure normal competition. New parties in the market must also have the option of locating their equipment near node points (for example main distribution frames¹⁵⁷) and this applies equally to full and shared access. In some instances it could be a possibility to locate equipment in other buildings close to the telephone exchange, but more often than not there is no option but to find space for the equipment in the telephone exchange in question and to ensure access to the equipment for monitoring and maintenance. It can however sometimes be difficult in some instances because of lack of space.¹⁵⁸ Built-up areas can be difficult for companies to erect new buildings for their terminal equipment as building land is often not available and where it is, the cost of buying is high. Denial of requests for facilities or abnormal fees can be an insurmountable barrier for new companies on this market.

¹⁵⁷ Main Distribution Frame

¹⁵⁸ See for example decision of Post and Telecom Administration 24 July 2004 on complaint by Og fjarskipti hf. about discrimination by Landssími Íslands hf. with reference to access to distribution frame in Árbær.

329) Available space in street cabinets must be examined, particularly with respect to the VDSL implementation now under way with Mila. Because of the limited range of the VDSL standard compared with the ADSL standard, the VDSL DSLAM equipment needs to be located in street cabinets or as close as possible to users, while ADSL DSLAM equipment is usually located in telephone exchanges or buildings close to them. Where space is very limited in street cabinets it can be that there is no room for more than one company to install its DSLAM equipment in each street cabinet. The companies that would like to set up their own, VDSL DSLAM equipment side-by-side with Mila therefore need to erect some kind of container for it alongside the Mila street cabinet. This is seen to be neither technically nor financially practical. One also has to note that there could be a possible interference if two parties have their equipment in a small space. This means that Mila has an advantage because of being first¹⁵⁹ on this market.

330) The PTA considers it unlikely that any party will see an advantage in installing a new local loop network with national coverage, but it is rather likely that companies such as for example utilities or individual municipalities in the countryside¹⁶⁰ will concentrate on introducing fibre-optic to their home areas and that this will be done in smaller areas.

331) The PTA considers that the installation of new local loops involves certain difficulties and that this is unrealistic in most instances, at least on competitive grounds. One can, however, expect that the development by GR, GS and Tengir will continue in these companies' operating territories in the coming years and in addition to this smaller municipalities in the countryside could decide to fund their own local fibre-optic. The above, along with the lack of facilities that is the reality at many locations in the country's most densely populated areas, particularly with respect to the introduction of VDSL that is now underway, create barriers for general competition.

332) The PTA considers that lack of facilities could along with delays in the processing of applications could be a serious barrier to competition.

4.4.3 Sunk costs

333) When a company enters a new market this often requires certain preparatory work and initial investment. If entry to a market fails it can sometimes be possible to recover such costs, for example with the sale of investments and equipment. Sunk costs are those costs that the new entrant has to bear as a loss should he not be able to establish himself on the market. Sunk costs are a barrier to entry, because the incumbent companies on the market do not have to bear them because in most instances they have already made them. The new companies that are finding their place on the market (particularly in mature markets) are at a greater risk of having to bear sunk costs than the incumbents who have already written off a large proportion of their investments.

334) Costs, for example for marketing, are generally highest at the beginning of operations. If a new party is to attract a significant share of customers from incumbent companies it will presumably need to invest heavily in extensive marketing. Sunk costs can be in investments in

¹⁵⁹ First Mover Advantage.

¹⁶⁰ Skeiða- og Gnúpverjahreppur municipality among others was responsible for installing fibre-optic network in the municipality and this project was completed at the beginning of 2013. More municipalities are planning projects because of alleged lack of initiative of electronic communication companies to introduce fibre-optic to sparsely populated areas.

electronic communications equipment and business costs related to marketing, particularly with young companies that are trying to gain a foothold on the market. One can assume that sunk costs are likely to be high in Iceland for geographical reasons and because of the sparse population.

335) Despite the fact that most local loops in this country are copper, companies that install local loops no longer use copper and concentrate on fibre-optic. Míla now only installs fibre-optic in greenfield districts and is developing VDSL in all the urban districts. It is therefore established that the sunk costs that have to be taken into account when discussing installation of local loops shall relate to installation of fibre-optic.

336) The initial costs of installing a network is first in connections outside buildings, second in the excavation of trenches, third in finishing off in streets and plots and fourth in the fibre-optic cable itself. The value of the fibre-optic cable is not such that it is realistic to assume that it can be recovered. One must however keep in mind that there could be considerable value in fibre-optic that has been installed underground and particularly at locations where there are no existing fibre-optic connections. Where there are existing fibre-optic connections, one must on the other hand assume that the resale value of a new cable is naturally less.

337) One can assume that sunk costs for local loops or fibre-optic installations will vary depending on local circumstances, although they will always be significant. One can assume in the light of the fact that quite a number of utility companies have chosen to install fibre-optic that there is a market at certain locations and that resale of a new fibre-optic network is such that the initial financial investment may possibly be recoverable, but it is difficult to rely on this.

338) One also has to note that it proves difficult for new companies to embark on competition with Míla, which has its own local loop network which was installed during the past decades under other market conditions, except in certain limited areas. The PTA considers that sunk costs are an entry barrier for new companies.

4.4.4 Economy of scale

339) Economy of scale is said to exist in company operations where increased production means a lower total cost for a product or service unit. This is characteristic of technical companies which have relatively high fixed costs and low variable costs. Economy of scale can act both as an access barrier and as a market advantage. Network operators already on the market endeavour to operate their own networks with maximum efficiency. New network operators need time to develop their operations, gain a customer base and traffic and can thus not expect to enjoy the same economy of scale as those that have operated their electronic communications networks for years.

340) With respect to the local loop market the operation of a local loop network constitutes in itself economy of scale in proportion to the size and scope of the network in the operations of the party in question. This is because of the substantial underlying investment and fixed costs that are for example inherent in the network. Economy also manifests itself in lower initial costs as a result of bulk purchasing of cable and in agreements with contractors for excavation, finishing and connections into buildings. In the same way economy of scale can result from the minimum number of repairmen and other staff with appropriate knowledge

and specialisation that are needed to provide adequate service. These factors can in some instances be a barrier to entry into the market.

341) As previously stated, the connections through Míla local loops are about 80% of active local loops. The networks that was built for the Landsiminn general telephone system is now used by Míla as its current owner. Figure 2.12 shows the number of user lines¹⁶¹ in the public telephone system. It can be seen there that Míla had about 131,000 connections in use throughout the whole country at the end of 2013. This corresponds to a position where copper lines are now in place in almost every commercial and residential property in the country.

342) Then there is the fact that Míla offers services nationwide and in large areas it is the only company on the market. In such a situation Míla has had time to establish itself and acquire all business in the regions in question, which is an option that other companies do not have. One can assume that this will make it less economic for new companies to enter the market areas in question and achieve minimum economy of scale. After Vodafone received access at the beginning of 2011 to fibre-optic threads owned by NATO that encircle the whole country, the company has increased its offer in urban municipalities and villages at many locations around the country. The fibre-optic threads in question are part of the leased line market and the company does not operate its own access network, except in the form of local loop lease from Míla.

343) Despite the major development of the GR local loop network in the past years, there is still a long way to go before it approaches the size of the Míla local loop network, except in a few municipalities in the south-west corner of the country, in Reykjavík and in a few districts and parts of districts in the capital city area outside Reykjavík. The PTA does not expect there to be any changes in this situation as the existing GR market territory and GR plans do not allow for nationwide development.

344) The PTA concludes therefore that Míla enjoys economy of scale in most parts of the operation and development of network systems which strengthens Míla's position against other companies on the market. This economy of scale can manifest itself as an entry barrier for the latter companies.

4.4.5 Economy of scope

345) Economy of scope is the economy where it is less expensive to manufacture two or more goods together rather than each separately. A lower cost is achieved by jointly using resources in the production. A good example of this is the use of an electronic communications network where a variety of services are offered to consumers. Economy of scope can act both as an entry barrier for new parties and as an advantage in the market over competitors.

346) As has been stated before, Míla has the only local loop network with national coverage and has 100% market share of the wholesale of copper local loops. In addition to this wholesale service the Skipti Group provides various retail services which leads to a certain economy of scope, for example because of better access to customers of retail services. The Skipti Group and Míla also enjoy economy of scope by operating services throughout the whole country, that is to say through its ubiquity with consumers.

¹⁶¹ With ISDN basic and primary connections.

347) Mila has a network system that reaches virtually the whole country that was initially developed for fixed line telephone. Both Mila and Siminn can jointly offer comprehensive services throughout the whole country almost independent of the user's geographical location. It is possible to assert that this position of these parties can act as an access barrier to new companies that do not have such widely distributed systems.

348) To a certain extent one can say that GR enjoys economy because of its ownership ties with OR. There are agreements between OR and GR that OR handle a large part of the necessary support services for the operation of a company, for example all the company's invoicing is handled by OR along with a large part of its bookkeeping. GR does however not offer electronic communications services in retail, only connection to the fibre-optic network.

349) GR also has access to facilities in OR buildings in its utility areas. GR thus enjoys economy of scope to an extent that is not available to companies other than Mila.

350) There is nothing to indicate that other network operators enjoy economy of scope to any extent as they are much smaller and generally limited to specific urban kernels in the countryside.

351) The PTA concludes that Mila has economy of scope on its own and as part of the Skipti Group, as does GR as a subsidiary of OR and that new companies on the market do not enjoy such economy to the same degree.

352) Of the two companies that enjoy economy of scope, Mila is much larger and has more scope in its offer electronic communications services, that is to say that Mila has a more varied service offer than other companies that provide local loop service on the relevant market and has great possibilities than others to leverage the economies resulting from staff, facilities and support services being used more efficiently by a wider range of products. The PTA therefore believes that even though both of these companies enjoy economy of scope, the economy is not equal and for this reason it is only the Mila economy of scope which is considered to be an entry barrier.

4.4.6 Access to capital

353) Access to capital can have a deciding influence on the possibilities for a company on a competitive market. This is particularly the case if substantial initial investments are required. Financially strong companies with good access to capital, other things being equal, are in a better position and can more easily protect themselves from competition than comparable companies that do not have as good access to capital.

354) The difference between companies, with respect to access to capital could be a barrier to entry. Good access to capital can both represent an entry barrier and can indicate market power.

355) Circumstances on financial markets are in many ways special at this point in time. There has been an international financial crisis for quite some time and the financial crisis in this country has been particularly difficult and has impinged on all local economic activity. One must consider it certain that access to capital has become more difficult for all companies. Capital for new investments is more difficult than before which impacts all development. Against this there is the fact that the advantages that some companies had over others with respect to access to capital has also diminished during the same period.

356) It is a very expensive measure to develop as extensive network as Míla and to a certain extent GR, operate today. The Míla network was built to a large extent during the period of monopoly and state control. The development of the GR network is still incomplete and in reality it is not certain how extensive it will be but there is every likelihood that it will not reach further than the south-west corner of the country. Tengir in Akureyri and Gagnaveita Skagafjarðar still have their systems in the development phase and this development is much slower than in the capital city area and there is probably a shortage of capital. It is thus clear that it significantly restricts competition if new companies do not have access to capital for development.

357) It will require considerable capital to develop a network comparable to that developed by Míla, or even the network now developed by GR. Access to capital is necessary and it is clear that access to capital is an entry barrier on the relevant market.

358) An important issue with respect to financing a local loop network is that such finance needs to be long-term. Electronic communications systems take a long time to pay for themselves and given current circumstances there is a lack of patient capital in most places, not only in this country but also widely abroad. This increases the importance of companies having easy access to capital and/or have already financed projects.

359) One must however note that as has been previously stated, it is not necessary to have a network with national coverage to survive on this market. It is also a fact that if one looks at the network operators that have entered the local loop market in recent years, none of them aim to operate a network with national coverage. Network operators are even related to relevant utility companies that see an advantage in connecting their market territory with fibre-optic. The same applies to individual municipalities.

360) One also has to keep in mind that many companies that are developing fibre-optic networks are subsidiaries of utility companies, which in some instances are financially strong and/or have access to capital by virtue of their core operations. One must however mention here that OR, the parent company of GR, has been experiencing significant financial difficulties in recent years. The possibility has among other things been discussed that OR should sell GR to reduce its debts. The owners of OR have authorised the sale of a 49% holding in GR. With the PTA Decision no. 2/2014 from 28 March 2014 the PTA granted its endorsement for the increase of GR share capital and for OR, the parent company of GR, paying for the increase. The plan is to reduce the debt between the companies to an amount corresponding to the share capital increase. This is part of financial restructuring of GR which is necessary before implementation of the sale of shares in GR under discussion. It should be noted that Skipti went through major financial restructuring during 2013.

361) It is however clear that in order to be viable on the relevant market a company needs to have significant market share and thus distribution of its network. Companies other than Míla and GR have limited distribution and their combined market share is under 1%. In order to acquire more users a company has to develop a wider and larger network than smaller companies currently have and this requires access to capital.

362) For the above reasons it is the opinion of the PTA that access to capital is problematic at the present time and is thus considered to be a significant barrier to entry for new electronic communications companies to the relevant market.

4.4.7 Barriers to growth

363) A market with significant potential for growth is much more attractive to new operators than is a stagnant (mature) market. It is probable that undertakings contemplating entry into a stagnant market must lure customers away from established operators. If there are limits to a market's potential to grow and offer more extensive services than those existing on the market, entry barriers may exist.

364) Copper local loops have already been installed to almost every single household and company in the country which on its own severely limits the market's growth potential as all significant entry for new companies must be directed at competing with the existing local loops. The growth potential on the market is thus almost exclusively in the installation of fibre-optic in those areas where there are only copper local loops, both in mature and greenfield districts. There has been little building development in recent years and even if the development of new districts increases, it is unlikely that there is significant future growth potential in this field.

365) The growth in the introduction of local loops has been in installation of fibre-optic local loops. The fibre-optic network has now been connected to about 50,000 homes in the country and the largest part of this is in the GR service area. GR expects that the currently planned introduction of fibre-optic will be completed in 2015 in Reykjavik and there is uncertainty about the next step in the company's service area in the capital city area. GR has however plans to connect the areas though dates have not yet been decided for this. Tengir in Akureyri has plans to connect about 500-1000 households in the coming years while Gagnaveita Skagafjarðar, which is now owned by Mila, has plans to continue its development but does not yet have an exact schedule for this.

366) Extensive distribution of fibre-optic local loops in the most densely populated areas has a very significant impact on growth potential for local companies. It must be considered almost impossible for other companies to see an advantage in installing local loops to households that are already connected with both fibre-optic and copper.

367) The existence of all their local loops means that the installation of new local loops will always need to compete with the existing ones. In the light of substitutability between copper local loops and fibre-optic local loops this significantly restricts companies' possibilities for growth.

368) It is the PTA conclusion that growth possibilities in the field of installation and operation of local loops are limited and that the lack of growth possibilities is likely to act as a barrier for new companies.

4.4.8 Service systems¹⁶²

369) Well-developed service systems can act as an entry barriers for new parties and as a competitive advantage. This particularly applies on markets where substantial costs are tied up in the development of distribution and sales systems or where all the companies have made sole agreements with the largest and/or most important distribution parties on the market.

370) Service systems can represent a large investment for new companies that would like to establish themselves on a given market. The presence of established operators that have perhaps written off their expenses can represent an entry barrier for new operators. Companies that have efficient service systems at their disposal can therefore have a competitive advantage over new market participants.

371) Investment in a service systems is not directly proportional to its number of customers or to its total sales but this investment expense is proportionally higher per customer in smaller companies. Therefore, an investment in efficient service systems represents economy of scale. Siminn has for example developed service systems and line bookkeeping over a period of many decades, while new companies must develop such systems from the ground up.

372) Efficient service systems are the foundation on which customers services rest as it is normally through service systems that customers communicate with the company. It is through the service systems that sales are registered, ordered, activated and charges collected through invoicing. It is difficult to see how a company can maintain reliable operations and a sufficiently high level of service to build up a convincing position on a service market without such systems.

373) During recent decades Mila, previously Siminn, has developed service systems and line bookkeeping that benefit Mila today. One must also assume that Mila can make use of the joint order entry system and invoicing within the Skipti Group.

374) At the same time one can say that GR benefits from being related to OR and from having access to its service systems, in the same way that Mila benefits from access to Skipti systems. It is unlikely that other companies that plan operations on the relevant market have access to such developed service systems like these two companies have.

375) The PTA considers that investment in service systems can be an entry barrier for new companies.

4.4.9 Vertical integration

376) Vertical integration exists where the same party operates on more than one production and/or sales level, for example he manufactures goods, sells them to another party in wholesale and also sells the goods himself at retail level. A company that integrates varying

¹⁶² Service systems is a collective name for the following systems:

- Sales system
- Order entry system
- Line bookkeeping
- Service information
- Invoicing

operations in this manner in the value added chain can by virtue of its position on the wholesale or retail markets erect barriers to competition on the market in order to strengthen his position against competitors.

377) Vertical integration from the point of view of an electronic communications company has certain advantages as the company can combine all the services in question under one umbrella and for example use the same service systems for the wholesale and retail parts. In addition to this, a company with vertical integration can relatively easily discriminate against competitors on the retail market because of its position on the wholesale market.

378) Despite the fact that Mila only handles wholesale services and Siminn both wholesale and retail this does not alter the fact that these two companies together form a vertically integrated company group. Siminn is Mila's largest customer as sales to Siminn represent over 70% of Mila's turnover. DSLAM equipment is located at Mila, as is the local loop system and Siminn leases access to local loops bitstream access from Mila. As both companies are part of the Skipti Group, ownership, management and financial connections between the companies are undisputed.

379) In the case of the GR fibre-optic local loops vertical integration is even greater. GR actually does not sell access to its own local loops but to bitstream.¹⁶³ This is an instance of almost entirely internal sales on the relevant market where the difference between local loops and bitstream is not particularly distinct to outside parties. Customers can generally not purchase access to local loops alone but must also purchase access to bitstream. This is however not always the case and there are known examples of companies that have received access to dark fibre but the companies that lease local loops from GR are relatively few.

380) The PTA considers that vertical integration on this market is likely to be an entry barrier for new companies to the market, despite some kind of self-imposed separation of wholesale and retail between Mila and Siminn in 2007, as the two companies are part of the Skipti Group. The Settlement between Skipti and CA from March 2013 reduces to some extent the management connections between Siminn and Mila but in no way does it exclude vertical integration of the companies. In addition to this, the implementation of the Settlement, which was to be fully completed 6-12 months after the signing of the Settlement, has not been as planned. It is not possible at this stage to draw conclusions on the impact of the Settlement. It does however to some extent lessen the impact of vertical integration that lease of local loops takes cost into account according to the rules and is subject to surveillance by the PTA.

4.4.10 Conclusion concerning entry barriers in the relevant market

381) One must consider it clear that if a company intends to enter the relevant market and develop service on its own access system, then it needs to develop facilities not easily duplicated. It is not only necessary to incur substantial costs in developing a distribution system and infrastructure but also it can prove very problematic to find space for the company's equipment. This is particularly true in built-up areas where space for buildings to house distribution frames is in short supply. Control of infrastructure is therefore considered to be a significant entry barrier in the opinion of the PTA.

¹⁶³ GR sells access to lease lines on Market 6 (terminating segments of leased lines) to companies.

382) For new companies planning to develop their own access system, one must consider that sunk costs from the investment represent a significant entry barrier. This particularly applies at locations where more than one system has already been installed (fibre-optic network and copper network).

383) Mila, which is part of the Skipti Group, enjoys economies of scale and scope that competitors cannot foreseeably match during the life cycle of the analysis. It is inevitable that new companies on the market would find it difficult to compete under such circumstances and this creates a significant barrier to entry.

384) The PTA considers that access to capital is hard to find today and because of how costly it is to enter and become a viable participant on the local loop market, then this is considered to be a significant entry barrier to the relevant market.

385) It is the opinion of the PTA that possibilities for growth have lessened significantly since the last analysis and that they will be meagre during the lifetime of this analysis. It is among other things for this reason that fibre-optic connections are so widespread in the most populous and urban regions and why population increase and the building of new districts has slowed down.

386) Mila's extensive service systems can give the company an advantage over new companies and they call for analogous systems with these companies.

387) The PTA believes that Mila enjoys vertical integration as part of the Skipti Group and that this is to some extent an entry barrier.

388) It should be noted that entry barriers are lower for companies that plan small local distribution. A number of companies have set up network systems and are already operating in other parts of the country. Such companies are mostly owned by local municipalities and/or utility companies and it is not clear whether such systems have been developed on competitive grounds. Little companies will however never have a large market share, except possibly on a very local basis and in addition to this they will not enjoy economies of scale and scope. The PTA believes that the entry of smaller companies does not have significant impact on the market.

389) The PTA concludes that barriers exist for new companies entering the relevant wholesale markets, which strengthen Mila's position on the relevant market.

4.5 Competition problems on the market in question

390) The main objective of the market analysis is to investigate whether competition is active on electronic communications markets and to react to this with appropriate measures should it prove not to be the case.

391) In the analysis of the local loop market one can identify five factors influencing competition which determine long-term profitability of the companies. These factors are 1) countervailing buying power of buyers in a strong position, 2) product diversification/bundling, 3) potential competition, 4) pressure from substitute products and 5) options available for customers, the possible costs of switching and/or the impact of binding transactions.

4.5.1 Customer countervailing buying power

392) Buyers with a strong negotiating position can influence competition and can limit sellers' possibilities to operate without taking into consideration competitors and customers. A strong negotiating position exists primarily when a customer buys a large portion of an operator's production, is well informed of other offerings, can switch to another operator without significant expense and even has the potential to commence production of a comparable product/service.

393) When it is kept in mind that Siminn is the largest lessee of Mila local loops it is unlikely that other smaller lessees can limit to any significant degree Mila's possibilities to operate without taking its customers into consideration (other than Siminn). With respect to the retail market and to users, large users, that is to say those that have many local loops into a building, have a certain countervailing buying power which possibly affords them a discount from the normal retail price. On the other hand Mila is not to any significant degree dependent on companies on the retail market because Siminn is its largest customer and this diminishes the countervailing buying part of the other customers.

394) At the same time almost all of GR local loop leasing takes place within the company. GR generally does not offer other parties direct access to its local loops, but owns itself all the equipment that is connected to their local loops and sells access to bitstream. GR is therefore in reality the only customer of GR on the local loop market. On the other hand, GR is hardly operating on the retail market for electronic communications services, apart from selling connections to its network, and in addition to this it only has 15% market share which means that in this respect GR and Mila are quite different.

395) It is clear that a customer only has significant countervailing buying power when he has the possibility of dealing with another party for lease of local loops. This is however not possible in large regions of the country in the current circumstances.

396) The market in this country is thus characterised by this internal selling. Siminn is by far the largest purchaser of local loop lines and has more than a 70% share of Mila's local loop leasing. Countervailing buying power of purchasers with such a large share in a seller's wholesale would under normal circumstances be considered very substantial. On the other hand one has to consider the circumstances of Siminn and Mila and the fact that they are both part of the Skipti Group. For this reason one should not consider the countervailing buying power of Mila's customers to be substantial.

397) Similar circumstances pertain with the sale of GR local loops. GR, which had about 15% market share at the end of 2013, almost exclusively sells to itself as access to local loops is generally not sold separately although there are examples of this to certain larger companies. GR control does not operate directly on the retail market like the Skipti Group, as the situation is that most of that company's connections are used for broadband services which Vodafone sells on to users.

398) The relevant market is thus characterised to great degree by internal sales as about 70% of all purchases of local loop connections in this country take place within a company or a company group.

399) Transactions that do not take place within companies on the local loop market are first and foremost between Mila and Vodafone where Vodafone is a purchaser of just under [...] ¹⁶⁴ of total share of the relevant market ¹⁶⁵. This share is however decreasing as Vodafone has increasingly moved its customers from the Mila copper local loops to GR fibre-optic local loops.

400) The PTA conclusion is that purchaser countervailing buying power, that is to say of other electronic communications companies than Siminn, is subject to limitations because of the special position of that company resulting from its ownership relationship between Mila and Siminn and the very substantial transactions between them. The large share held by Siminn in retail also generally weakens customers' position.

4.5.2 Product diversification / bundling

401) Product diversification refers to how the consumer defines products and distinguishes between similar products. Clear product diversification in a company's offer can create trust in customers and can equally complicate entry for new parties into the market contrary to what happens when the product offer is more homogenous. Strong brand names have a comparable effect.

402) A company that is dominant on one market can leverage its position to bundle products on that market with products on another market with offers that competitors have difficulty emulating. If competitors do not have the possibility of making comparable offers, then this strengthens the dominant position of the company on the former market and create a competitive advantage on the latter. An advantage of this kind may need to be examined when markets strength on the latter market is assessed.

403) Mila has the special position on this market of being related to Siminn, which is ubiquitous on the market in this country and has a trademark developed over decades and for a long time had a monopoly in most areas of the electronic communications. In this instance Mila has a good position but one has to keep in mind that the relevant market is first and foremost at wholesale level where one can assume that the strength of a trademark is not as important as on the general consumer market.

4.5.3 Potential competition

404) This criterion is decided by the opportunities new companies have to enter the market. Should they have opportunities to enter the market this can impact tariffs and price structure of incumbent companies and can also limit their possibilities to maintain higher prices and can support innovation. If new competitors can be expected then this will lessen the tendency of incumbents to abuse their market power. It is necessary to examine this criterion from the point of view of access barriers (see Section 4.3). There is normally a correlation between access barriers and a lack of potential competition.

405) When new companies enter a market the reason is often that they aim to acquire incumbents' market share and profits. This risk exercises restraint on incumbents and competition that they try to react to in some way or other. An example of this is their endeavours to increase economy of scale and reduce unit costs. Increased variety in the form

¹⁶⁴ Removed for reasons of confidentiality

¹⁶⁵ PTA information from parties to the market, August 2012.

of quality or trademarks is also a measure to counter competition. High investment costs provide resistance and particularly where it requires reinvestment in existing assets (switching cost). In addition to this, limited access to the distribution channels can be problematic for competitors. Companies who are the first ones on the market can often leverage their experience and knowledge as an advantage over competitors who come later. Access to resources (for example frequencies), government action and technical changes can also impact the ability and interest of new companies to commence operations.

406) As has been stated here above, the PTA considers that a new local loop system would require considerable investment which would be to a great extent sunk, Particularly if the intention is to achieve economy of scale and market share on the relevant market. Economies of scale and concentration, which characterise access systems and apply particularly to the Mila access network, increase entry barriers for new companies.

407) The PTA concludes in this matter that there is little likelihood that new parties will enter and commence competition with incumbent network operators on the local loop market, particularly as a national level. Small local network operators concern themselves with providing inhabitants in their areas with access to fibre-optic where such a possibility has been highly unlikely without their intervention, rather than contemplate competing with Mila. In addition to this there is nothing to indicate that other network solutions like wireless connections will change much in the near future. Possible competition with Mila at a national level is thus not on the horizon during the period of validity of this analysis.

4.5.4 Pressure from substitute products

408) One can assume that on markets characterised by significant innovation, it is more difficult for companies to maintain and leverage their market power than on markets where there is little innovation. Technical developments that result in substitute products on the market can thus function as potential competition with incumbent companies and can weaken their dominant market position.

409) Substitute products were discussed in Section 2.3.1 here above, where it was stated that despite the fact that various new technologies had emerged in recent years, there were still no other products belonging to the market than copper and fibre-optic local loops.

410) In this country there is a widely distributed, copper local loop network and significant development has taken place in installing fibre-optic local loops. For this reason one can consider the relevant market to be mature in the understanding that a significant increase is not expected in the total number of local loops of the types existing today.

411) Nor is there any indication that there are other solutions on the market that fulfil the requirements made by the market for local loops, other than the existing copper lines and fibre-optic.

412) The PTA believes that there is no pressure on the market from potential substitute products and that it is unlikely that this will change significantly during the life cycle of the analysis.

4.5.5 Customer choice and potential switching costs/the effects of binding contracts

413) If a service provider has a dominant market position, limitations or costs to consumers of switching provider company can enhance that provider's opportunities to behave without concern for the market. Such limitations can be commercial, technical or financial in nature, but they can also be a consequence of the user trusting established service providers more than new ones and being unwilling to take the risk of switching providers.

414) One has to take into account the fact that in large areas of the country Mila is the only network operator that service providers can deal with. It is also a fact that despite the development of new systems, Mila has had its system in use since the inception of Internet use and it is thus inevitable that service providers have taken this into account and tried to adapt their systems to access Mila's copper network.

415) To replace systems in order to be able to transfer to another network, such as connecting to fibre-optic local loops, can be costly and time-consuming. Parties to the market have to a large extent avoided this by dealing with GR, which sells them bitstream access to the fibre-optic network, which means that the companies do not need to purchase the connection equipment needed to connect directly to their local loops. One must however keep in mind that with this, the companies descend in the value chain and control they have over the service they provide diminishes.

416) The PTA believes that because of the long history and scope of the Mila local loop network, where the company is also the only one on the market, Mila has a certain competitive advantage in this respect.

4.5.6 Conclusions on competition on the relevant market

417) Copper local loops are by far the most common form of access for Internet connections in this country. It is thus clear that Mila's position on the market is still very strong, particularly when one takes into account the impact of bundling of services from Mila and its sister company Siminn. As has been previously stated. Siminn is ubiquitous on the market and is one of the country's oldest trademarks. In addition to this Mila controls the only network with national coverage.

418) Buyers with a strong bargaining position can impact competition and seller operations in a variety of ways. In this country however it cannot be said that buyers' bargaining position is strong. Most of Mila's sales take place within the Skipti Group. This high proportion, along with Siemens strong position in the retail market, makes it possible for Mila to be more independent of other buyers than would be the case if unrelated parties had such a large share of their business in local loops.

419) Access to the GR local loops is considered to be sale within the same company. GR leases access to bitstream to service providers (in most instances in Vodafone), which takes a fee from users for general bitstream service, but does not collect a fee for access to the local loop. That fee is collected by GR itself and the user pays directly to that company. The largest part of GR revenue from local loops (about 98%) is therefore fees directly from end users, which means that there are not many examples of access to local loops being leased to service providers but rather the sales are taking place in parallel, that is to say that the same party purchases at the same time both local loop and broadband access. It should however be

pointed out that the company's retail department hardly exists and its situation is not comparable to that of Mila and the Skipti Group.¹⁶⁶

420) The relevant market is characterised by about three quarters of all sales being in fact internal sales and the development has tended towards increased internal sales. The PTA therefore concludes that customer countervailing buying power is not substantial.

421) Competition on the market is largely controlled by how consumers define products and distinguish between them. On the market in question Siminn is ubiquitous and is also a trademark that has been developed over decades and Mila enjoys the benefits of this. On the other hand one must keep in mind that the nature of the market as a wholesale market means that the strength of a trademark does not have the same force as it otherwise would have. The advantage that Mila has in this respect cannot therefore be considered to be as important as on a consumer market.

422) The possibilities of new competition are to a large extent limited, particularly at a national level. The possibilities for local companies to establish networks in their home region do however exist at many locations. It is not certain whether such local development is feasible on competitive grounds as other considerations often take precedence in such development over the consideration of profit. It is difficult to imagine that such development, should it take place, would be more than in just a few low population areas and would hardly change much with respect to market share in the country as a whole. The PTA thus does not expect there to be significant new competition during the life cycle of the analysis.

423) The PTA does not expect that the new technology, such as wireless network connections, would be able to replace existing local loops and become a substitute product for them during the period of validity of the analysis.

424) The possible limitations and cost for purchasers to switch between companies could inhibit competition. This particularly applies where one company has market dominance. In this country Mila was the only party on the market for many years and is still the only party on the market in large areas of the country. The PTA believes that because of this business history and its extensive business network, Mila has a competitive advantage on this market in this respect.

425) Competition between companies already operating is characterised in general by the Mila high market share throughout the whole country. All companies that operate electronic communications services need to rely to some degree on Mila and many have made substantial investments in work and equipment to connect to Mila's systems. To switch service provider can thus be both costly and time-consuming and there is the additional risk that services will be curtailed for some time. Mila thus enjoys an advantage from having been on the market for a long time and from the fact that many companies have business commitments to Mila. In addition to this, internal sales are very conspicuous with Siminn being the largest buyer.

426) The conclusion of the PTA market analysis of the relevant market is that Mila has competitive dominance on the relevant market. The company's market share, its size and

¹⁶⁶ GR collects and ISK 2410 access charge to fibre-optic directly from the users and it is the opinion of the PTA that such a charge is the equivalent of local loop leasing and part of the cost for bitstream access.

position are the reasons for this. It is also the view of the PTA that there are access barriers for new companies entering the relevant market.

5.0 Assessment of SMP on the relevant market and the designation of a company with SMP

5.1 General

427) Assessment of SMP - SMP is based on the ESA Guidelines on market analysis and on the various factors discussed in Chapter 4 here above. In accordance with the text of Paragraph 76 in the ESA Guidelines and taking into account existing market conditions, the PTA bases its assessment on analysis of the relevant markets as they are today and having taken into account development in recent years and prospects in the near future.

428) In Paragraph 1 Article 18 of the Electronic Communications Act no. 81/20030, the following is stated: *An undertaking shall be deemed to have SMP if it, either individually or jointly with others, holds a position of economic strength on a certain market which enables it to prevent effective competition and to operate to a substantial extent without concern for competitors, customers and consumers.*”

429) This is an important point of departure in the market analysis and PTA wishes to emphasise that SMP is the appropriate metric, not abuse of a dominant position. Therefore, the core of the market analysis is not whether an undertaking has misused its dominant market position. This does not however mean that an undertaking’s behaviour in the market does not make any difference in the assessment of SMP. Even though aspects of the form of the market weigh heaviest, practices which support SMP, or that maintain the competitive advantage of a company with SMP, can reduce competition on the market.

430) As is stated in Chapter 4 on market analysis, assessment of market share is on its own not sufficient to decide on whether a company should be designated with SMP on the relevant market. It is necessary to examine all relevant criteria. A decision on SMP cannot be based exclusively on one criterion, but rather it has to be based on a number of criteria and on interactions between them.

431) A company can be designated as having single dominance or joint/collective dominance. If the conclusion is that one company has SMP then one normally does not need to consider the question of joint dominance. If on the other hand the conclusion is that no company has SMP on its own, then one must examine whether the circumstances that pertain for joint dominance. In addition to this, a company that has SMP on the relevant market, can also be considered to have SMP on a related market. If the connections between the markets are such that the company can leverage its market strength on one market in order to increase its market strength on the other, see Paragraph 2 of Article 18 of the Electronic Communications Act.

5.2 Assessment of SMP on the relevant market

432) Five companies have for some time been operating on the relevant wholesale market: Mila, Gagnaveita Reykjavíkur (GR), Tengir, Gagnaveita Skagafjarðar (GS) and Fjarskiptafélag Örfæinga¹⁶⁷. In January 2013 Fjarskiptafélag Skeiða- og Gnúpverjahrepps (municipality) commenced operations and Hvalfjarðarsveit Municipality commenced in

¹⁶⁷ With an agreement from 2012 the municipality Sveitarfélagið Hornafjörður has become an operating party of the Örfæinga system.

March 2014. Civil works for the introduction of fibre-optic are ongoing in Skagabyggð and in Mýrdalur but the electronic communications companies in question have not yet been notified to the PTA for registration. This means that there are eight companies on the market and soon they will be ten. As has been stated there is substantial concentration on the market and six of these companies have jointly about 2% market share, GR has about 15% market share and Mila has 83% market share as of the end of 2013.

433) The general rule is that a company is considered to have a dominant market position if it has more than 50% market share. According to this, the Mila market share is well over the guideline which indicates its SMP on the local loop market. Besides this, Mila is part of the Skipti Group, which is the largest electronic communications company in the country.

434) It was stated in Section 4.1 that market share does not, on its own decide whether a company has SMP but there is considered to be a *prima facie* likelihood that a company with more than 50% market share has market dominance. A market share of about 83% at the end of 2013, a lack of substitute service along with the access barriers that other companies must face on the relevant market that are described in Chapter 4, indicate decidedly that Mila has SMP on the relevant market.

435) In Chapter 4 on market analysis, there was discussion on the competitive position of companies on the relevant market for local loops. It was stated that local loops are still limited to fixed line connections and must be laid underground and that despite various innovations and developments on the market, there are still significant barriers facing electronic communications companies that wish to establish themselves on the relevant market. The access barriers that mainly face new companies are control of infrastructure difficult to duplicate, sunk costs, economy of scale, economy of scope, access to capital, barriers to growth, developed service systems of the dominant parties to the market and vertical integration. In the light of this and because of how extensive and large, the Mila system is, along with the substantial cooperation with its sister company Siminn, one can assume that the company can maintain its strong position on the market against competitors during the life cycle of this analysis.

436) On the basis of the above and the conclusion from the analysis of the relevant market for wholesale access to network infrastructure at a fixed location it is the conclusion of the PTA that competition is not active and that Mila has SMP on the relevant market, see Paragraph 1 of Article 18 of the Electronic Communications Act. In the light of this, the PTA intends to designate the Mila as having SMP on the market for wholesale network infrastructure access at a fixed location.

437) With the above conclusion in mind, the PTA does not consider any need to discuss the question of joint market dominance.

6.0 Analysis of the wholesale market for bitstream access (Market 5)

6.1 Introduction

438) When a market has been defined then the next step is to analyse competition, keeping in mind the factors that influence market power and to establish whether the power of one or more companies is significant. The factors that are used to measure market power depend on the characteristics of each market and it is in the hands of the regulatory institutions to evaluate which factors shall be examined in each instance. In the Guidelines on market analysis¹⁶⁸ one can find a list of the criteria that can be used when assessing SMP and the criteria that the PTA considers important will be discussed here below. The list published in the Guidelines is not exhaustive and the PTA is authorised to add other criteria to the list that could apply.

439) In the previous PTA analysis of the relevant market which was published on 18 April 2008 the bitstream market was defined which was Market 12 according to the ESA Recommendation then in force from 2004. In 2008 the ESA published a new Recommendation where markets were defined in the new manner where the market for wholesale access to bitstream is Market 5. Material changes were not made to the definition of the market and this market analysis will take that into account.

440) In this country there are three companies that are largest on the market for wholesale bitstream access: Siminn, Vodafone and GR.¹⁶⁹ Of these companies Siminn has the largest share. The company provides its broadband services almost exclusively on the Mila copper local loops and as previously stated Mila's local loop network is the largest in the country and has national coverage. The Mila bitstream system was developed within Siminn which is related to Mila, as both companies are members of the Skipti Group. From and including September 2013 Mila has taken over operation of Siminn DSL and GPON system in accordance with the Settlement between Skipti and the Competition Authority from March 2013. At many locations Vodafone has DSLAM equipment for ADSL on the Mila local loop network and is also a wholesale customer on the GR network. GR provides broadband services in wholesale on its own fibre-optic network which has been under development in the south-west corner of the country in the past years.

441) Those households that do not have broadband access to a fixed network are variously connected with radio connections at market rates, or they are covered by the Act on the Electronic Communications Fund no. 135/2005. About 1800 households that had not been connected solely on the basis of market rates have been connected with the support of the fund.¹⁷⁰ Siminn was successful in the Electronic Communications Fund call for tenders in September 2008 and has connected the places in question, mostly with 3G technology and also with satellite connections.¹⁷¹

¹⁶⁸ See Chapter 3.1 in the Guidelines.

¹⁶⁹ Smaller local companies on the market are among others: Snerpa which operates in Ísafjörður, Netsamskipti which operates in Reykjanesbær and TSC in Grundarfjörður. The market share of these companies is negligible at a national level.

¹⁷⁰ Telecommunications fund, see

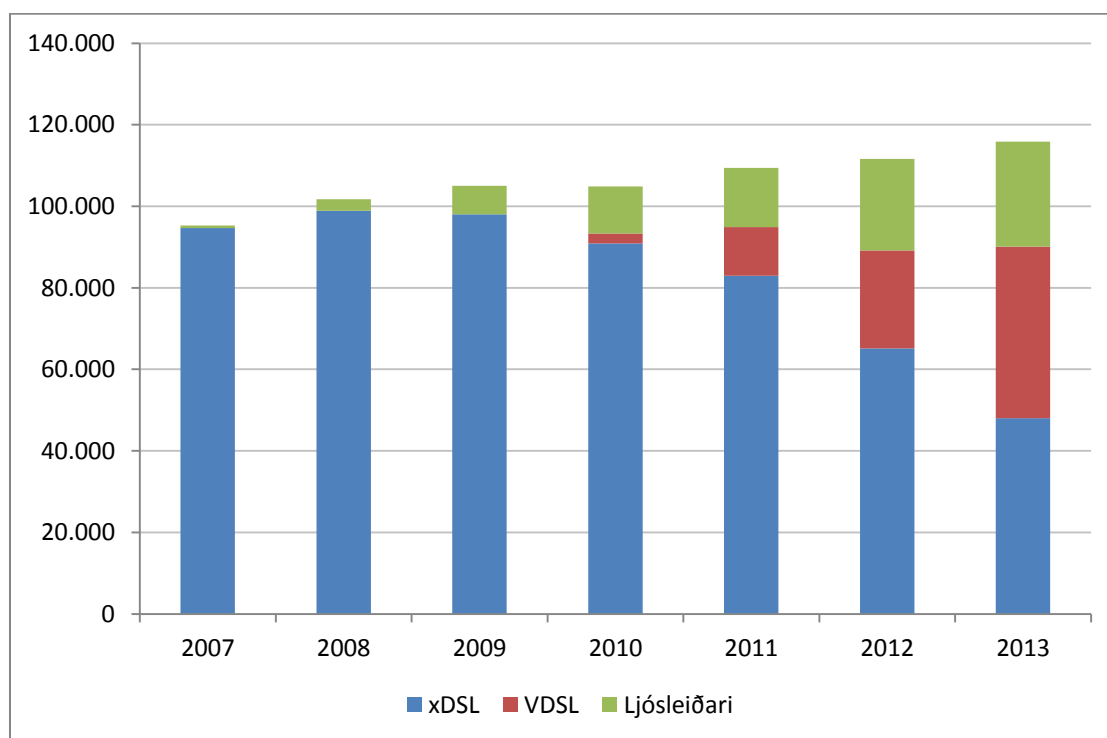
http://www.fjarskiptasjodur.is/default.asp?cat_id=8&module_id=220&element_id=171 (29.11.11).

¹⁷¹ www.rikiskaup.is see call for tenders no. 14121

442) As is stated in Chapter 2 here above, broadband connections have mostly been made through ADSL or were copper local loops up until recently. It was also stated there that since the publication of the last analysis there have been some changes in the offer of technology that can be used to transmit bitstream. Both fibre-optic and the VDSL system have entered the market recently. For this reason potential substitutability in broadband connections of the fibre-optic network and the VDSL standard has been examined and the decision was reached that this substitutability does exist in certain areas but that other possible substitutability for broadband access was not sufficient. The PTA assumes that it is on the one hand broadband connections through the ADSL system and on the other hand fibre-optic that form the wholesale market that provides service providers with bitstream access.

443) This change in access technology has had a significant impact and in recent years the connections that use fibre-optic or the VDSL system have increased substantially. Figure 6.1 shows this development well along with the changes that have taken place in broadband connections.

Figure 6.1 Number of broadband connections at fixed location by type from 2007 to 2013



Source: Post and Telecom Administration

Notes: xDSL connections in this figure are first and foremost ADSL connections and other DSL standards apart from the VDSL are included there.

444) It is clear that the composition of broadband connections has changed in recent years. In 2007 almost all broadband connections are ADSL and are on the Mila copper network but since 2009 broadband connections by fibre-optic increased and in 2011 VDSL connections began to increase rapidly. At the end of 2013 there were thus more than 22% of broadband connections on fibre-optic and more than 36% broadband connections were through the VDSL standard. The development in past years indicates that broadband connections through both VDSL and the fibre-optic network will increase in coming years at the expense of ADSL connections.

445) As with local loop connections it is interesting to note that broadband connections have not increased significantly overall despite major technical changes. It is thus clear that broadband connections that use fibre-optic local loops and VDSL technology are not simply an addition to the market but rather that they are replacing existing connections.

446) The market here being examined is the wholesale market. In Section 2.2.1 the retail market connected to the local loop market was covered and it is necessary to understand how these markets are connected and how circumstances on the wholesale market impact the retail market.

447) Here below, the competition conditions on the relevant market will be assessed with the main influencing factors in mind. Following this, in Chapter 7 there will be an assessment of whether some company has SMP on the relevant market.

6.2 Market share

448) A company's market share is an important factor in market analysis. It is however not the only factor that decides whether a company is designated as having SMP, but it can however, give strong indications about whether SMP exists or not. A very significant market share market share, that is to say over 50%, is on its own sufficient according to accepted case law, to rule that a company has a dominant position, except in exceptional circumstances. According to the Guidelines a suspicion that single dominance is in existence with one company does not arise until market share has reached at least 40%. This depends, however, on the size of the company in comparison with its competitors. In some instances a company with a market share of less than 40% can have single dominance. A company with market share of less than 25% would in all likelihood not be considered to have dominance, except in the case where it had joint dominance with another undertaking.

449) Development of market share over a given period of time is also significant in the assessment of whether the company has a dominant market position. Should a company have a non-transitory high market share then this indicates a dominant market position, while on the other hand a fluctuating or falling market share will indicate the contrary. In new and growing markets a high market share is less of an indication of market strength than on a mature market with slow growth.

450) Unlike Market 4, Market 5 was not changed in the new ESA Recommendation from November 2008. On the other hand the development and the changes that have taken place on the local loop market have a direct impact on market share of the wholesale broadband market. In particular the development of the fibre-optic network has brought about changes so one must take this particularly into account.

451) In the previous PTA analysis from April 2008 Siminn was designated as having SMP and at the end of 2006 it had over 60% market share of the relevant market while no other service provider controlled more than a 25% market share. With the agreement between Skipti and the Competition Authority in 2013, the Siminn sister company, Mila, has now taken over the Siminn DSL system which means that Siminn no longer operates on the wholesale market.

452) In this country today there are three companies that are by far the largest in the development and operation of broadband access: Mila, Vodafone and GR and in addition to

these companies there are some small local systems at various locations around the country. The Mila access network is mostly based on DSLAM equipment on the Mila copper local loops. GR only sells bitstream on its fibre-optic local loops. Vodafone has its own DSLAM equipment on the Mila local loops, purchases bitstream access in wholesale from Mila xDSL systems and in the GR fibre-optic network and in addition to this it has agreements with smaller utilities at many locations around the country.

453) Siminn is part of the Skipti Group and is a service provider while Mila, another company within the Skipti Group, mostly operates an access network to electronic communications infrastructure and does not operate on the retail market. A large part of the Siminn and Mila development took place while those companies were state owned and had a monopoly in electronic communications operations. Mila has very large distribution throughout the whole country and this can be attributed to the situation Siminn was in in the past and thus the network was not entirely developed on the basis of market criteria. Siminn is almost entirely on the Mila network which has its own local loop network reaching almost all citizens of all their local loops can vary in quality and their distance from telephone exchanges varies.

454) Vodafone came into existence in 2005 with the merging of a number of companies that had operated on the electronic communications market for a number of years. These companies were Íslandssími, Halló and Margmiðlun. For a long time Vodafone was part of the company group known as Teymi hf. but that company has been split and Vodafone is no longer part of the group of companies that formed Teymi.

455) Gagnaveita Reykjavíkur (GR) is owned by is owned by Orkuveita Reykjavíkur (OR) and was founded as a private limited company in 2007. Prior to that the company had been a department within OR and before that it had been a company owned by the city of Reykjavík, Lína.Net. Lína.Net commenced the introduction of fibre-optic in Reykjavík in 2000. The purpose in founding the company was to offer homes and companies access to a high-speed data transmission system with the guiding vision that high-speed data transmission would improve quality-of-life and the competitiveness of the Icelandic nation.¹⁷² GR has mainly concentrated on installing a fibre-optic network in the OR market territory in the capital city area and in South West Iceland and has made agreements to this effect with a number of municipalities in its operational territory.¹⁷³

456) The PTA considers that the best way to give a realistic picture of the position and strength of parties on the bitstream market is to use the number of connections in use as a basis for calculating market share in wholesale, rather than turnover figures. The reason for this is that is that the companies that are largest on the market (Mila, Vodafone and GR) use different criteria in their service offer and business relationship with users. GR sells broadband access directly to users in parallel to access to local loops. Vodafone only sells broadband access while Mila sells access to broadband and local loop access as separate products. On the other hand the reason is that it is difficult to estimate internal sales of the companies, particularly for GR and Vodafone, which calls for estimating turnover in wholesale from estimated information and such calculations are subject to uncertainty. Given the above, it is the PTA conclusion to use the number of connections as a reference in calculating market share on the wholesale market as this is a more exact metric than estimated turnover figures from income from internal sales in wholesale.

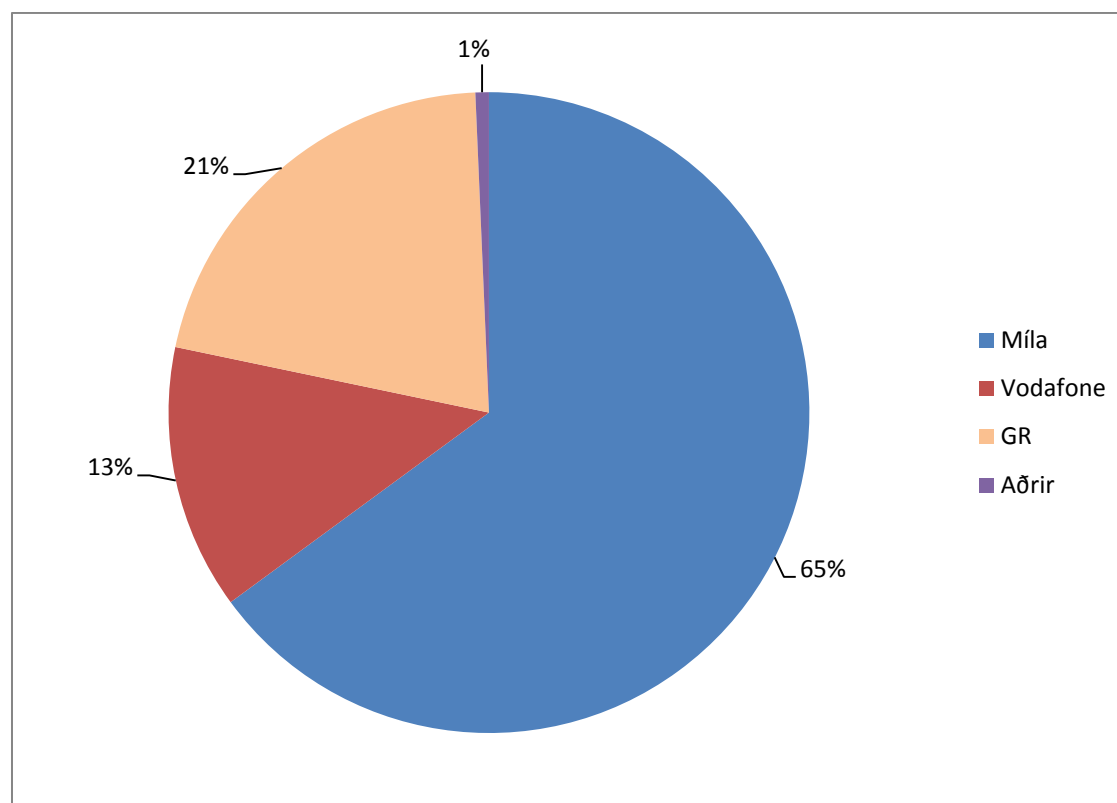
¹⁷² <http://gagnaveita.is/UmGagnaveituna/> (13.02.2012).

¹⁷³ The municipalities are: Reykjavík, Akranes, Hveragerði, Hella and Hvolsvöllur.

457) Since the previous PTA analysis of the market there have been significant changes, first and foremost because of a great increase in fibre-optic local loops and because of the migration of service providers between systems. The main changes are that GR has established itself on the market with the development of its fibre-optic network and the company IP-fjarskipti (then Hive, now Tal) has left the market in question with the purchase of the Hive DSL system by Vodafone. During the latter part of 2012, Tal moved most of its customers from the Vodafone DSL system over to the Mila DSL system.

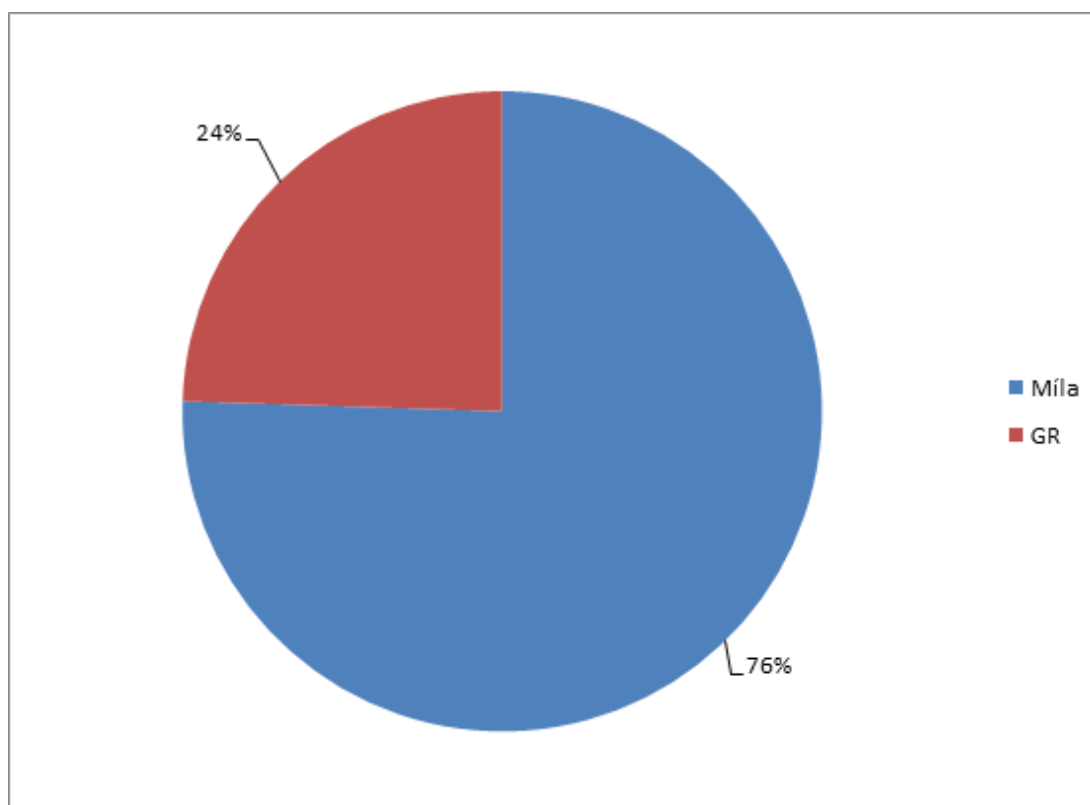
458) The Mila market share in all of bitstream access connections was about 65% at the end of 2013. The GR market share was about 21% and Vodafone had about 13% at the same time while other operators were much smaller with a joint share of less than 1% market share. Vodafone however only operates an ADSL network in Reykjavik and limited parts elsewhere. After Tal moving its procurement of bitstream from Vodafone to Mila Vodafone has no wholesale customers to speak of, almost only supplies it's own retail service. The other very small operators in the market also only supply each their own retail service. Taken this self-supply into account and excluding it from the size of the market Mila has a calculated 76% market share of bitstream connections in wholesale and GR 24%. Looking forward, the possibilities of Vodafone exerting competitive pressure upon Mila's bitstream operations are diminishing every year as they are operating a legacy ADSL system in a market quickly developing and moving to a more capable VDSL and fibre technology. PTA is of the view that Vodafone's ADSL system does not have the capability to constrain Mila's behaviour in the market for bitstream when looking forward, and finds that the most relevant market situation to be that Mila has 76% share and GR 24% for wholesale of bitstream.

Figure 6.2 Share of bitstream connections by company at the end of 2013



Source: Post and Telecom Administration.

Figure 6.3 *Calculated share of wholesale of bitstream connections at the end of 2013*

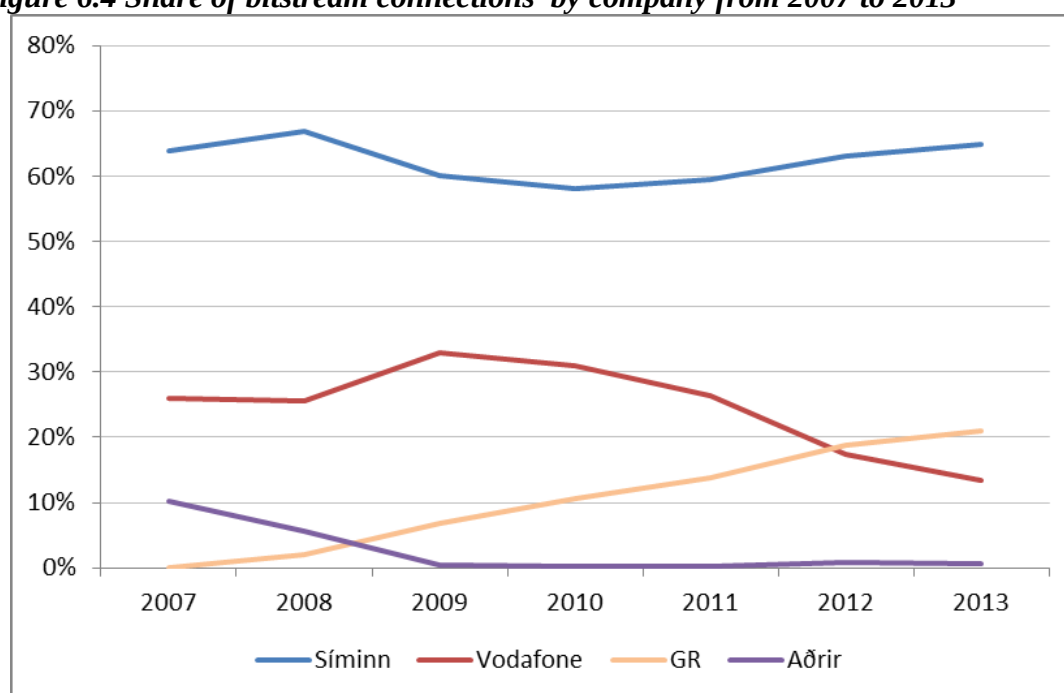


Source: Post and Telecom Administration.

459) Because of the magnitude of internal sales of service providers on the bitstream market it is unavoidable to also consider the retail market and to investigate whether discernible changes have taken place in the positions of the companies since the publication of the last analysis. As is stated in Section 2 and shown in figures 2.6 and 2.7, Siminn has retained more than 50% market share in retail sale of Internet connections from 2007 and at the end of 2013 it had approximately 52% market share by the total number of network connections through copper and fibre-optic local loops. Vodafone has at the same time maintained its share at a little over 30% during the period whereas there has been a significant reduction for Tal during recent years where their share had dropped to less than 10% at the end of 2013.

460) The development of market share in wholesale bitstream access is shown in figure 6.3. Mila, former Siminn, has increased its share and the transfer of Mila customers from the ADSL system over to VDSL has strengthened the company's competitive position. The GR share has increased significantly in recent years to about 21%, 24% when Vodafone's self-supply is discounted, and the company is the second largest on the market. The GR increase has however not had a significant impact on the Mila position on the market as in recent years the Vodafone share of the wholesale market has declined significantly where the main reason is that Vodafone has been transferring its customers from its own DSL systems over to the GR fibre-optic network. In addition to this Tal has transferred its business from Vodafone to Mila (previously Siminn). The Vodafone market share had dropped to 13% on the wholesale market at the end of 2013. The company's position on the retail market has at the same time remained relatively steady during the period. As stated previously Tal no longer operates on the wholesale market.

Figure 6.4 Share of bitstream connections by company from 2007 to 2013



Source: Post and Telecom Administration. – Mila operates the Siminn wholesale since sept. 2013

461) One can assume that this development will continue during the coming years and that more Vodafone customers will move to the GR system as that system spreads out and as uptake by end users increases, as this seems to be the policy of both companies. An innovation in Mila product offer, the VDSL system, has not been on the market for long but its impact is just starting to register at this point in time. It seems that its introduction has had some effect as many users are connected to this system and there are indications of a deceleration in the increase of fibre-optic broadband connections. The Mila introduction of VDSL is thus this Skipti Group counterbalance to the GR fibre-optic developments in the capital city area and to those of other local network operators around the country. Siminn and Mila appear to place considerable emphasis on transferring their customers from ADSL over to VDSL when it is on offer. Subsequent to the PTA Decision no. 38/2012 Vodafone has now decided to request VDSL access from Mila at several locations and it is likely that this trend will continue in the coming months and years. So it is likely that Mila will hold its position quite well on the relevant market during the life cycle of this analysis.

462) When market share is examined it is also important to have concentration of the market in mind. A common method to measure concentration on a market is the HHI index.¹⁷⁴ The HHI index for market share in this country at the end of 2013 is about 0.64, which indicates very high concentration.

463) With respect to market share of companies on the bitstream market one can assert that it is characterised first and foremost by 3 salient features. These are Mila's strong and stable position on the market, a substantial increase in GR share mostly at the cost of Vodafone and finally the considerable concentration on the market (HHI index 0.64).

¹⁷⁴ Herfindahl-Hirschman Index. The value of the index lies between 0-1. The higher the value the greater the concentration on the market. If the result is less than 0.1 then action is considered unnecessary. If the result is in the range of 0.1-0.18 then there is average concentration and over 0.18 there is significant concentration.

464) The development of the Mila market share has been steady during the past five years having been around 60% during the period and was 65% at the end of 2013. It is expected that Mila will maintain this dominant position during the lifetime of the analysis. If the calculated share is 76%, taking Vodafone self-supply into account, the dominant position is even stronger. Mila's possibility of maintaining this position is among other things due to the introduction of VDSL that was started by Siminn, which provides a strong counterbalance to the introduction of fibre-optic by other network operators. In any event, Mila market share increased most towards the end of the period, i.e. 2012-2013.

6.3 Overall size of a company

465) The size of the company for example on the basis of turnover or of some other metric, can be important when assessing SMP. If the company is significantly larger than its main competitors, then this can mean competitive dominance. Dominance can be in better production methods, more economic procurement, economic strength, access to capital, wider distribution and strong marketing. A company with longer specialised experience on the market than that of its competitors has similar dominance, for example in specialised knowledge in technical matters, knowledge of markets and of the legal environment.

466) Characteristics best suited for comparison are turnover and company revenue on the electronic communications market and economic strength, for example in the form of equity ratio and total assets.

467) Skipti is the largest electronic communications company in this country and has major and long experience of telecommunications. Organisational changes in the Skipti Group to which Siminn and Mila belong has not brought any changes with respect to the overall size of the company or to its experience on the electronic communications market as the same electronic communications operations are within the group as before. The company is as before by far the largest electronic communications company in the country. The total turnover of the Skipti Group, that is to say of Siminn and Mila on the Icelandic market was ISK [...] ¹⁷⁵ billion in 2012 which is [...] ¹⁷⁶ of total turnover on the electronic communications market.

468) Vodafone has now operated on the electronic communications market for more than a decade and thus has significant experience of electronic communications operations. Further to this, Vodafone has an agreement with the International Vodafone group on cooperation in marketing and service issues and also has the use of its trademark. One can assume that this agreement strengthens the company to some extent, for example with respect to marketing and to a more varied service offer to users located abroad. Vodafone had revenue of ISK [...] ¹⁷⁷ in 2012 of its operations in Iceland which is about [...] ¹⁷⁸ of total turnover on the electronic communications market.

469) Siminn and Mila are part of the Skipti Group, which is the largest electronic communications company in the country where Mila among other things controls most local

¹⁷⁵ Removed for reasons of confidentiality.

¹⁷⁶ Removed for reasons of confidentiality.

¹⁷⁷ Removed for reasons of confidentiality.

¹⁷⁸ Removed for reasons of confidentiality.

loops in this country. This and the fact that Mila is now also the largest company on the broadband market can result in competitive dominance for the company.

470) Competitive dominance is among other things, because Mila enjoys more economy of scale in its operations than other companies. This can among other things, be manifested in more economical procurement, in production methods, in distribution and marketing.

471) Competitive dominance of the largest company can also be in the fact that its access to capital is easier and also because capital can often be acquired at more advantageous terms. This particularly applies to an economically strong company. Circumstances in this country have on the other hand been such that virtually all companies have faced financial problems, subsequent to the bank crash in 2008. Companies have been in financial restructuring, most recently Skipti in 2013 and currently GR. or are heading in that direction and more often than not such a process involves change of ownership. Vodafone has also gone through such financial restructuring. It is not possible to say that any company on the local loop market enjoys financial strength to the extent that it affords the company a significant competitive advantage, except possibly over new parties to the market.

472) The PTA assumes that other service providers will not significantly grow larger than they are currently and that the changes that might occur will not threaten Mila's dominant position during the period of validity of the analysis.

473) The PTA has taken into account the size of Mila on the electronic communications market as a service provider of broadband along with the size of the Skipti Group of which Mila is a part. It is the PTA conclusion that the size of Mila and the Skipti Group in comparison with competitors, strengthens the Mila's position on the relevant market.

6.4 Entry barriers

6.4.1 General comments on barriers to entry

474) Entry barriers is a collective name for various factors that can influence companies' market power. If there are few barriers to a market then possible profitability is an attraction for new companies to gain market share from the incumbents. Possible competition from new parties can influence the behaviour of a company with SMP and can diminish its harmful influence on competition. Entry barriers on the other hand weaken or prevent competition.

475) There is a strong relationship between entry barriers and profitability. The more entry barriers that exist, the greater the profitability that can be expected from incumbent companies, which can often be attributed to a lack of competition rather than to efficiency. An ideal situation for an incumbent company is one where there are many entry barriers and few exit barriers. In such circumstances incumbent companies deter new companies from establishing themselves and companies without profitability will easily give up.

476) The objective of the PTA market analysis and possible subsequent measures is to strengthen competition on the relevant market. It is conducted for the purpose of encouraging innovation and development, of enhancing companies' competitiveness and the interests of consumers. One way to achieve this is to limit entry barriers to markets, which can be in varying forms. Here below there will be more detailed discussion on the main barriers that are considered to prevent entry of new parties to the bitstream market.

477) The entry barriers that confront companies on the relevant market are to a large extent attributable to the strong position of the Skipti Group and on the other hand to difficulties encountered by new electronic communications companies in creating infrastructure they need to compete on the market. The former category includes control of infrastructure that is difficult to duplicate, economy of scale, economy of scope, access to capital and vertical integration. The latter category can include sunk costs, restrictions to growth and costs for service systems.

478) Entry barriers usually have their roots in the development and position on the electronic communications market, but in some instances there is a risk that a party with SMP could see an advantage in making it difficult for competitors and delaying their entry to the market, for example by refusing requests for space in telephone exchanges, by setting restrictive conditions on access for repairmen to buildings that house leased facilities and so on. It is important to discuss possible entry barriers on the relevant market and take a position on whether these are real barriers or not.

6.4.2 Control of infrastructure that is difficult to duplicate

479) When a company has control over infrastructure that is difficult or expensive for others to duplicate, this can be a significant barrier for competitors. An example of such infrastructure is a fixed line telephone network. Infrastructure difficult to duplicate more often than not requires substantial investment so it is necessary to examine this factor in connection with the discussion on sunk costs in Section 6.4.3.

480) It is possible to reduce investment costs by cooperating on electronic communications structures, that is to say colocation or other sharing of networks. Co-location means among other things where new parties install their equipment at locations already used by other companies with similar needs where they jointly use important connection points. Savings from this can be significant, particularly in rural areas. Sharing can variously be on the basis of free agreement, agreements reached on the basis of an obligation Pursuant to Article 25 of the Electronic Communications Act or on the basis of obligations imposed for access, pursuant to Article 28 of the Competition Act.

481) The market for broadband access is certainly higher up the value ladder than the local loop market and there is no need for such extensive infrastructure as the laying of underground local loops to homes would be. It is normally sufficient to install equipment in a telephone exchange or in a street cabinet (for example DSLAM in the case of xDSL connections).

482) It is on the other hand not always an easy matter to find space for equipment at the relevant locations. In many locations in the country, for example in the capital city area, there is a lack of infrastructure for electronic communications equipment in the high density building that pertains and all land in residential areas has been planned. Buildings owned by Mila, which owns and operates all copper local loops in the country, are already full to bursting point at various locations while an access obligation rests on the company with respect to lease of infrastructure pursuant to the PTA Decisions nos. 26/2007 and 8/2008. GR to some extent uses buildings owned by Orkuveita Reykjavíkur (OR) but there are no obligations on OR. GR leases facilities to a certain degree in Mila premises.

483) New parties to the market must furthermore have the option of installing equipment near telephone exchange distribution frames or in other analogous node points of electronic communications networks and this applies equally to full and shared access. In some instances it could be a possibility to locate equipment in other buildings close to the telephone exchange, but more often than not, there is no option but to find space for the equipment in the telephone exchange in question and to ensure access to the equipment for monitoring and maintenance. It can however sometimes be difficult in some instances because of lack of space.¹⁷⁹ Built-up areas can be difficult for companies to erect new buildings for their terminal equipment as building land is often not available and where it is, the cost of buying is high. Denial of requests for facilities or abnormal fees can be an insurmountable barrier for new companies on this market. It should however be noted that there is an obligation for price control on the Mila with respect to lease of facilities.

484) One has to particularly take into account the special position of the VDSL system. Although there is no technical reason why more than one party should not install VDSL DSLAM equipment in a street cabinet the situation is however such that space in street cabinets can be limited and it can prove difficult to find space for equipment from more than one party and in addition to this it can be difficult to connect more than one service party to fibre-optic local loops in a street cabinet and there is a possibility of crosstalk in the distribution frames of copper local loops. New parties and the VDSL market could therefore need to direct new buildings for their equipment but this is expensive and it is not certain that permission would be granted for this. In the case of the VDSL system it is very important that DSLAM equipment is as near as possible to the end user as its performance declines rapidly the greater the distance.

485) The Mila xDSL system virtually has national coverage which makes it desirable for other network operators to acquire access to the system in order to avoid multiple investments in infrastructure in the relevant market. Vodafone has among other things requested bitstream access to the Siminn (now Mila) ADSL network through Access Option 1 which was stipulated in the PTA Decision no. 8/2008 on the relevant market. This means that Vodafone would operate its own backbone network to telephone exchanges and only use Mila's DSLAM equipment and the copper loops themselves from DSLAM to the end user (household). With the PTA Decision no. 38/2012 the PTA came to the conclusion that Siminn (now Mila) was obliged to provide Vodafone with VDSL Access according to Access Option 1 with multicast. For this reason Vodafone can now offer end users its IPTV system on Mila's systems.

486) The PTA considers that lack of facilities is widespread in the most densely populated areas of the country and that this can be a serious barrier to competition. In particular there is a lack of available facilities for VDSL equipment. In addition to the price one must consider it impractical and even detrimental to operational security that staff need to open street cabinets and move connections for telephone lines between equipment within the cabinet or between street cabinets, even many times a week, when customers switch between service providers.

487) The PTA concludes that control of infrastructure and of buildings is particularly important on the relevant market, a shortage of facilities at some locations and the risk of disruption and/or delays in the processing of applications for lease of facilities could be a

¹⁷⁹ See for example decision of post-telecom administration 24 July 2004 on complaint by Og fjarskipti hf. about discrimination by Landssími Íslands hf. with reference to access to distribution frame in Árbær.

serious barrier to competition. The above could strengthen Mila's position on the relevant market as part of the Skipti Group, among other things because of the historical position of the company and its distribution across the whole country.

6.4.3 Sunk costs

488) When a company enters a new market it needs to perform certain preparatory work and to invest in start-up costs. If entry to a market fails it can sometimes be possible to recover such costs, for example with the sale of investments and equipment. Sunk costs are those costs that the new entrant has to bear as a loss should he not be able to establish himself on the market. Sunk costs are a barrier to entry, because the incumbent companies on the market do not have to bear them because the cost in most instances has already been paid and even written off. The new companies that are finding their place on the market (particularly in mature markets) are at a greater risk of having to bear sunk costs than the incumbents who have already written off a large proportion of their investments.

489) Costs, for example for marketing are generally highest at the beginning of operations. If a new party is to attract a significant share of customers from incumbent companies, it will presumably need to invest heavily in extensive marketing. Sunk costs can be in investments in electronic communications equipment and business costs related to marketing, particularly with young companies that are trying to gain a foothold on the market. One can assume that sunk costs are likely to be high in Iceland for geographical reasons and because of the sparse population.

490) As has been previously stated it is not easy for companies to install their own DSLAM equipment, connected to the VDSL system, in street cabinets or in analogous structures where such equipment is already in situ. The problem was first and foremost lack of space and companies that aimed to adopt VDSL would often need to pay substantial amounts to be able to house the relevant equipment. Nor is it certain how this would be possible both technically and logistically. Nor is it likely that companies will make significant investments in ADSL systems at this point in time as it appears that the majority of citizens will have access to greater data performance in the form of VDSL and fibre-optic in the coming years. It is therefore clear that if a new company intends to operate with its own VDSL equipment then it would need to construct buildings to house such equipment, in the event that this were possible. It is likely that there would be a poor return were it necessary to sell such equipment and buildings.

491) In the case of bitstream through fibre-optic there have not been many instances of companies being offered access to fibre-optic local loops that is to say local loops without service (dark fibre). Such service has been offered by GR to a limited degree while other fibre-optic network operators are much smaller and have a negligible market share of the national market. As has been stated previously that Mila only installs fibre-optic in greenfield districts while the development of such districts has been almost at a standstill in recent years, though things appear to be looking up in this respect in recent months.

492) The service provider that plans to develop his own bitstream system on leased fibre-optic local loops needs to make a significant investment in network equipment and to acquire space for such equipment at node points. The installation of equipment to provide broadband services with shared access to fibre-optic local loops is probably technically possible but this

option is hardly realistic given current status because of technical difficulties and high costs.¹⁸⁰

493) A new network operator on the bitstream market also needs to be able to offer his potential customers, that is to say service providers that supply among other things Internet services to end users, various additional services that other network operators offer. The most important of such services is IPTV. Under current circumstances it is proved difficult for network operators to acquire access to IPTV services which means that the part in question may possibly need to invest in their own IPTV system. The cost of such an investment is mostly fixed cost and is divided between more end users with larger network operators. It is also difficult to see that the cost of the IPTV system in question can be recouped except to a very small degree should the system be discontinued.

494) In addition to this there are marketing costs. It is established that it is necessary to incur high costs in promoting a new company/trademark in order to create user awareness. It is also necessary to present the company's operations and the solutions it is offering, both of which can be very expensive. Marketing costs are normally highest at the outset and there is no certainty that any of these costs can be recouped should market entry not be successful.

495) One can allow for sunk costs in relation to wholesale bitstream being quite substantial. It is expensive to acquire DSLAM equipment for VDSL and this investment cannot be used for any other purpose. In the case of fibre-optic it is difficult to assert that it is possible for a company to acquire such equipment. In addition to this the initial costs with an IPTV system and its marketing can be substantial and are mostly sunk costs.

496) The PTA concludes that the necessary costs incurred by a company to enter the broadband market (where it is possible) are generally speaking substantial and to a great degree sunk costs. The PTA considers that sunk costs can to a significant extent be an entry barrier for new companies.

6.4.4 Economy of scale

497) Economy of scale is said to exist in company operations where increased production means a lower total cost for a product or service unit. This is characteristic for technical companies which have relatively high fixed costs and low variable costs. Economy of scale can act both as an access barrier and as a market advantage. Service providers on the market endeavour to operate their systems with as good usage is possible. New network operators need time to develop their operations, gain a customer base and traffic and can thus not expect to enjoy the same economy of scale as those that have operated their networks for years.

498) With respect to the market for bitstream, the offer of bitstream services has economy of scale in proportion to the scope and range of the system operated by the party in question because of the substantial underlying investments and fixed costs inherent in such services. Economy can for example be in lower initial costs as a result of bulk purchase of equipment and in the same way economy of scale in operations is related to for example the minimum number of repairmen and other staff needed to provide adequate services. Economy of scale in data transmission systems is particularly manifested in the number of staff required for

¹⁸⁰ See the opinion of the EU Commission on OFCOM analysis of market 4 in June 2010. (EU Telecom Flash Message 54/2010).

operations and surveillance. A minimum number of staff is needed for the above specified tasks but as systems grow larger it is unlikely that the number of staff will grow in proportion to growth in the number of customers. In addition to this it is also unlikely that the cost of new and more powerful equipment will increase in direct proportion to growth in the number of customers.

499) Mila's bitstream service is supplied to most customers, that is to say about 76% of the total market. There is nothing to indicate otherwise than that Mila's possibilities to achieve greater economy of scale than other companies on the market are substantial. This particularly applies in the light of the fact that the company closest to Mila in size, that is to say GR, only has about 24% market share at the end of 2013.

500) The PTA considers that Mila on its own and as part of the Skipti Group enjoys economy of scale which is manifested in a strong market position against new companies in the market. This can manifest itself as an entry barrier for the latter companies.

6.4.5 Economy of scope

501) Economy of scope is the economy where it is less expensive to manufacture two or more goods together rather than each separately. A lower cost is achieved by jointly using resources in the production. A good example of this is the use of an electronic communications network where a variety of services are offered to consumers. Economy of scope can act both as an entry barrier for new parties and as an advantage in the market over competitors.

502) As previously stated Siminn is the largest company on the broadband market with about 76% share of the wholesale market and Gagnaveita Reykjavíkur 24%. Other companies are hardly measurable on the relevant market. Wholesale bitstream access is only part of the product range that these three previously mentioned companies offer.

503) Mila, the largest company, is part of the Skipti Group which is involved in almost all branches of the electronic communications market in Iceland. The most comprehensive electronic communications networks in the country are operated within the Skipti Group, both in the fields of fixed line and mobile phone services.

504) In addition to offering bitstream service in wholesale Mila has offered a wide range of wholesale services in most if not all sectors of the electronic communications market. Mila is also the largest wholesaler of electronic communications services whether measured in turnover or market share. This leads inevitably to possibilities for economies of scope existing, for example in better access to customers for wholesale services.

505) Mila also enjoys economy of scope by operating services throughout the whole country as part of the Skipti Group, that is to say through its ubiquitous proximity to customers. Mila's product offer is large and on the markets for access to bitstream services Mila has many products the three most common of which are: ADSL, VDSL and fibre-optic service, though Mila's fibre-optic service is not yet substantial. Mila's varied service offer gives the company great possibilities for economies of scope.

506) Mila can provide a comprehensive product offer that other network operators would have difficulty in assembling. Mila offers wholesale services in most sections of electronic

communications where Mila offers electronic communications companies a variety of services such as a nationwide network of trunk and access lines, hosting in buildings and masts and surveillance service for systems. Mila, as part of the Skipti Group, enjoys the scope provided by all of the operations of the Group to the company where Mila enjoys priority rights to purchasing of companies within the Group, such as Siminn, of wholesale electronic communications services.

507) Vodafone has been long been on the market and for a considerable time was part of a company group known as Teymi. Vodafone has a wide service offer, particularly in retail and has a large retail sales system and shops at many locations. One must consider that Vodafone enjoys economy of scope that is not available to many other companies.

508) Gagnaveita Reykjavíkur (GR) operates almost exclusively on the wholesale market and one of its services is wholesale of data transmission systems on the corporate market. Despite its offer on the local loop market this company's operations do not cover a sufficiently extensive field for it to be considered likely to enjoy economy of scope compared with other parties to the market.

509) Of the three companies that enjoy economy of scope, Mila is the much larger company on the relevant markets. The PTA therefore believes that even though all three of these companies were to enjoy economy of scope, the economy is not equal and for this reason, it is only the Mila economy of scope which is considered to be an entry barrier.

6.4.6 Access to capital

510) Access to capital can have a deciding influence on the possibilities for a company on a competitive market. This is particularly case if substantial initial investments are required. Financially strong companies with good access to capital, other things being equal, are in a better position and can more easily protect themselves from competition than comparable companies that do not have as good access to capital.

511) The difference between companies, with respect to access to capital could be a barrier to entry. Good access to capital can both represent an entry barrier and can indicate market power.

512) Circumstances on financial markets are very special at this point in time and have been since 2008 . There has been an international financial crisis for quite some time and the financial crisis in this country has been particularly difficult and has impinged on all economic activity in this country. Access to capital has become tighter for all companies. Capital for new investments is more difficult than before, which impacts all development. Against this there is the fact that the advantages that some companies had over others with respect to access to capital has also diminished during the same period.

513) It can require a significant amount of capital to build up an extensive access network for bitstream services. Such a network demands that the equipment is distributed throughout the area that the company plans to operate in. This equipment generally needs to be located close to potential customers. A powerful backbone network then has to be built that connects such points to the system core. The more distributed a system is the more expensive it is to build.

514) For smaller companies it is possible to enter the market in a relatively limited area. It is most economical for companies to install DSLAM equipment in the area in question and operate an ADSL system of copper local loops. It is also possible to set up DSLAM for a VDSL system but this is subject to certain limitations as has been previously indicated. In addition to this ADSL technology is being phased out and it is unlikely that companies can achieve a good foothold on the market while they do not offer other options. Possibilities for smaller companies to enter the market on fibre-optic local loops are also subject to limitations. There is no fibre-optic network with national coverage and no access obligations have yet been imposed on fibre-optic local loops.

515) It is clear that if the company intends to be conspicuous on the market and to acquire an adequate market share so that revenue will support investments and operations, it is necessary to achieve a large number of users and it has been shown that this is very costly. In such cases access to capital is necessary.

516) The PTA believes that it is possible to enter the market in a small way without significant costs but such companies are normally small with small distribution and small market share. In the light of the fact that in order to achieve such market share that the company is a serious participant in the market and to enjoy some degree of economy of scale in operations, the company needs to spend a lot on development. For this reason the PTA considers that access to capital is a significant barrier to entry for new companies. This is not least true now when Mila and Vodafone have gone through financial restructuring and where GR completed such restructuring last April.

6.4.7 Barriers to growth

517) A market with significant potential for growth is much more attractive to new operators than is a stagnant (mature) market. It is probable that undertakings contemplating entry into a stagnant market must lure customers away from incumbents. If there are limits to a market's potential to grow and offer more extensive services than those existing on the market, entry barriers may exist.

518) The current situation today is that almost all Icelanders have a dedicated broadband connection into their homes. Most still have an ADSL connection but both fibre-optic connections and VDSL connections are increasing rapidly, first and foremost subsequent to develop months by Mila which makes it possible for Siminn and other service providers to upgrade their customers connections. Because of the wide distribution currently existing among the public is not possible to expect a significant increase in the total number of Internet connections except an increase corresponding to an increase in households.

519) Now the fibre-optic network has been connected to about 58,000 households in the GR utility territory and it is estimated that this company's introduction of fibre-optic will be completed in Reykjavik in 2015. GR expects to have about 63,000 broadband connections to households at the end of 2014. No time schedule has been decided for GR plans for introduction of fibre-optic in Reykjavik's neighbouring municipalities. Given the current situation it is not planned that other companies will sell broadband access through the GR local loops and this therefore has a major impact on growth possibilities for companies on the wholesale market for bitstream.

520) The situation is similar with Mila VDSL connections. As has been previously stated it is expected that the Mila will soon complete connections with up to 100,000 households. Despite the fact that the Mila reference offer allows for service providers being able to set up their own DSLAM equipment, this is not quite so simple in practice as there is often a shortage of space for DSLAM equipment in street cabinets. It is thus clear that Mila enjoys what is called first mover advantage in this respect.

521) The existence of this specific bitstream connection but now exists means that it is more difficult for new parties to install their own equipment and compete with incumbents on the market. It is clear that this significantly impedes growth opportunities for the companies.

522) It is the PTA conclusion that growth possibilities in the field of wholesale of bitstream are limited and that the lack of growth possibilities is likely to act as a barrier for new companies.

6.4.8 Service systems¹⁸¹

523) Well-developed service systems can act as an entry barriers for new parties and as a competitive advantage. This particularly applies on markets where substantial costs are tied up in the development of distribution and sales systems or where all the companies have made sole agreements with the largest and/or most important distribution parties on the market.

524) Service systems can represent a large investment for new companies that would like to establish themselves on a given market. The presence of established operators that have perhaps written off their expenses can represent an entry barrier for new operators. Companies that have efficient service systems at their disposal can therefore have a competitive advantage over new market participants.

525) Investment in a service system is not directly proportional to the number of customers or to total sales but rather in smaller companies, this investment expense is proportionally higher per customer. Therefore, an investment in an efficient service system represents economy of scale. Siminn has for example developed service systems and line bookkeeping over a period of many decades, while new companies must develop such systems from the ground up.

526) Efficient service systems are the foundation on which customers services rest as it is normally through service systems that customers communicate with the company. It is through the service systems that sales are registered, ordered, activated and the charges collected through invoicing. It is difficult to see how a company can maintain reliable operations and a sufficiently high level of service to build up a convincing position on a service market without such systems.

¹⁸¹ Service systems is a collective name for the following systems:

- Sales system
- Order entry system
- Line bookkeeping
- Service information
- Invoicing

527) During the past decades service systems and line bookkeeping have been developed within the Skipti Group which benefits Mila. One must also assume that Mila can make use of the joint order entry system and invoicing within the Skipti Group.

528) At the same time one can say that GR benefits from being a subsidiary of OR and from having access to its service systems, in the same way that Mila benefits from access to Skipti systems. OR is however not a specialised electronic communications company in the same way that the Skipti Group is.

529) Vodafone has been operating for many years, for most of the time as part of the Teymir group which has now been dissolved. During that time Vodafone has developed service and sales systems. One must assume that Vodafone has a stronger position with respect to service systems than new companies. Vodafone's position is however not as strong as that of Mila.

530) The PTA considers that investment in service systems can be an entry barrier for new companies. This particularly applies if new companies are not granted direct access to the Mila base systems.

6.4.9 Vertical integration

531) Vertical integration exists where the same party operates on more than one production and/or sales level, for example he manufactures goods, sells them to another party in wholesale and also sells the goods himself at retail level. A company that integrates varying operations in this manner in the value added chain can on the basis of its position on the wholesale or retail markets erect barriers to competition on the market in order to strengthen his position against competitors.

532) On the broadband market in this country the companies that have largest market share also have extensive operations in other fields related to production and/or sale of broadband access.

533) The fact that local loop leasing and wholesale of bitstream service are within the same company in the Skipti Group constitutes increased vertical integration. The Mila unit which operates bitstream service, that is to say DSLAM equipment, leases facilities for the equipment and connects to the local loop system in cooperation with the appropriate units within the same company. Mila also enjoys a connection with the Group's retail arm, Siminn, which is the largest comprehensive service provider on the electronic communications market.

534) Mila is, as previously stated, part of the Skipti Group and therefore the ownership, management and financial connections between Mila and Siminn are undisputed. The Settlement between Skipti and the CA from March 2014 has reduced management connections between the companies but these connections remain substantial. Siminn is now the largest customer of Mila bitstream service as the largest wholesale purchase of bitstream access and in addition to this is by far the largest Mila customer in most if not all areas of the Mila operations. Internet service is there the most common digital interactive service provided through bitstream and another of the service options offered by Siminn retail, which is growing rapidly, is digital interactive television (IPTV).

535) With IPTV television service which is distributed with bitstream on ADSL and is now also available on Mila's VDSL and fibre-optic systems, Siminn has strengthened its position both on the Internet service retail market and thus strengthened itself as a purchaser on the wholesale market for bitstream. This strengthens Mila. It has not been possible to receive Siminn television services on other bitstream systems/networks than those currently owned by Mila. The customers of bitstream services provided by other companies thus need to transfer the bitstream part of their connections from that company over to the Mila system in order to be able to receive the television services from Siminn. The service that was received through bitstream from a former party, often Internet service, is thus still received from that original party, which has given Mila wholesale business with service providers and has established a business relationship by Siminn with consumers for television services. This can facilitate Siminn's sales and marketing operations for its other services, particularly Internet services as the Mila bitstream connection is now in place. In addition to this the end user will be subjected to inconvenience in his home and in the use of the service. He receives new terminal equipment from Siminn and Mila and one can consider it likely that an end user in this position might decide to move all services over to Siminn which means that the service provider has lost both bitstream and Internet service business from this customer.

536) As has been previously stated the distribution of IPTV is very widespread in this country and at the end of 2013 more than 73% of broadband users, both on the residential non-residential markets, had such decoders¹⁸² while in other countries digital television is usually broadcast through cable systems, satellite or radio.¹⁸³ Such distribution supports the view that service providers cannot compete on the relevant market except by offering such a service and the integration of telephone, Internet and TV services through the same connection (triple play) is thus necessary for the service provider.¹⁸⁴

537) One may thus consider it likely that Siminn IPTV service plays a part in Siminn having maintained its share of the wholesale bitstream market during recent years, despite the fact that new companies have entered the market and new technology (such as bitstream through fibre-optic local loops) has arrived. Mila has now inherited this strong position. Siminn has successfully held its market share on the retail market for broadband connections and Internet services during recent years, that is to say about 50%.

538) Neither Siminn's Internet service nor its IPTV service is available through bitstream networks owned by other companies but Internet service of other companies is available on Mila's DSL networks (ADSL and VDSL). There are examples that companies have endeavoured to be allowed to distribute Siminn's IPTV service through their bitstream networks but this has been seriously delayed because of Siminn's reluctance. With the PTA Decision no. 38/2012 the PTA stipulated that Siminn was obliged to provide Vodafone with access to Access Option 1 in VDSL with multicast. This means that Vodafone can distribute its own IPTV system through the Mila/Siminn electronic communications networks. Siminn was not designated as having SMP in the older Market 18 for TV distribution through a

¹⁸² Post and Telecom Administration.

¹⁸³ Of the 10 main comparative countries for the UK in Europe it is only in France that IPTV has achieved significant distribution, 24% (in that country the uptake of digital TV is well over 60%). See: Ofcom, International Communications Market Report 2011, Page 137.

¹⁸⁴ This has also been supported by the Commission, see Case DK/2008/0862 where it states among other things "However, the Commission believes that it is possible that trends in the market for wholesale broadband access may develop in such a direction that in the absence of a TV offering the provision of an Internet access product alone may no longer be sufficient to compete effectively at the retail level."

network at a fixed location. This is why there are no obligations on the company to provide other parties with access to its IPTV system and nor is Siminn obliged to distribute its IPTV system through the electronic communications networks of other parties.

539) Despite the separation of wholesale bitstream and the retail services provided over bitstream, the fact that retail of Siminn's services is not accessible on the bitstream networks of other companies although such networks have achieved significant distribution is an indication that the Skipti Group enjoys vertical integration of Mila and Siminn which acts as an access barrier to other companies on the wholesale bitstream market.

540) GR controls local loops in its own name but has not been particularly active on the retail market. The part of retail that affects GR is that all of the company's users pay a special fee to GR for access to fibre-optic but for the services themselves the users pay other companies. One must conclude that the retail part of GR operations is insignificant and unlikely to matter when the company's position is assessed. GR does not engage in much marketing at retail level. The GR marketing efforts have mainly been through communications with owners of buildings during the development stage.

541) Vodafone is party to more than one sales level. Vodafone has DSLAM equipment on copper local loops leased from Mila and it sells bitstream access in wholesale to other companies (in addition to internal sales). In addition to this Vodafone also offers retail services where Vodafone sells among other things broadband services on the GR network. Most of Vodafone wholesale services are sold in retail to the company itself.

542) Vodafone also offers service items other than general Internet service such as digital interactive TV (IPTV). The Vodafone Internet service is distributed over its own ADSL network, over the Mila ADSL and VDSL networks and over the GR fibre-optic network. The Vodafone IPTV system is distributed over both its own ADSL and the GR fibre-optic network and through the Siminn VDSL network, see the PTA Decision no. 38/2012. Vodafone wholesale of bitstream access is thus not protected by vertical integration with its own retail service.

543) As has been previously stated Vodafone has requested to distribute its IPTV service through Mila's xDSL network as it has been demonstrated that a large proportion of customers make the requirement of receiving Internet, telephone and TV from the same service provider. With the PTA Decision no. 38/2012 this will become possible for Vodafone.

544) The PTA considers that vertical integration on this market is likely to be an entry barrier for new companies to the market, despite separation of wholesale by the Skipti Group.

6.4.10 Conclusion concerning entry barriers in the relevant market

545) One must consider it clear that if the company intends to enter the relevant market and develop service on its own access system, then it needs to develop facilities that are difficult to duplicate. It is not only necessary to incur substantial costs in developing systems and infrastructure as it can also prove very problematic to find space for the company's technical equipment in the dedicated electronic communications structures. This particularly applies in built-up areas as space for buildings for distribution frames or analogous node points of electronic communications networks for the essential equipment is in short supply and it is

difficult to make extensions to existing buildings. Control of infrastructure difficult to duplicate is therefore considered to be a significant entry barrier in the opinion of the PTA.

546) If the company intends to enter the relevant market and develop service on its own access system one must consider that sunk costs from the investment constitute a significant entry barrier. It is difficult to establish DSLAM equipment for the VDSL system and there is a limited offer of fibre-optic local loops so the easiest option is to develop an ADSL system. Connections on the ADSL system have fallen in number in recent years and costs related to them are probably to a large extent sunk costs.

547) Mila, as part of the Skipti Group, enjoys economies of scale and scope and Vodafone, as an electronic communications company with a wide product range, also enjoys economy of scope though not to the same extent. It is inevitable that new companies on the market will find it difficult to compete in the presence of such a difference in circumstances and this creates a significant barrier to entry.

548) The PTA believes that in order to achieve such market share that a company is a serious participant in the market and to enjoy some degree of economy of scale in operations, the company needs to spend a lot on development. For this reason the PTA considers that access to capital is a significant barrier to entry for new companies.

549) It is the opinion of the PTA that possibilities for growth have lessened significantly since the last analysis and that they will be meagre during the lifetime of this analysis. It is clear that this significantly impedes growth opportunities for the companies.

550) Mila's extensive service systems can give the company an advantage over new companies and they call for analogous systems with these companies. The PTA concludes that access to service systems is an entry barrier.

551) The PTA believes that the Mila enjoys vertical integration. This particularly applies to general broadband services which are only available on Mila's networks. The PTA believes that vertical integration is an access barrier.

552) With the above discussion in mind one can conclude that barriers exist for new companies entering the relevant wholesale markets.

6.5 Competition problems on the market in question

553) The main objective of the market analysis is to investigate whether competition is active on electronic communications markets and to react to this with appropriate measures should it prove not to be the case.

554) In analysis of the wholesale broadband market one can identify six factors for competition that decide average long-term feasibility of companies. These factors are 1) countervailing buying power of buyers in a strong position, 2) product differentiation/bundling, 3) possible competition, 4) pressure from substitute products and 5) options available for customers, the possible costs of switching and/or the impact of binding transactions.

6.5.1 Customer countervailing buying power

555) Buyers with a strong negotiating position can influence competition and can limit sellers' possibilities to operate without taking into consideration competitors and customers. A strong negotiating position exists primarily when a customer buys a large portion of an operator's production, is well informed of other offerings, can switch to another operator without significant expense and even has the potential to commence production of a comparable product/service.

556) Mila enjoys a unique position on the relevant market as the Siminn retail department is part of the same group and is also the largest purchaser on the whole market, whether one considers the market as a whole or simply wholesale transactions within Mila. Up to this point in time Siminn retail has almost exclusively purchased bitstream from its own wholesale department which has now been taken over by Mila, and now purchases more than 80% of all of Mila's wholesale bitstream connections. Recently however Siminn has offered retail services over bitstream through the Tengir fibre-optic network in Akureyri where Mila leases Tengir local loops as dark fibre and builds its own bitstream service on them.¹⁸⁵

557) When one has in mind the size of the share purchased by Siminn retail it is unlikely that other purchasers, who are all smaller, can limit to any significant extent the possibility for Mila to operate without taking their customers into consideration (other than Siminn retail).

558) With respect to other sellers of bitstream, they do not have as large a share of internal sales as the Skipti Group has. Almost all connections of Vodafone's own bitstream system are used for its own retail. These connections are however only [...] ¹⁸⁶ of total Vodafone bitstream connections in retail. The company is thus dependent on external wholesalers for the remainder. In the winter of 2012-2013, Tal transferred mostly over to Skipti Group systems from Vodafone for bitstream access which meant that Vodafone lost by far its largest wholesale customer. The development in recent years has been such that Vodafone has increased wholesale purchase of bitstream service from external parties at the cost of its own bitstream system. GR sells bitstream access almost exclusively to external parties so there are almost no internal sales in that company. Vodafone is by far the largest purchaser of bitstream connections from GR where it purchased approximately [...] ¹⁸⁷ of these connections at the end of 2013.

559) It is clear that the customer countervailing buying power is decided by many factors for example the proportion of sales that he purchases, how easy it is to switch providers and how important the purchaser is for the supplier. As shown above the situation of the largest sellers of bitstream in wholesale in this country varies significantly. While GR does business with proportionately large external customers, the Mila customer base is small in proportion to internal sales of the Group.

560) The market in this country is thus characterised by internal sales. Siminn is by far the largest purchaser of bitstream from its sister company Mila. Countervailing buying power of purchasers with such a large share in a seller's wholesale would under normal circumstances be considered very substantial. On the other hand one must keep in mind that these transactions are taking place between companies within the same Group. For this reason one

¹⁸⁵ <http://tengir.is> (26.04.2012).

¹⁸⁶ Removed for reasons of confidentiality.

¹⁸⁷ Removed for reasons of confidentiality.

must not conclude that Siminn retail has strong countervailing buying power. The circumstances of companies within the same Group can create an opportunity for the Group to conduct business between units in such a manner that the whole Group maximises its benefits at the cost of its own service providers and thus also of other purchasers on the relevant market. At the same time one must consider countervailing buying power of other customers to be weak in comparison and Siminn in fact did not offer wholesale access before the PTA imposed an obligation to this effect on the company in 2008. The switch by Tal over to the Mila network will change this proportion but Tal is not so large that this would impact countervailing buying power on the market.

561) Vodafone has significant internal sales and has in recent years, to some extent, operated on the wholesale market for bitstream access where Tal was the company's main customer. The transfer of Tal over to the Siminn network at the end of 2012 has severely dented Vodafone wholesale operations which are minimal today. GR has almost no internal sales at all and almost all its external sales are to Vodafone which indicates that Vodafone has the opportunity to leverage countervailing buying power against GR. The size and scope of GR wholesale bitstream sales is however such that the Vodafone position does not have a significant impact on the market as a whole.

562) The PTA conclusion is that countervailing buying power is very limited on the market and is characterised by the strong position of companies within the Skipti Group as purchasers and sellers of bitstream access in wholesale.

6.5.2 Product diversification/bundling

563) Product diversification refers to how the consumer defines products and distinguishes between similar products. Clear product diversification in companies' offers can create trust in customers and can equally complicate entry for new parties into the market, contrary to what happens when the product offer is more homogenous. Strong brand names have a comparable effect.

564) A company that is dominant on one market can leverage its position to bundle products on that market with products on another market with offers that competitors have difficulty duplicating. If competitors do not have the possibility of making comparable offers, then this strengthens the dominant position of the company on the former market and creates a competitive advantage on the latter. An advantage of this kind may need to be examined when markets strength on the latter market is assessed.

565) On the retail market related to access to wholesale bitstream services, IPTV service is popular and increasing among users.¹⁸⁸ At Siminn the company's IPTV service is only accessible to users that also received their bitstream service from Mila. The Vodafone IPTV service is on the other hand on offer both through Vodafone bitstream service and on the GR fibre-optic network. Since 2010 Vodafone has requested that it may distribute its IPTV service on the Siminn (now Mila) DSL networks. It was not until the PTA Decision no. 38/2012 from December 2012 that this possibility became a reality. Vodafone has now commenced distribution of IPTV service through the Mila system.

¹⁸⁸ See For example: Hagtíðindi year 96. 45. edition 6. -- September 2011 page 6. See also: <https://hagstofa.is/lisalib/getfile.aspx?ItemID=12638> and also: Capacent survey for the PTA may/June 2010.

566) One must however note that Mila has the special position of this market of being part of the company group that took over from Póstur og Síminn and is ubiquitous on the market in this country through its retail arm, Siminn, which has been developed over decades, for a long period being the only electronic communications company in the country.

567) The PTA conclusion is that despite obligations on Siminn and Mila with respect to bundling of products, Siminn and Mila's product diversification and product offer are such that they can strengthen Mila's position on the relevant market.

6.5.3 Possible competition

568) This aspect is decided by the opportunities new companies have to enter the market. Should they have opportunities to enter the market this can impact tariffs and price structure of incumbent companies and can also limit their possibilities to maintain higher prices and can support innovation. If new competitors can be expected then this will lessen the tendency of incumbents to abuse their market power. It is necessary to examine this criterion from the point of view of access barriers see Section 6.4. There is normally a correlation between access barriers and a lack of potential competition.

569) When new companies enter a market, the reason is often that they aim to acquire incumbents' market share and profits. This risk exercises restraint on incumbents and competition that they try to react to in some way or another. An example of this is their endeavours to increase economy of scale and reduce unit costs. Increased variety in the form of quality or trademarks is also a measure to counter competition. High investment costs provide resistance and particularly where they involve reinvestment in existing assets (switching cost). In addition to this, limited access to the distribution channels can be problematic for competitors. Companies who are the first ones on the market can often leverage their experience and knowledge as an advantage over competitors who come later. Access to resources, for example frequencies, government action and technical changes can also impact the ability and interest of new companies to commence operations.

570) Possibilities for a competition in bitstream access are to some extent inherent in how companies succeed in surmounting entry barriers. Entry barriers were discussed in Section 6.4. The PTA came to the conclusion that entry barriers existed on the market which could prove difficult for new companies to deal with. In addition to this the difference between the position of Siminn and that of other electronic communications companies, particularly smaller companies planning entry into the market, is significant. Siminn has been on the market longer than all other companies and has established itself across the whole country and Mila benefits from this long history.

571) Despite obligations and despite the fact that at many locations in the country companies have the option of bitstream access from other companies, the vertical integration of Siminn and Mila, particularly with respect to TV broadcasts through bitstream, is such that it affords Mila an advantage over its competitors. It is difficult to see how a new companies can establish broadband services that contain as wide a variety of services as Siminn offers. Siminn has up to this point in time not made access available to others to the company's IPTV system but subsequent to Tal having moved its wholesale business from Vodafone to Siminn, Siminn made the option available to Tal to resell the Siminn IPTV service. With the PTA Decision no. 38/2012, Vodafone was given the opportunity to distribute its own IPTV system through the Skipti Group networks. Surveys and consumer consumption patterns indicate

decidedly that this is such an important service that a bitstream service provider cannot become influential on the market without offering such TV services through its system or through the system from which it purchases broadband access. In the Settlement between the Skipti Group and CA there is a provision which obliges Siminn to offer its IPTV service in wholesale.

572) The PTA conclusion is that there are still access barriers on the market and that the difference position between Mila and other parties is so great that conditions for competition will be disadvantageous during the period of validity of the analysis.

6.5.4 Horizontal integration

573) If, in the shelter of ownership, a service provider controls various parallel elements of electronic communications infrastructure that can be used to provide a user with products in a competitive market, this is referred to as horizontal integration. If this is the case, the service provider in question can strengthen his dominance of the market by preventing competition with other electronic communications infrastructure that he controls.

574) Mila has many parallel elements of electronic communications infrastructure through its ownership relationship with the Skipti Group. Various obligations that have been imposed on the Skipti Group as a party with market dominance make it difficult for the company to offer inclusive packages containing these elements. One can however assume that many users would prefer to do business with one party rather than many which means that Siminn and Mila thus have a somewhat stronger position than other companies. The PTA believes that although Mila enjoys horizontal integration this does not give the company a significant competitive advantage.

6.5.5 Customer choice and potential switching costs/the effects of binding contracts

575) If a service provider has a dominant market position, limitations or costs of switching provider company can enhance that provider's opportunities to behave without concern for the market. Such limitations can be commercial, technical or financial in nature, but they can also be a consequence of the user trusting established service providers more than new ones and being unwilling to take the risk of switching providers.

576) It is clear that in large parts of the country Mila is the only service provider of bitstream that service providers can turn to. It is also a fact that despite the development of new systems, Mila has had its system in use since the inception of Internet use and it is thus inevitable that service providers have taken this into account and tried to adapt their systems to access to Mila's systems. To replace systems in order to be able to transfer to another network, such as connecting to fibre-optic local loops, can be costly and time-consuming. Mila has however a certain competitive advantage in this respect which will always be not necessarily very significant in isolation.

6.5.6 Conclusions on competition on the relevant market

577) Access to bitstream with xDSL through the Mila copper local loops is still by far the most common access form to bitstream in this country. It is thus clear that Mila's position on the market is still strong, particularly when one takes into account the impact of bundling of services from these two related companies. As has been previously stated, Siminn is

ubiquitous on the market and is one of the country's oldest trademarks which is to Mila's advantage. In addition to this the Skipti Group controls the only network with national coverage.

578) The relevant market is special in many ways as internal sales are very conspicuous in all of its sectors. The market is characterised by Mila being the largest service provider in wholesale along with being the sister company of the largest purchaser on the wholesale market. Almost all Mila sales on the wholesale market are within the Group. This strong Mila position in wholesale strengthens the company's position and correspondingly weakens purchasers' bargaining power.

579) Siminn's conspicuous position and its ubiquity on the market can strengthen Mila's position on the relevant market.

580) The possibilities for new competition are limited because of significant entry barriers, because of significant difference in position and because of Mila and Siminn's vertical integration. It is unlikely that new and smaller companies can offer the necessary product range to become serious participants on the relevant market.

581) Siminn, Mila and the Skipti Group offer a very varied product range in all sectors of electronic communications. Many users have a tendency to wish to purchase from and deal with one party rather than many different parties. The fact that Siminn's IPTV service is only accessible through that Group's bitstream services strengthens its position on the bitstream market as does the fact that that to date the IPTV services of other companies have not been distributed through the Mila bitstream networks - but this barrier will soon be removed subsequent to the PTA Decision no. 38/2012..

582) The extensive Siminn distribution, the local loop network now controlled by Mila and the company's strong historical position were factors that enabled Siminn to develop DSL service at a national level. All companies that operate electronic communications services need to rely to some degree on a company in the group, usually Mila, and many have made substantial investments in time and equipment to connect to Mila systems and local loop. To switch service provider can thus be both costly and time-consuming and there is the additional risk that services will be curtailed for some time. Mila thus enjoys an advantage from its predecessors having been on the market for a long time and from the fact that many companies have business commitments to the company.

583) The conclusion of the PTA market analysis of the relevant market is that Mila has competitive dominance on the relevant market. The company's market share, its size and position are the reasons for this. It is also the view of the PTA that there are access barriers for new companies entering the relevant market.

7.0 Assessment of SMP on the relevant market and the designation of a company with SMP

7.1 General

584) Assessment of SMP is based on the ESA Guidelines and on the various factors discussed in Chapter 6 here above. In accordance with the text of Paragraph 76 in the ESA Guidelines and taking into account existing market conditions, the PTA bases its assessment on analysis of the relevant markets as they are today and having taken into account development in recent years and in the near future.

585) In Paragraph 1 of Article 18 of the Electronic Communications Act no. 81/20030, the following is stated: *An undertaking shall be deemed to have SMP if it, either individually or jointly with others, holds a position of economic strength on a certain market which enables it to prevent effective competition and to operate to a substantial extent without concern for competitors, customers and consumers.*”

586) This is an important point of departure in the market analysis and PTA wishes to emphasise that SMP is the appropriate measure, not abuse of a dominant position. Therefore, the core of the market analysis is not whether an undertaking has misused its dominant market position. This does not mean, however, that an undertaking’s behaviour in the market does not make any difference in the assessment of SMP. Even though aspects of the form of the market weigh heaviest, practices which support SMP, or that maintain the competitive advantage of a company with SMP, can reduce competition on the market.

587) As is stated in Chapter 6 on market analysis, assessment of market share is on its own not sufficient to decide on whether a company should be designated with SMP on the relevant market. It is necessary to examine all relevant criteria. A decision on SMP cannot be based exclusively on one criterion, but rather it has to be based on a number of criteria and on interactions between them.

588) A company can be designated as having single dominance or joint/collective dominance. If the conclusion is that one company has SMP then one normally does not need to consider the question of joint dominance. If on the other hand the conclusion is that no company has SMP on its own, then one must examine whether circumstances pertain for joint dominance. In addition to this, a company that has SMP on the relevant market, can also be considered to have SMP on a related market if the connections between the markets are such that the company can leverage its market strength on one market in order to increase its market strength on the other, see Paragraph 2 of Article 18 of the Electronic Communications Act.

7.2 Assessment of SMP on the relevant market

589) Many companies of varying size and with varying distribution now operate on the relevant wholesale market. As has been shown there is substantial concentration on the market and companies other than the three largest have a market share which is hardly measurable and there is also a considerable difference in size between the three mentioned above. Mila has most market share, about 76%, while GR has about 24% in the end of 2013.

590) The general rule is that a company is considered to have a dominant market position if it has more than 50% market share. According to this the Mila market share is well over the guideline which indicates its SMP on the wholesale market for bitstream access. Besides this Mila is part of the Skipti Group, which is the largest electronic communications company in the country.

591) It was stated in Section 6.2.1 that market share does not on its own decide whether a company has SMP but there is considered to be a *prima facie* likelihood that a company with more than 50% market share has market dominance. A market share which is about 76% along with the access barriers that other companies must face on the relevant market and that are described in Chapter 6, where it was stated that there were entry barriers for new companies entering the relevant market, indicate decidedly that Mila has SMP on the relevant market.

592) In Chapter 6 there was also discussion on the competitive position of companies on the relevant market. There it was stated that the largest part of bitstream traffic was still through Mila systems and that there had been little change in this respect in recent years. Then it was also stated that despite various innovations and developments on the market there are still significant barriers facing new companies that wish to establish themselves on the relevant market. The access barriers that mainly face new companies are control of infrastructure difficult to duplicate, sunk costs, economy of scale, economy of scope, access to capital, barriers to growth, developed service systems of the dominant parties to the market and vertical integration. In the light of this and because of Mila's strong position with respect to the size of the access network, the strength of its sister company Siminn as a purchaser on the wholesale market, Siminn's strength on the retail market and ownership connections with Mila and within the Skipti Group as a whole, one could assume that Mila could strengthen its position on the market against competitors.

593) On the basis of the above and the conclusion from the analysis of the relevant market for wholesale access to network infrastructure at a fixed location it is the conclusion of the PTA that competition is not active and that Mila has SMP on the relevant market, see Paragraph 1 of Article 18 of the Electronic Communications Act. In the light of this the PTA intends to designate Mila as having SMP on the wholesale market for broadband access.

594) With the above conclusion in mind, the PTA does not consider any need to discuss the question of joint market dominance.

8.0 Imposition of obligations on Market 4

8.1 In general on obligations

595) According to Paragraph 2 of Article 17 of the Electronic Communications Act, market analysis shall be the basis for decisions on whether the PTA shall impose, maintain, amend or withdraw obligations on companies with SMP. If a market analysis reveals that there is no effective competition in the relevant market and that one or more electronic communications undertakings in that market possess SMP, the PTA is authorised to impose one or more obligations on the company designated as having SMP pursuant to Article 18 of the Electronic Communications Act. If the PTA has previously imposed specific obligations on operators pursuant to the previous Electronic Communications Act these shall be reviewed and either maintained, amended, or withdrawn in accordance with the results of the market analysis.

596) Article 27 of the Electronic Communications Act states that when an electronic communications undertaking is designated with SMP, the PTA may impose on it obligations concerning transparency, non-discrimination, accounting separation, open access to specific network facilities, price control and cost accounting as necessary for the purpose of promoting effective competition.¹⁸⁹ These obligations are described more fully in Articles 28 – 32 of the Electronic Communications Act.

597) When selecting obligations to be imposed in order to solve specific competition problems, it is necessary to use several fundamental principles as guidelines.¹⁹⁰ All obligations imposed shall take into account the nature of the specified competition problem and shall be designed to solve it. They shall be transparent, justifiable, reasoned and in line with the objectives they are designed to achieve – that is to promote competition – as well as contributing to the development of the internal market and safeguarding users' interests. Obligations must be proportionate and may not impose heavier burdens on operators than is considered necessary.

598) In a report from the European Regulators Group (ERG)¹⁹¹ on ex-ante obligations, emphasis is placed on developing competition in the development of electronic infrastructure and networks where this is considered desirable. In such instances the imposed obligations should support such development. When infrastructure-based competition is not considered desirable due to significant and non-transitory economies of scale and scope or other barriers to entry, it is necessary to guarantee sufficient access to electronic communications networks and equipment at the wholesale level. In this context, it is necessary to ensure two things: first, to encourage service-based competition; and second, to guarantee a sufficient fee for access to existing electronic communications networks thus providing an incentive for further investment in such networks, as well as for their renovation and maintenance.

599) For the long term, service-based competition that has its foundation in steered access to a cost-analysed price can be a tool for generating competition in the regeneration of

¹⁸⁹ See also Articles 9-14 of the Access Directive.

¹⁹⁰ See Article 8 of the Framework Directive.

¹⁹¹ Now BEREC.

electronic communications networks. This refers to what is called “the investment ladder,” and its objective is to create conditions that make it possible for new operators to build up their electronic communications networks step by step.

600) In selecting the obligations that are best fitted to promote competition in a given market, it is often beneficial to consider the position that would exist if obligations were not imposed on undertakings in the relevant market and whether it would be sufficient to use competition legislation alone to guarantee competition.

8.2 Competition problems

8.2.1 In general on problems in the field of competition

601) Obligations are imposed on companies with SMP with the aim of combating real and/or potential problems in the field of competition in the markets in question. Problems in the field of competition refers to any kind of behaviour by a company with SMP, which is intended or leads to competitors being forced out of markets, which prevents potential competitors from entering the market and/or damages consumers' interests. When obligations are applied pursuant to the Electronic Communications Act, the reason for doing this is not actual abuse of market dominance. It is sufficient that competition problems could possibly arise under the circumstances that pertain.

8.2.2 Competition problems on the market in question

602) It has been stated that at most locations in the country competition is not active on the wholesale market for local loops, for full or shared access and that changes to the situation are not foreseen at least not during the period of validity of this analysis. Those network operators currently on the market, apart from Mila, plan solely to concentrate on specific urban kernels in their own home territory and do not plan to expand development to other areas. The PTA will however monitor developments on the relevant market and review the market analysis conclusions after a reasonable period of time should circumstances change. The PTA has in previous chapters come to the conclusion that Mila has SMP on the market. Furthermore, various barriers facing new competitors have been itemised. For these reasons one can assume that at many locations Mila is in a position to act independently of competition, customers and general users.

603) On the market for local loops there mainly two kinds of potential competition problem and they must both be taken into consideration. On the one hand there are problems related to the possibility of transfer of a company's position on the wholesale market to the corresponding retail market and on the other hand problems resulting from the company's strong position on the wholesale market.

604) In its analysis of Market 11 (Decision 26/2007) the PTA discussed potential competition problems on the relevant market. It was the opinion of the PTA that companies with vertically integrated operations might try to transfer their market power in such a manner that the company transferred a position that it had on a wholesale market over to a related retail market and that this could lead to it being possible to reject adequate access for other parties to necessary entities of operations, including co-location and support systems. In the instance here under discussion on the retail market is composed among other things of fixed line telephone and broadband services to users and electronic communications companies can

offer both wholesale and retail services in these sectors. With respect to Mila and Siminn, they are sister companies 100% owned by Skipti and along with others they form the Skipti Group. On the access market Mila handles local loop operation and services while Siminn leases local loops from Mila and provides services through the loops.

605) A company which competes with other companies on such services could be tempted to deny others access to local loops that it controls in order to limit competition and to increase its share of the retail market. Even where there is no categorical denial, discrimination in the execution progress can take place when either the applications from customers of the company's own retail department are given priority or when information to competitors is inadequate.

606) In the above specified Decision (26/2007) the PTA came to the conclusion that Mila could by virtue of its position influence Skipti Group competitors' choice of technical solution such as VDSL by rejecting their use on the basis of possible interference or other problems.¹⁹² When pricing on the wholesale market is subject to control, which is the case on the Icelandic market, it is possible for a company with SMP to employ other measures. These measures could be in the form where the retail department of the group is given the opportunity to be ahead of competitors on the retail market which in itself can limit competition. Furthermore, practices of this nature may increase costs for competitors, reduce their sales opportunities and create difficulties for them in pricing services. An example of measures of this kind are where negotiations are delayed, technical problems are cited and inappropriate requirements made for bank guarantees, information, market projections etc. Another kind of measure is discrimination in quality of service such as in reaction time to faults and misuse of competitors' information¹⁹³.

607) In the light of the current position of Mila on the market for open access to local loops, along with the experience of past years, the PTA concludes that the competition problems described here are still persistent on the relevant market, and this holds despite the settlement made between Skipti and the Competition Authority that was covered in Section 8.4 here below.

608) Another example of transfer of market position is pricing which has the objective of reducing competitors' sales on the retail market, increasing costs and/or imposing limitations on their opportunities to price their services appropriately. Discrimination in prices of local loops, which is an advantage to a company with SMP over competitors on the retail market, would have serious consequences for competition. Subsidies in the form of transfer could for example be where the company charged a high price for local loop leasing and charged its retail arm, that is to say Siminn, a low price for Internet access and thus created problems for competitors in their pricing of the service. Under-pricing on the user market for broadband services can result in a competition problem on the local loop market which would manifest itself in competitors having difficulty in pricing their services.

609) When examining competition problems that can result from Mila's market power one can divide them into three categories: entry barriers, constraint measures against customers

¹⁹² In the Decision of the PTA number 38/2012 (access option 1) Siminn presented among other things such considerations and succeeded in delaying and access request from Vodafone for several months

¹⁹³ In the Decision of the PTA number 37/2010 the PTA came to the conclusion that Siminn had abused their electronic communications information from Nova for market purposes. Subsequently the PTA instructed Siminn to adopt a large number of remedies to assure confidentiality of information.

and uneconomical development of service. Entry barriers are designed to hinder entry for new parties. For example Mila could put a clause in its service agreement which made it expensive for customers to switch service provider. Constraints of this kind can be in the form of high pricing of service or price discrimination.

610) For a company with SMP it can be tempting to price its services high in order to increase profit. Price discrimination which constitutes dividing the market in two varying purchaser groups can lead to increased profit for a company with SMP. In addition to this, a shortage of competition on the wholesale market for local loops may possibly result in an economic development and operation of the local loop network. The result may be in the form of limited investment, poor cost monitoring and lower quality. The PTA considers that there will be a reduction in the need for large investments in the local loop network as the network already reaches all companies and households in the country as was stated in Chapter 2 and as fibre-optic is increasingly installed in greenfield districts and municipalities instead of copper local loops, either in street cabinets or directly into buildings. The cost lies in the excavation and work on ducts rather than the cable material. Poor cost monitoring can lead to pressure to increase price and thus has negative consequences for the retail market. Poor quality can also have a negative impact on the retail market but because of Siminn's participation in that market the PTA does not consider there to be a need to assume that Mila will see an advantage in reducing the quality of local loops.

611) In recent years various complaints and indications have been received by the PTA with respect to access to Siminn's local loops and related facilities, for example from inhabitants in the Úlfarsfellshverfi district in Reykjavik. Dwellings there are not connected to traditional copper telephone lines but only to fibre-optic local loop from Mila but GR has not yet connected that district to its system. Inhabitants in the Úlfarsfellshverfi district have not been able to choose services from service providers other than Siminn as other electronic communications companies have not been prepared to start services on the Mila fibre-optic local loop in question. Wholesale service of Mila fibre-optic local loops has not been used by electronic communications companies other than Siminn though this service has been on offer in recent months.

612) The market has not undergone fundamental changes since the previous analysis. GR and other parties have however developed extensive fibre-optic networks. Despite the fact that the market is now technically independent and that there are more service providers, Mila still has a dominant market share of 87% and in addition to this the incentive to provide wholesale products that are subject to obligations does not seem to be great. Companies that wish to provide electronic communications services are still dependent on access to Mila local loops for it to be possible to them to provide homogenous service throughout the whole country. Development of the market has thus not given reason to assume otherwise than that there is still a need to maintain obligations on the relevant market.

8.3 Obligations in force

8.3.1 Obligations imposed with the PTA Decision no. 26/2007 from 21 December 2007.

613) With a decision from 21 December 2007 on the imposition of obligations subject to analysis of Market 11 for wholesale access to copper local loops, the PTA imposed the following obligations.

Obligation to provide access to copper local loops

614) Obligations were imposed on Mila to accede to all fair requests from electronic communications companies for shared access to the company's local loops in the form of copper wires, both fully unbundled and shared access. Access to the copper local loop was divided into the following sub categories.

- Unbundled access for the service provider to the lower and upper frequency ranges of the local loop for telephone service and data transmission.
- Shared access where the network party uses the lower frequency range for telephone service and the upper frequency range is leased by another electronic communications company.
- Access to the lower frequency range only (basic access), that is to say the local loop is used only for telephone service.
- Access to the upper frequency range only (naked DSL), that is the local loop used solely for data transmission.

615) With the access obligation the duty was placed on Mila to offer sharing or co-location for the facilities the company controls, including in buildings and other facilities. The obligation covered reasonable requests but did not entail a significantly increased financial burden on Mila.

616) The obligation was also imposed on Mila to provide access to support systems and information necessary for the use of the copper local loops for the purpose for which they were leased.

Obligation for non-discrimination

617) The obligation for non-discrimination in leasing of copper local loops was imposed on Mila. Mila should provide all those who lease local loops, including its own departments and related companies, services with the same conditions, speed of processing, prices and quality and availability. In addition to this Mila should send to the PTA before one July each year, a written statement from its accounts on how non-discrimination and prices and in prices had been maintained.

Obligation for transparency

618) The obligation for transparency in leasing of copper local loops was imposed on Mila. Mila was obliged to publish information related to access to copper local loops, for example on bookkeeping for local loops, technical descriptions, characteristics of networks, terms and conditions for delivery and use and tariff. Part of this obligation was that Mila was to issue a reference offer for local loops which was to be maintained and updated as required and submitted to the PTA for endorsement no later than six months after the PTA published its decision on Market 11. Mila was also obliged to authorise open access for other companies to technical interfaces, communications protocols and other technologies that are sure interoperability of services.

Obligation for separation of accountancy

619) The obligation was imposed on Mila to structure separation in its accounts with respect to revenue, costs, assets and liabilities for copper local loops. Mila was to provide the PTA on an annual basis with a breakdown of the operational accounts and balance sheet for wholesale and retail along with a statement of the division of indirect costs that were not

possible to assign through comparison with other cost items. The above specified statement should reach the Administration no later than 1 April each year for the previous year. Mila was also obliged to deliver a report from an independent auditor to the PTA to show that there was correspondence between the Mila description to the PTA on how costs had been divided and the implementation of accounting separation by Mila.

Obligation for price control

620) The obligation was imposed on Mila to decide a tariff for lease of copper local loops and related facilities on the basis of costs and to submit to PTA price control. The tariff should be broken down into base price, additional fees for shared access and fees for related facilities. The base price for the copper local loop should be calculated from the annual operational costs of the local loop system which should be based on historical costs and should apply as an average price for the whole country. Mila was to make a cost model to calculate the fee for local loop lease no less than six months after the publication of the decision on the relevant market, which used historical costs as a reference for the tariff and the PTA would at the same time take into account operations of analogous services conducted in an economical manner in accordance with the authority in the Electronic Communications Act. The PTA was to assess on the basis of the results of the cost analysis in each instance whether it would be more appropriate to use the LRIC method than to use historical costs when determining tariffs. All amendments to tariff were subject to the PTA endorsement. An obligation was also imposed on Mila for cost accounting for copper local loop operation which should capture, identify, assess and distribute the costs in question. Mila was to deliver to the PTA a description of the cost accounting and to publish the main cost categories and rules that were used to apportion cost and was to deliver a report to the PTA from an independent auditor that there was correspondence between the Mila description and the implementation in Mila's accounts.

8.3.2 The impact of existing obligations

621) Existing obligations have by the nature of things had a direct impact on access for electronic communications companies to Mila systems and on the prices offered. On the other hand they have not resulted in a reduction of price in excess of what was obliged and in addition to this there have been examples of delays in companies receiving greater access to Mila systems than that stipulated by the obligation.¹⁹⁴

622) It is considered likely that obligations that were imposed on wholesale have affected pricing in retail as the price for leasing local loops is a significant factor in the price of retail service such as the fixed fee for fixed line telephones and bitstream connections. There has been considerable development in technical solutions and in products carried by local loops since the last analysis. In this context one can mention the substantial performance increase in bitstream transmission, which makes price comparison more difficult. But one can say that the prices of the main packages during each period have changed little during the period of validity of the previous analysis and seem to follow the consumer price index (though of course download speed increases as does the amount of data included).

623) In addition to this, customer market share at retail level has remained relatively stable (see figures 2.5 and 2.6). The largest three service providers still have a combined market share of more than 90% at the end of 2013 with the proportional division between these parties remaining similar. On the wholesale market Mila still has great dominance with

¹⁹⁴ For example with respect to Mila fibre-optic lines in the Úlfarsfellshverfi district.

respect to the number of local loops. Siminn is still the largest purchaser of local loops from Mila while Vodafone leases the next largest ballroom all local loops from Mila and provides xDSL service on about 17% of all leased local loops which is significantly less than in 2007.

8.3.3 The necessity to maintain obligations (not to impose new obligations)

624) As previously stated Mila is still by far the largest network company in the country with about 80% market share of the local loop market despite the advent of new network operators and Mila has not shown great willingness to sell or lease access in excess of what is directly stipulated by the obligations. Development on the market seems to be that companies other than Siminn turn to other network operators, like for example GR. The share of Skipti Group competitors in leased local loops from Mila changed significantly during the period of validity of the previous market analysis despite obligations for access, as it has declined. The PTA made a Decision in December 2012 (no. 38/2012) where the conclusion was that Siminn should grant Vodafone (and other electronic communications companies that so requested) VDSL access through Access Option 1. Recent developments seem to be such that competitors of the Skipti Group on the retail market prefer to purchase wholesale bitstream access rather than to lease local loops and operate their own bitstream system. According to this it is clear that obligations on Mila and Siminn on Markets 4 and 5 need to be maintained.

625) The development in recent years does not give reason to conclude that the market has tended sufficiently towards free competition that the conditions exist to withdraw obligations from the market. One could say the same about the outlook for the near future.

8.4 The Decision of the Competition Authority no. 6/2013

626) On 26 March 2013 the Competition Authority Decision no. 6/2013 was published. The Decision is based on a Settlement between Skipti hf., Siminn hf. and Mila ehf. and the Competition Authority with respect to seven cases involving Siminn market conduct which were being investigated by the Competition Authority. With the Settlement a clear separation was made between the Skipti Group core systems and Siminn retail operations.

627) The Decision was intended to prevent the Skipti position in core electronic communications being leveraged to create a competitive advantage over competitors. For this purpose it was among other things prescribed that Siminn competitors should enjoy the same access to the Mila electronic communications infrastructure and electronic communications services with the same terms, conditions and quality as Siminn itself at any given time. The same applies to non-discrimination with respect to all provision of information.

628) Mila's independence was strengthened with decrees on company business policy and scope of operations, with an autonomous Chairman of the Board and managerial autonomy, separate premises, obligations for confidentiality and a ban on sharing of specific services. Further to this, a number of wholesale sectors that had been transferred to Siminn were transferred back to Mila.

629) In Article 8 of the Settlement one can find general provisions on access to Mila services and systems. Mila is obliged to practise non-discrimination, impartiality and transparency towards the electronic communications companies that request access to electronic communications networks and other company facilities. It is specifically prescribed that Mila shall provide Siminn and its competitors with bitstream access.

630) Mila shall inform all its customers about new or planned products or services, changes or plans related to existing or planned services, at the same time and in the same manner. Furthermore Mila shall ensure with necessary measures that confidential information to which its employees are privy about individual company customers shall not be disclosed to Skipti, to Mila sister companies or other Mila customers, with the exception of those departments that are authorised to provide Mila with support services, see Article 5, should this be necessary in direct connection with the support service in question.

631) In the Settlement it is specifically stated that it has no effect on the jurisdiction of the Post and Telecom Administration pursuant to Act no. 69/2003 on those issues covered by the Electronic Communications Act no. 81/2003 and derived rules and Decisions on the basis of electronic communications legislation.

632) The settlement does not prescribe the offer of specified wholesale services by Mila, with the exception of bitstream access. There are no specific statements on the offer of local loops in the Settlement and no provisions on price control of the tariff for local loops. The general provisions of Article 8 of the Settlement on access to Mila systems and services thus covers local loops.

633) The PTA has examined whether the above specified Decision by the Competition Authority in any way diminishes the need for obligations on the relevant market. When assessing whether general competition rules suffice to correct market failure then one must keep in mind whether substantial measures are required, whether frequent and immediate intervention is required and whether special measures are needed to create legal predictability on the market.

634) Major measures would mainly be necessary when a company that controlled critical facilities refused to provide access to other parties and where the authorities needed to establish access with decrees to the company in question or perhaps by organising the nature of access through intervention in pricing and with other conditions.

635) As stated here above there are non-transitory entry barriers to this market which among other things are manifested in the difficulty of duplicating facilities comparable to those controlled by the largest company on the market. Smaller electronic communications companies need to rely on having access to the Mila network to be able to serve their customers across the whole country. No other access network covers all inhabited areas of the country.

636) On the market for local loops, quite substantial measures were required to ensure access at fair terms. It has been necessary to establish extensive price control with the accompanying cost analyses to ensure that all purchasers on the market can rely on getting access on an equal footing and at a price that is not far in excess of cost having taken into account a reasonable return for Mila.

637) Experience has shown that not all problems on the market can be solved with one Decision but rather that regular intervention is required. The PTA has in recent years intervened on many occasions and has made Decisions in matters concerning local loops. In this respect one can cite the following PTA Decisions:

- [26/2007](#) On the designation of a company with significant market power and on the imposition of obligations on the wholesale market for access to copper local loops (Market 11), dated 21 December 2007.
- 1/2009 with respect to the Mila reference offer for access to local loops.
- 23/2009 As a result of a complaint by Gagnaveita Reykjavíkur ehf. about hosting charges by Mila ehf.
- [13/2009](#) With respect to cost analysis for open access to copper local loops (Market 11 according to the older Recommendation).
- [16/2009](#) In a dispute on the Mila ehf. closure of shared access the service provider to the upper frequency range of local loop.
- 30/2011 Regarding the review of tariffs for copper local loops, setup fees and access to distribution frame (Market 11, now Market 4).
- 15/2013 On amendments to the Mila tariff for copper local loops.

638) This listing demonstrates that measures by the regulatory authorities are often required. It can hardly be expected that the competition authorities have the capacity for such frequent measures on one sub-market in the electronic communications sector. Furthermore the measures to which it has been necessary to resort have been very specialised, based on specific legal rules and on specialised knowledge of the PTA. The measures in question often relate to maximum wholesale prices where the Competition Authority has no authority to intervene.

639) There are often very substantial interests tied to gaining access to local loops without delay. It can prove impossible for electronic communications companies to commence operations in new areas if access to local loops in the area is not available. If new companies are denied access or if access is made uneconomic with excessive pricing or unfair terms and conditions it is possible that significant damage could result both for the company in question and for the market as a whole and as a result for consumers.

640) The risk of denial of access or of unfair conditions for access, calls for permanent measures being in place to ensure that it is always possible to gain access and that it is possible to react without delay in order to prevent new companies being repelled from the market with delaying tactics. It should be assumed that the Decisions of a specialised authority that operates according to special rules of electronic communications legislation will, all things being equal, be a quicker way to assure access on reasonable terms, rather than Decisions based on general rules governing competition. There among other things provisions in the legislation that governs the PTA to the effect that the Administration can make temporary Decisions in cases, given certain circumstances, and this authority has often been exercised in practice.

641) When a company plans to attempt an entry into an electronic communications market where there is a need to invest significant sunk costs, it is necessary to be able to foresee the type of access it will be possible to gain to incumbents' networks and on what terms. Uncertainty about such issues would deter companies and investors from entering the market. Mitigating measures provided by the Electronic Communications Act which are ex-ante obligations on access and related issues, are much more conducive to increasing predictability on a market like this rather than general rules of competition which allow for intervention subsequent to instances of misuse of a dominant market position coming to light. In such cases where intervention is subsequent to the event it is often extremely difficult to predict the conclusion and the length of time the case might take.

642) Obligations imposed by the PTA on companies with significant market power apply until a new Decision has been made subsequent to a new market analysis where consultation has been made with parties to the market and with ESA. Transparency and predictability of such an arrangement is much greater than is generally the case with Decisions made on the basis of the general competition law. Obligations that were imposed on Siminn with the PTA Decision no. 26/2007 do not specifically address the needs of purchasers on the local loop market, which means that there is a risk that damaging delays could occur were a party to demand access to a specific local loop service on the basis of general provisions in the Decision by the Competition Authority.

643) The conclusion of the PTA is that the Competition Authority Decision no. 6/2013 does not lessen the need for special obligations on the market for access to local loops. Experience has shown that there is a need for frequent and substantial intervention in the market and that predictability needs to be created with respect to access for competitors of the Skipti Group to the Mila networks. The Decision of the Competition Authority is general in nature and does not specifically address issues on the relevant market. In addition to this there is not yet adequate experience of the implementation of the Settlement and its execution by the Group has not been fully in accordance with undertakings by the Group when it signed the Settlement in question. For this reason the PTA considers it necessary to maintain obligations on the market pursuant to the Electronic Communications Act.

8.5 Imposition of obligations pursuant to the Electronic Communications Act

644) In its analysis of the relevant markets for wholesale network infrastructure access at a fixed location, the PTA has come to the conclusion that competition is not effective enough and that this situation is primarily a result of Mila's strong position in the relevant markets and related markets. The PTA came to the conclusion in Chapter 5 that Mila had SMP on the relevant wholesale market and that it is not considered that there is much likelihood of this situation changing unless appropriate obligations are still imposed on Mila. In this chapter, proposals from the PTA can be found for obligations on Mila for the purpose of resolving competition problems and facilitating more active competition on the relevant market. The obligations have the main objective of increasing competition on the relevant market and creating conditions for the entry and growth of independent service providers.

645) Given the competition problems described in Section 8.2.2 the following obligations are in the opinion of the PTA conducive to mitigating circumstances on the relevant market:

1. Obligation for access to networks and appropriate facilities.
2. Obligation for non-discrimination
3. Obligation for transparency
4. Obligation for separation of accountancy
5. Obligation for price control
6. Obligation for cost accounting

646) The PTA believes that these obligations are both in accordance with the objectives presented in the EU Framework and Access Directives and with the provisions of legislation on electronic communications and that they are appropriate for the period that is expected to

pass until the market will be analysed again. Here below follows detailed discussion on the above specified obligations.

8.5.1 Obligation to provide access

647) According to Paragraph 1 of Article 28 of the Electronic Communications Act the PTA may instruct undertakings with SMP to meet normal and reasonable requests for open access to public electronic communications networks, network elements and associated facilities under certain conditions prescribed by the Administration. Paragraph 2, Item g of the same Article states that it is permissible to require that electronic communications undertakings interconnect networks or network elements.

648) When imposing an obligation to grant access it is necessary to consider whether the access in question encourages investments in the network and promotes innovation, efficiency and sustainable competition. In Paragraph 3 of Article 28 of the Electronic Communications Act it is stated that when making a Decision to impose obligations pursuant to Paragraph 1, the PTA shall take into account whether it is:

- a. technically and financially realistic to use or install competing facilities in view of market developments and the nature and type of interconnection and access involved;
- b. feasible to provide the access proposed;
- c. justifiable, in view of the original investment by the owner of the facility and the risk taken in making the investment;
- d. to the advantage of competition in the longer term;
- e. inappropriate, in view of intellectual property rights;
- f. conducive to increasing the supply of services.

649) The PTA has assessed whether the access requirement is technologically and financially realistic and whether it would be realistic for a competitor to set up his own infrastructure in competition with Siminn, considering market developments and the nature of the access in question. The PTA considers it quite feasible for Mila to grant the access that is proposed and furthermore it considers it justifiable with respect to Siminn's initial investment. The PTA considers obligations to be in the interests of competition in the long-term and that they will encourage an increase in service offers.

8.5.1.1 Access to specific network elements or facilities, including unbundled access to local loops

650) Pursuant to Item a Paragraph 2 of Article 28 of the Electronic Communications Act the PTA can demand that an electronic communications company with SMP provide access to specific elements of networks or facilities, including unbundled access to local loops. There are further provisions on access to local loops in Article 34 of the same act where it says that an electronic communications company with SMP in public electronic communications networks and telephone services shall meet all legitimate and reasonable requests for access to local loops or facilities associated with such access. Requests for access to local loops shall only be rejected on the basis of objective criteria, the necessity of maintaining network integrity or for technical reasons.

651) Pursuant to Paragraph 1 of Article 34 of the Electronic Communications Act Mila shall accede to all reasonable requests from electronic communications companies for unbundled access to the company's local loops in the form of copper wire or fibre-optic whether for full or shared access. A reasonable request for full or shared access to copper local loop is considered to be a request for a local loop that is not in use for another purpose on that day when new use is planned. The right of each user for universal services through an network connection node should be kept in mind and also the necessity to maintain network integrity.

Copper local loops

652) In the previous analysis the market was limited to copper local loops but now it is technically independent and fibre-optic local loops now belong to the relevant market and they differ in many ways in structure and capabilities. For this reason one has to discuss each type of local loop separately.

653) Access to the copper local loop was divided into the following sub categories:

- Fully unbundled loop¹⁹⁵. Contains both access to the lower and upper frequency ranges of the local loop.
- Shared unbundled loop¹⁹⁶ Access for an electronic communications company to the upper frequency range of the local loop with DSL or other analogous technology while access to the lower frequency range of the local loop is used by another electronic communications company at the same time for telephone services.
- Access solely to the lower frequency range. Access for an electronic communications company solely to the lower frequency range while the upper frequency range is not being used at the same time.
- Access solely to the upper frequency range (naked DSL)¹⁹⁷. Access for an electronic communications company solely to the upper frequency range while the lower frequency range is not being used at the same time.

654) Fully unbundled access means that the electronic communications company leases the local loop as a whole, that is to say its whole frequency range. It is often different service departments that sell services on the two frequency ranges that apply for Siminn use of the local loop. When different companies that lease access to the two frequency ranges this is considered to be shared access and it is common for Siminn to provide telephone service in the lower frequency range while another party leasing the local loop uses xDSL technology to provide for example an Internet connection in the upper frequency range. The division of the frequency range is implemented with a splitter. Before the advent of xDSL technology the local loop was almost exclusively used for telephone services. What is called "naked DSL" has increased in recent years and it involves using the local loop solely for data transmission for example in the form of an Internet connection and/or digital TV. The PTA intends to impose obligations in accordance with all subcategories.

655) As has been previously stated there are two xDSL standards that are most common in this country. They are ADSL and VDSL. VDSL is new technology which has been establishing itself in recent months and is mainly offered by Siminn on the Mila local loops.

¹⁹⁵ "Fully unbundled loop".

¹⁹⁶ "Shared unbundled loop".

¹⁹⁷ "Naked DSL"

Because other methods are needed to provide shared access to be DSL then this will be covered separately after discussion on traditional Access Options to copper local loops.

656) With respect to xDSL, other than VDSL, Mila shall meet requests from electronic communications companies for the upper frequency range of copper local loops for data transmission even though the lower can say range is not being used for telephone service.

Access to copper sub loops

657) Normally the access obligation for copper local loops is implemented such that the access to sub loops¹⁹⁸, for example in street cabinets is part of such an access obligation. Bitstream systems that require shorter line lengths use such access to sub loops to develop the system from street cabinets to end user. This applies in the case of VDSL systems as operated by Mila which uses for this purpose access to copper sub loops and facilities in the company's street cabinets.

658) As is mentioned in Section 2.3.1.2 on copper local loops, it can be problematic to provide more than one VDSL operator access to street cabinets. This is among other things because of lack of space in street cabinets and difficulties and costs involved in either enlarging cabinets or installing more cabinets adjacent to the existing ones. There are also technical problems such as crosstalk where the VDSL signals from different users affect each other, such that service quality for all users of local loops in the same multipair cable could be impaired. Vectoring is a technology that reduces crosstalk and thus increases the capacity of VDSL connections. The

659) In order to meet these changed needs some regulatory authorities in Europe have imposed obligations for open virtual access to sub loops¹⁹⁹ (VULA²⁰⁰ or vULL), hereafter called virtual access. The European Commission has agreed to this method though it states that it is only a temporary solution until development of new technology makes shared access easier.²⁰¹ VULA involves providing a connection from a switching station, telephone exchange (aggregation point²⁰²) to the home of the end user.

660) It is therefore clear that if one is to take this into account that it must be possible to use vectoring to increase the capacity of VDSL connections and to assure the objective for open access to the local loops that use the VDSL standard with vectoring then additions have to be made to the obligations imposed in the previous analysis. In this connection one has to particularly keep in mind that Mila is almost the only electronic communications company that provides service using the VDSL technology on copper local loops today.

661) Because of the difficulties that can arise in providing more than one party with access to sub loops that carry the VDSL system, the PTA plans to take particularly into account the circumstances and to structure obligations in accordance with the circumstances that pertain in the case of open virtual access. the PTA therefore intends to impose the obligation on Mila to provide access to the local loop from the telephone exchange/aggregation point to the end user in such a manner that the party leasing virtual access has full access to the VDSL system

¹⁹⁸ "sub-loop".

¹⁹⁹ See for example United Kingdom: Review of the wholesale broadband access markets Final explanatory statement and notification Statement and Austria: EU Telecom Flash Message 63/2010.

²⁰⁰ Virtual Unbundled Local Access.

²⁰¹ EU Telecom Flash Message 54/2010.

²⁰² Aggregation Point.

in question and can control service to end users in the same manner as if he operated his own VDSL system with all those technical and performance specifications needed to provide any kind of service over bitstream including IPTV. As open virtual access should simulate open access, the leasing party receives access to a kind of virtual network/virtual channel that gives him the network facility he requests.

662) In those street cabinets where VDSL equipment is already in place and where Mila ensures and guarantees that open virtual access has been activated, the PTA plans to provide an exception from the obligation on Mila for access to sub loops while open virtual access is being offered, as the obligation for open virtual access would replace access to sub loops with respect to the local loops in question.

663) In order for open Virtual access, VULA, to be an adequate substitute for open access to sub loops, five conditions related to service an access must be fulfilled. They are:

- 1 *Access at each location* - Mila must ensure that in each of the street cabinets where VDSL is provided, competitors receive access to local loops. Mila must retain dynamic registration of those buildings connected to be DSL at any given time and provide access to this register.
- 2 *Access independent of the service provided on the line* - Mila may not discriminate on the basis of the nature of the service transmitted through the line. Mila must ensure that the VDSL system in question provides each service provider with the same kind of bitstream where there is no distinction made between types of services (for example IPTV).
- 3 *Specific and fixed definition of line capacity* - Competitors receive the same service as Mila's bitstream department enjoys at any given time for its VDSL service and all was receive the performance specified in the agreement.
- 4 *Full control of access and service/service specifications* - service providers must receive access to those systems that specify capacity and service for end users, such as for example the amount of capacity dedicated to TV, telephone etc. and the providers must be able to control the technical and quality specifications required by each service.
- 5 *Full control of user equipment* - the VDSL system operators in question needs to provide service providers with a router at the same price as their own retail or related party would pay. The router must be able to provide all the service that they competitor wishes to provide through the connection such as general Internet service, telephone over Internet connection and digital TV/VoD through Internet connection (ISP, VoIP and IPTV/VoD). In addition to this they competitor needs to receive full access to such a router to be able to set it up according to the service standards he requires. If the VDSL system operator (Mila) can provide this service/bitstream on a router owned by competitor then this requirement can be withdrawn.

664) Mila is only authorised to limit access to and use of local loops on the basis of fundamental demands that relate to operational security of electronic communications networks in emergencies, its system and in proven instances the operational capability of service systems and protection of data, see the decision of the PTA from 15 April 2005 where Siminn was obliged to process transfer requests from Og fjarskipti for ADSL service.²⁰³

²⁰³ The decision was confirmed in the ruling by the Electronic Communications Appellant Committee no. 3/2005.

665) In the light of the above the PTA intends to impose obligations on Mila for access for electronic communications companies to the company's copper local loops where the obligations for access shall also apply to copper sub-loops for example from street cabinets into the users' building. Where VDSL equipment has been installed and it is planned to use vectoring, Mila shall ensure that open virtual access is provided, see discussion here above. Having fulfilled this Mila can acquire an endorsement from the PTA for the cancellation of the obligation for access to sub local loops with respect to these local loops. An exception to the obligation for access to sub-loops is provided where open virtual access to sub-loops is offered, see discussion here above, but only subsequent to endorsement by the PTA. The application of vectoring is one of the main pre-requisites for being granted exemption to the obligation for access to part of the local loop. If Mila has not applied vectoring to the local loops in question in three months after being granted the exception the PTA will revoke the exception to the sub-loop unbundling obligation.

Fibre-optic local loops

666) Fibre-optic local loops are as has previously been stated relatively new on the market in this country and there were no obligations on them in the previous analysis. Because of the difference in structure of fibre-optic networks and copper networks it is necessary to discuss separately access obligations for fibre-optic.

667) In this country, as has previously been stated, there are two types of fibre-optic network that are most common. Point to Point (P2P), which among others GR operates and Gigabit Passive Optical Network (GPON). Mila operates a GPON network on its fibre-optic local loops. It is technically possible to share access to fibre-optic local loops on these access systems but current operational and financial lack of feasibility of this operation is such that it is not considered realistic to share access in the above case.²⁰⁴

668) In the case of both of these network arrangements each end user has his own dedicated fibre-optic local loop from the exchange/technical space. This exchange/technical space is normally quite close to the end user. Competitors of the network operator can set up their own backbone network to the exchange/technical space and have the user end of the fibre-optic connected to his equipment. This is then unbundled access to the fibre-optic local loop. Realistic solutions to shared access in these systems are not yet available.²⁰⁵ The P2P system is the most common in use in this country.

669) In Mila fibre-optic local loop cables there are at least four optical threads for each apartment. The Mila system is designed to allow more than one service provider to provide service simultaneously. But as shared access to fibre-optic connections is not a realistic option for the time being, the service providers in question cannot use the same thread and terminal equipment. The number of threads in Mila local loops make it however possible for more than one service provider to provide service to the same end user at the same time, where each service provider provides service through its own thread. For this reason the PTA considers there to be no need to impose access obligations for shared access to individual fibre-optic threads.

²⁰⁴ Architectures and competitive models in fibre networks; Prof. Dr. Steffen Hoernig, Stephan Jay, Dr. Karl-Heinz Neumann, Prof. Dr. Martin Peitz, Dr. Thomas Plückebaum, Prof. Dr. Ingo Vogelsang. Wik Consultants 2010.

²⁰⁵ Comparing FTTH Access Networks based on P2P and PMP Fibre Topologies 10th Conference of Telecommunication, Media and Internet Techno-Economics (CTTE).

670) As the fibre-optic thread is whole and continuous between the technical space and end user it is impossible to connect equipment to it on the route in question. This means in other words that access to fibre-optic sub loops is in reality technically impossible. The PTA considers therefore there to be no need to impose access obligations for fibre-optic sub loops.

671) With respect to local loop leasing, Mila does not offer service on its fibre-optic cables but leases access to the local loop without end equipment, in the same way that Mila leases its copper local loops. Service providers who would like to provide service through Mila's local loops therefore need to develop their own data transmission system with the related operations and equipment required for this. This includes equipment such as a system core, equipment in Mila equipment space and user point of service equipment. The same applies to the Mila bitstream Department when operating as this type of service provider.

672) Access to fibre-optic local loops can be divided into the following subgroups:

- Access to fibre-optic local loops Where one company uses the access, independent of the use of the local loop.
- Shared fibre-optic cable If more than one electronic communications company uses its own thread in the fibre-optic local loop then thread is considered to be a separate local loop. Mila is authorised to resolve the need for shared access with virtual networks over bitstream provided through fibre local loop on receiving agreement from the PTA in each instance.
- Access to facilities, which is connected to access to fibre-optic local loops.

673) Mila is only authorised to limit access to and use of local loops on the basis of fundamental demands that relate to operational security of electronic communications networks in emergencies, its system and in proven instances the operational capability of service systems and protection of data, see the decision of the PTA from 15 April 2005 where Siminn was obliged to process transfer requests from Og fjarskipti for ADSL service.²⁰⁶

674) The PTA plans to impose obligations on Mila to provide open access to the company's fibre-optic local loops. Access shall be provided from the technical space/node point in the distribution frame of the fibre-optic to the network connection point of the end user.

8.5.1.2 Co-location or sharing

675) According to Item d Paragraph 2 of Article 28 of the Electronic Communications Act it can be required that electronic communications companies with SMP offer co-location or joint utilisation including joint utilisation of cable ducts and buildings.

676) In addition to this there is a general provision that the PTA can call for agreements on co-location or other kinds of joint utilisation of facilities or of land in Article 25 of the Electronic Communications Act which is analogous with Article 51 of the older Electronic Communications Act no. 107/1999.

²⁰⁶ The decision was confirmed in the ruling by the Electronic Communications Appellant Committee no. 3/2005.

677) It can be very costly for new network operators on the local loop market to develop facilities necessary to be able to offer an adequate network. Such costs are in many instances sunk costs. In order to distribute such development costs between the companies in question the cost of excavation and laying of ducts is often shared (Duct Sharing).²⁰⁷

678) The EU Commission has also emphasised that parties to the market provide regulatory authorities with information on where it would be possible to utilise ducts and other structures for the distribution of next generation access networks (NGA).²⁰⁸ For this purpose the regulatory authorities shall emphasise that where the above specified facilities exist, they should be open to all.²⁰⁹

679) Should the situation arise where a new party requested permission to install a new cable in a Míla duct that is not fully used then Míla shall meet this request. The pricing of access shall be cost-oriented and is based on Míla historical costs (HCA)²¹⁰ where cost is allocated to the relevant service service (FAC)²¹¹.

680) Siminn and later Míla have provided facilities, for example in buildings, on the basis of Article 25 of the Electronic Communications Act. Despite this is the PTA considers it necessary to impose this duty on Míla on the basis of Paragraph 2 of Article 28 of the same act as an incentive can be created for companies not to give new parties access to their facilities. A reasonable request for co-location is considered to be a request for free space in Míla buildings and such a definition can also include a request that requires enlargement or rebuilding of the premises.

681) Míla shall provide a list of planned excavation and duct activities (Civil Works) with six months' notice. Other electronic communications companies shall be offered to participate in the projects with equal division of costs between parties to the projects. Repairs to or renewal of individual local loops will normally not be subject to this obligation.

682) The PTA believes that the duty to offer joint utilisation or co-location is reasonable and should not create significant financial burdens for Míla but rather provides the company with the opportunity to use excess capacity. In addition to this the payments for such access will provide Míla with the opportunity to receive reimbursements on its investment. Where the duty for joint utilisation or co-location requires changes or extensions then Míla shall accede to normal and reasonable requests. Míla shall accede to all reasonable requests for co-location of the necessary equipment related to services provided through fibre-optic and copper local loops.

683) The obligation to offer joint utilisation or co-location is imposed on Míla for the facilities the company controls, including in buildings and other facilities. The obligation covers reasonable requests but does not entail a significantly increased financial burden on Míla. Should agreement not be reached between the parties on access to joint utilisation or co-location the PTA can decide a cost oriented price and reasonable conditions for access.

²⁰⁷ See for example BEREC: Report on „Open Access“, February 2011, pages 23.

²⁰⁸ Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) – Page 4.

²⁰⁹ Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) – Page 12.

²¹⁰ Historical Cost Accounting.

²¹¹ All costs are allocated to the relevant operation or service. (Fully Allocated Costs; FAC).

8.5.1.3 Access to other essential facilities

684) According to Item i of Paragraph 2 of Article 28 of the Electronic Communications Act it can be required that an electronic communications company with SMP provide access to other essential facilities.

685) With reference to Item c of Paragraph 2 of Article 28 of the Electronic Communications Act, the PTA plans to prescribe that Mila provide other electronic communications companies open access to technical interfaces, protocols and other key technologies which are necessary to ensure interoperability of services (connections with other networks).

686) Mila shall provide access to support systems and information necessary for the local loops to be utilised for the purpose for which they were leased. Such access constitutes the following:

1. Operational support.
2. A database to provide information before an order is made.
3. Delivery.
4. Orders.
5. Maintenance.
6. Fault processing.
7. Invoicing.

687) Applications sent electronically for access to local loops and related facilities such as buildings shall be processed by Mila as quickly as possible. Mila is unauthorised to provide its departments and related companies priority in handling at the cost of other electronic communications companies. Denial of access shall be sent electronically and shall contain grounds for the decision. The grounds must contain all information required to enable assessment of the justification of the denial. Applications for access shall have access equal to that of companies within the Skipti Group to the Mila service systems for the purpose of tracking their applications and also for information on maintenance and maintenance of local loops and on invoicing.

8.5.1.4 Technical migration

688) Those obligations that now rest on Mila for access to copper local loops shall not be discontinued if Mila converts the structure of its systems to the next generation of networks, for example should fibre-optic cables replace copper local loops (migration), unless an agreement for the procedure of the migration has been reached and the party's leasing the local loops loss prepared to accept new types of local loop in place of the older ones when the migration takes place. Should such an agreement not be reached then Mila shall inform parties to the market of all changes to the arrangements of local loop access that are likely to alter companies' competitiveness on the market with five years notice.²¹² Deviation may be made from the above period of notice on receipt of advance endorsement by the PTA. If Mila's request for such an exemption is found to be material and proportionate the PTA would hold a consultation among stakeholders. If no material comments would arise and stakeholder

²¹² Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) – Page 43. See further BEREC Common Position on best practices in remedies on the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location imposed as a consequence of a position of significant market power in the relevant market - Page 18.

proven to have sufficient alternative and not suffer undue hardship migrating between systems, the PTA would grant such an exemption.

689) Should Mila make changes to its systems it is important that:

- System downtime should be at a minimum for those wholesale customers operating on the relevant sub-market.
- Costs resulting from the migration should not be so great as to act as an entry barrier to what results from the migration.
- An integrated process for transferring all parties should be in place with care taken to ensure non-discrimination between all parties on the market.
- The time taken for migration should be at a minimum given the type and scope of the application.
- There should be a service level agreement and a list of key performance criteria to ensure the efficiency of the migration procedure, unless there are indications that such is unnecessary or is not cost-effective.

8.5.1.5 Summary

690) With the authority in Articles 28 and 34 of the Electronic Communications Act the PTA intends to impose on Mila obligations to meet normal and reasonable requests for wholesale access to its copper and fibre-optic local loops and related facilities. It is problematic to provide more than one VDSL operator access to street cabinets. Therefore the access obligation must be resolved with open virtual access (VULA). VULA needs to fulfil five conditions related to service an access and they are: Access at each location, access independent of service provided on the line, specific and fixed definition of line capacity, full control of access and service/service definitions and full control of customer premises equipment. Where shared access is not technically possible and exemption is granted where open virtual access to sub-loops is offered. Access to fibre-optic local loops shall be provided from equipment space/node point in the distribution frame. The PTA also intends to impose the duty on Mila to offer core location/joint utilisation along with access to support systems and appropriate information and Mila is required to notify all technical migration with advance notice. Mila shall authorise open access for other companies to technical interfaces, communications protocols and other technologies that ensure interoperability of services. Civil works with six months' notice. furthermore Mila shall notify parties to the market of all changes to the structure of local loop access that are likely to impact on companies' competitiveness on the market with 5 years notice and to respect the main principles in this respect. The PTA can grant an exemption from the 5 years' notice in question. If Mila's request for such an exemption is found to be material and proportionate the PTA would hold a consultation among stakeholders. If no material comments would arise and stakeholder proven to have sufficient alternative and not suffer undue hardship migrating between systems, the PTA would grant such an exemption.

8.5.2 Obligation for non-discrimination

691) According to Article 30 of the Electronic Communications Act, the PTA can impose obligations on electronic communications companies designated with SMP to practise non-discrimination when agreeing to interconnection or access. Such obligations should particularly ensure that electronic communications companies make the same conditions to other companies that provide electronic communications services for the same kind of

transactions and should provide service and information with the same conditions and the same quality as it provides to its own service department, subsidiaries or collaborators.

692) The provision on non-discrimination in Article 30 of the Electronic Communications Act is in two parts. On the one hand the PTA can impose obligations on a company with SMP that it practise non-discrimination when agreeing to interconnection and access, that is to say practise non-discrimination between unrelated electronic communications companies. On the other hand the obligations shall ensure that the company make the same conditions to unrelated electronic communications companies in analogous transactions as it makes to its own service providers or other related parties.

693) In order for this to be successful, the obligation to grant access must be imposed together with an obligation for non-discrimination. The non-discrimination obligation is intended to prevent a vertically integrated undertaking with SMP from engaging in practices that have a negative impact on competition. It is intended to prevent such an undertaking from discriminating, for example with regard to price and quality of service, that is, selling less expensive and better services to its own retail departments than to other parties. Fair, moderate and justifiable conditions for access, including price, are basic issues when striving to strengthen competition. The obligation for non-discrimination does not mean that all companies are subject to exactly the same conditions but rather that all difference in conditions is based on objective criteria.

694) Significant market power on the market for local loops can lead to the company discriminating against parties that require the service, should the obligation for non-discrimination not be imposed. It could tend to sell to unrelated parties at a higher price than to its own departments and to other related parties. In order for the non-discrimination obligation to have the desired effect, it is often necessary to impose an obligation to practise accounting separation as well.

695) The even though companies have been assured access to local loops at the same price, Mila can try to discriminate in other manners and in this way increase costs for Skipti Group competitors in order to cause them problems and even push them out of the market. Such practices could for example be in the form of varying quality of service, differing service offers between related unrelated parties, varying processing of applications, inadequate information to unrelated parties (among other things on new service and/or planned distribution networks), unreasonable conditions for agreements and demands that other unrelated service is purchased at the same time.

696) The PTA believes that the obligation for non-discrimination is admirably suited to tackle the problems that arise in connection with discrimination with respect to price and access conditions. As an example of varying quality one could mention variations between the Skipti Group service departments and other companies with respect to expedition of connection of local loops. Discrimination can also manifests itself in varying prices and/or conditions for access to information systems and in parties being provided access to systems of varying ages and capacity.

697) The information gained by Mila from other companies when making agreements for access, or completion of agreements, shall solely be used for the purpose provided for and shall at all stages be treated as confidential. It is unauthorised to supply information from

related or unrelated parties, see among other things Article 26 of the Electronic Communications Act no. 81/2003.

698) The PTA intends to impose the obligation on Mila that all electronic communications companies that purchase access to local loops, whether copper or fibre-optic, taking circumstances into consideration, enjoy the same conditions (including price) that apply to related parties or to those cooperating with Mila. The PTA intends furthermore to make the requirements that quality of access provided to unrelated parties be no less than that of services provided by Mila to related parties. The obligation for non-discrimination that the PTA intends to impose on Mila is what is called Equivalence of Input (EoI) and is a stricter non-discrimination obligation than Equivalence of Output – (EoO). The main reason for choosing the stricter non-obligation is the fact that the PTA does not at this point in time intend to prescribe price control for Mila fibre-optic local loops. Under such circumstances it is deciding factor that non-discrimination between related and unrelated parties is total. The PTA considers it unnecessarily complex in practice to solely specify the stricter non-discrimination obligation for fibre-optic and the weaker one for copper local loops. For this reason the PTA intends to prescribe that the stricter non-discrimination obligation applies for all of Mila as local loop leasing. The non-discrimination obligation in question shall be fully implemented no later than three months after this decision has come into force. Within this period of time Mila shall submit documentation to the PTA which demonstrates that the non-discrimination obligation has been implemented. Otherwise the PTA reserves the right to prescribe a price control obligation for Mila as fibre-optic local loops.

699) Equivalence of Input means that Mila is obliged to offer the same price, use the same service procedures/service systems, the same time limits and to publish the same information about the service (among other things development and distribution information) to related and unrelated customers. In this way unrelated customers receive access to the same information, the same delivery and ordering service and receive the same treatment within the same time limits as related parties. The same applies to notification of faults and solutions and access for the staff of the unrelated party to Mila's information systems which are used for service to end users. Mila shall open those systems that are used within the Skipti Group and that the necessary in connection with local loop leasing for unrelated parties.

700) Information on access to local loops and access related service shall be equally accessible to other electronic communications companies as to related parties. Among other things information shall be provided on the length of local loops in each instance, where known, that is to say distance of the end user in question from the next connection point. When a local loop is measured for some reason, updated information shall be published using the conclusions of the measurement.

701) The PTA considers it particularly important that Mila does not have the opportunity to discriminate in an abnormal manner between related and unrelated parties with respect to innovations on the market.²¹³ As related retail markets are in continuous development, unrelated parties need to be certain that the appropriate wholesale products are available with adequate notice in order that they can offer new, improved and less expensive retail service (for example more capacity in Internet access) at the same time as parties related to Mila. The PTA plans to impose the obligation on Mila that unrelated parties be informed about distribution, enlargement or other developments of Mila local loop networks (and related

²¹³ Unjustified first mover advantage.

service and significant other innovations) with the same notice as parties related to Mila. This notice shall under no circumstances be shorter than six months. Information shall among other things contain planned prices, conditions, technical specifications, scheduled distribution plans, updated position on distribution and planned connection points. Such information is particularly important with respect to migration from ADSL to VDSL and with respect to distribution of fibre-optic local loops. Related parties may thus not receive the information in question before unrelated parties. Mila shall give related and unrelated parties the opportunity to influence development of new wholesale products and planned interfaces. Mila may not refuse to develop new service at the request of an unrelated party simply because a related party has not requested such service. Such a request by an unrelated party shall however be reasonable and normal.

702) In order to ensure that Mila fulfils the obligation in question the PTA can perform a technical and/or economic investigation as to whether unrelated parties can replicate the product offer of related parties in a sustainable manner (technical and/or economic replicability). Should the PTA conclusion be that unrelated parties cannot replicate the product offer of related parties for technical or economic reasons, the PTA can instruct Mila to alter its product offer and/or offer new wholesale products to enable unrelated parties to replicate the product offer of related parties on normal commercial grounds.

703) Mila shall take care that applications from unrelated electronic communications companies access to local loops are related services be processed in as timely manner as those of related parties. Should there be a problem in processing an application this shall immediately be notified to the applicant in writing or in an electronic manner and reasons provided for the delay. Mila is not authorised to make abnormal demands on the applicant as a condition for processing the application.

704) The PTA plans to make the reservation that Mila make service agreements with all purchasers of local loops where among other things the quality of service shall be prescribed and issues relating to non-discrimination as itemised in the obligations that the PTA plans to impose on Mila on the relevant market. This is a service level agreement (SLA). Such agreements shall cover the various service issues that relate to local loop leasing, including orders, delivery, service access, service switching and maintenance. The service agreements shall also among other things prescribe how mutual interference of signals will be avoided between parties on the Mila local loops. They shall furthermore prescribe efficient and economic procedures with respect to service switching at wholesale, that is to say when a Mila counterparty decides to transfer from one service to another at Mila. In order to ensure non-discrimination and transparency with respect to quality in Mila local loop leasing services, the PTA plans to prescribe that all service level agreements shall be published on the Mila website. Such agreements can among other things be part of a reference offer. Parties can consult with the PTA on the making of such agreements and the PTA can rule on matters of contention when making these agreements. Service level agreements can vary between parties, depending on the wishes of Mila counterparties. Mila shall however respect the non-discrimination obligation and for this reason it is important that all such agreements are published. Mila shall complete service level agreements with all of its counterparties no later than six months after the publication of the decision on the relevant market.

705) In addition to the obligation to make service level agreements the PTA intends to impose the obligation on Mila to issue a specific declaration on quality guarantees (Service Level Guarantees (SLG)). Such service level guarantees shall cover all necessary service

issues that relate to the local loop leasing including orders, delivery, service access, service switching and maintenance. Such service level guarantees shall among other things prescribe specific fines which Mila must pay to its counterparties should the service level guarantee not be honoured. In this instance it could be that a specific amount is paid for each day that for example delivery or repair exceeds the time-limit prescribed by the service level guarantee. Such provisions for fines should be objective, simple and unequivocal such the parties should not need to resort to the PTA or to the courts for interpretation. The PTA shall monitor the implementation of the Mila service level guarantee which shall be completed six months from the time that the decision on the relevant market is published. Mila shall ensure that interested electronic communications companies be informed of the content of the service level guarantee.

706) In order to ensure that Mila respects the obligation for non-discrimination that is intended to be imposed on the company and the making of service level guarantees, the PTA intends to impose the obligation on Mila that it should collect and publish regularly certain key performance indicators (KPI). The necessity to publish such information is published in a BEREC document on appropriate obligations on the relevant market from December 2012²¹⁴ and in the ERG document on obligations.²¹⁵ The key issue is mentioned are in this instance processing of orders, delivery of service, service availability, switching of service and maintenance. In this way Mila's counterparties can compare the service they receive with the service received by companies related to Mila on the one hand and with the average in the sector on the other. In this way Mila counterparties can determine whether they are being discriminated against. The publication of conclusions of measurements of key performance indicators will as shown above help in casting light on whether the non-discrimination obligation is complied with, particularly with respect to those factors related to pricing and whether Mila has fulfilled its duty to make adequate service level agreements with its counterparties.

707) As a minimum Mila shall publish the following key performance indicators as part of key performance assessment.²¹⁶

- 1) Delivery of orders.
 - a. Number of orders delivered.
 - b. Proportion of orders rejected after having been accepted in the ordering system.
- 2) Delivery of products/services.
 - a. Average delivery time.
 - b. Proportion of deliveries at or before time limit.
 - c. Precision of delivery.
- 3) Maintenance.
 - a. Proportion of faults in equipment for which company with SMP is responsible, measured in lines per year.
 - b. Average duration of repair of fault.

²¹⁴ BEREC Common Position on best practices in remedies on the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location imposed as a consequence of a position of significant market power in the relevant market - Page 15-16, BoR (12) 127.

²¹⁵ Revised ERG Common Position on the approach to Appropriate remedies in the ECNS regulatory framework.

²¹⁶ http://www.erg.eu/streaming/erg_07_53_wla_wba_bp_final_080604.pdf?contentId=544650&field=ATTACHED_FILE.

- c. Proportion of fault repairs at or before time limit.
- 4) Service switching.
 - a. Average time for switching from one wholesale service to another.
 - b. Proportion of deliveries at or before time limit.
 - c. Precision of delivery.

708) The PTA shall monitor whether Mila collects and regularly publishes the above specified key performance indicators for internal transactions on the one hand and external on the other. It is planned that Mila should publish the information in question in the first instance within three months from the publication of the decision on the relevant market and subsequently at monthly intervals.

709) The PTA considers that the publication of key performance factors is appropriate as the means to monitor compliance with the non-discrimination obligation and with Mila's duty to make service level agreements. For this reason and on the basis of minimum criteria in the BEREC and ERG documents, the PTA intends to impose the obligations on Mila to gather and publish figures on the company website for key performance indicators at monthly intervals.

710) The PTA understands that the obligation in question for collection of data can be onerous for Mila. On the other hand the PTA considers that measuring these criteria is extremely important for the market and further more important for Mila in its own operations. Publishing the above specified information is important for competition on the relevant market and supports compliance with the demand for non-discrimination and that all parties can rely on this compliance.

711) The PTA believes that the demand for non-discrimination is both reasonable and normal. There is no indication that it entails unnecessarily large costs or inconvenience for companies with SMP, given the support for competition provided by the obligation. The PTA considers it necessary to strengthen competition on the market for local loops by imposing obligations for non-discrimination but take into account at least the above specified items.

8.5.2.1 Summary

712) With the authority of Article 30 of the Electronic Communications Act the PTA intends to impose the obligation on Mila that all electronic communications companies that purchase access to local loops, whether copper or fibre-optic, enjoy the same conditions including price as apply to related parties or to those cooperating with Mila. Quality of access provided to unrelated parties shall not be less than quality of access provided by Mila to related parties. The obligation for non-discrimination that the PTA intends to impose on Mila is for Equivalence of Input which is where the company is obliged to offer the same price, use the same service procedures/service systems, the same time limits and publish the same information about the service to related and unrelated customers. Mila shall open those systems that are used within the Skipti Group and that the necessary in connection with local loop leasing for unrelated parties.

713) The non-discrimination obligation in question shall be fully implemented no later than three months after this decision has come into force. Within this period of time Mila shall submit documentation to the PTA which demonstrates that the non-discrimination obligation

has been implemented. Otherwise the PTA reserves the right to prescribe a price control obligation for Mila as fibre-optic local loops.

714) The PTA plans to impose the obligation on Mila that unrelated parties be informed about distribution, enlargement or other developments of Mila local loop networks with the same notice as parties related to Mila and this notice shall not be shorter than six months. Furthermore, Mila shall give related and unrelated parties the opportunity to influence development of new wholesale products and planned interfaces.

715) In order to ensure that Mila fulfils the obligation in question the PTA can perform a technical and/or economic investigation as to whether unrelated parties can replicate the product offer of related parties in a sustainable manner (technical and/or economic replicability). This should the PTA conclusion be that unrelated parties cannot replicate the product offer of related parties for technical or economic reasons, the PTA can instruct Mila to alter its product offer and/or offer new wholesale products to enable unrelated parties to replicate the product offer of related parties on normal commercial grounds.

716) The PTA plans to impose the obligation on Mila to make service level agreements with all purchasers of local loops. Such agreements shall cover the various service issues that relate to non-discrimination in respect of local loop leasing, including orders, delivery, service access, service switching and maintenance. Mila shall complete service level agreements with all of its counterparties no later than six months after the publication of the decision on the relevant market. All service level agreements shall be published on the Mila website.

717) In addition the PTA intends to impose the obligation on Mila to issue a specific declaration on quality guarantees (Service Level Guarantees (SLG)). Such service level guarantees shall cover all necessary service issues that relate to non-discrimination in local loop leasing including orders, delivery, service access, service switching and maintenance. Such service level guarantees shall among other things prescribe specific fines which Mila must pay to its counterparties should the service level guarantee not to be honoured. Mila shall issue the service level guarantees within six months from the publication of this decision. Mila shall inform interested electronic communications companies about the content of the service level guarantee.

718) Furthermore the PTA intends to impose the obligation on Mila that the company gather and regularly publish specific key performance indicators, including criteria that relate to processing of orders, delivery of service, maintenance services and service switching - for internal transactions on the one hand and external on the other. It is planned that Mila should publish the information in question in the first instance no later than six months after this decision has been published and subsequently at monthly intervals.

719) The information gained by Mila from other companies when making agreements for access, or completion of agreements, shall solely be used for the purpose provided for and shall at all stages be treated as confidential. It is unauthorised to supply information from related or unrelated parties, See among other things Article 26 of the Electronic Communications Act no. 81/2003.

8.5.3 Obligation for transparency

720) According to Paragraph 1 Article 29 of the Electronic Communications Act, the PTA can oblige electronic communications companies with SMP to publish specific information in

order to increase transparency of interconnection or access to the facilities of an electronic communications company, for example accounting information, technical specifications, information on the characteristics of networks, terms and conditions for delivery and for use and tariffs. It is authorised to make an exemption to the publication of information if an electronic communications company can show that it concerns important financial or business interests that it is fair and normal to keep confidential.

721) In Paragraph 2 of Article 29 of the same Act it states that when an electronic communications company is obliged to practise non-discrimination then the PTA can demand that it publishes a reference offer that contains a breakdown description of interconnection or access along with terms and conditions, including tariffs. The PTA can prescribe amendments to the reference offer and is authorised to impose rules on the content of such offers.

722) Transparency of terms and conditions for interconnection and access to facilities, including price, served the purpose of expediting agreement negotiations, prevents disputes and supports belief among parties to the market that there is no discrimination in provision of services. It is necessary that technical provisions that applied to local loop leasing are clear and transparent which can be particularly important in ensuring operational compatibility.

723) The publication of a reference offer gives all parties to the market the opportunity to see what is on offer and it ensures that companies will not be required to pay for service and facilities for which they have no need. Mila has published a reference offer for open access to local loops (RUO), see obligations from previous market analysis. The PTA intends to commence a review of the reference offer for local loops in accordance with obligations imposed in this instance and in the light of new definitions of the relevant market and new obligations that the Administration intends to impose on Mila.

724) Mila is requested to maintain and update as required the existing reference offer²¹⁷ for wholesale leasing of local loops and for open virtual access to sub-loops (VULA). The reference offer shall be itemised with granularity no less than in the Appendix to Regulation no. 199/2002 for unbundled access to local loops and in accordance with Paragraph 722 here below. It is important that Mila upgrade its reference offer regularly with respect to technical development and market needs having taken into account considerations of the company's related and unrelated customers. The reference offer and amendments shall be submitted to the PTA for endorsement before publication. Publication on the Mila website is deemed adequate. An updated reference offer shall be submitted to the PTA no later than six months after the publication of the decision on Market 4.

725) In the updated reference offer Mila shall among other things publish work procedures that describe how the company treats applications for access to new services on existing networks. New service among other things refers to increased speed and shorter maintenance time than has been the practice to date. The work procedures shall among other things specify how such requests shall be made and in what form, information that is necessary for Mila to assess whether it is feasible to provide the new access and the time window for processing such a request. The main rule is that Mila must process such requests without delay. Should Mila reject the new access then the company must justify this in writing. Such a rejection can be referred to the PTA.

²¹⁷ "Reference offer for open access to local loops" with appendices dated 1 April 2009, and Appendix 1a "Base service" is stated 1 January 2012.

726) At least the following items shall be specified in the Mila reference offer:

- Description of the network access being offered including technical characteristics (which shall contain necessary information on configuration in network equipment to enable the most effective network access); this includes the VULA access offer;
- Locations where network access is provided;
- Work procedures and conditions used for the purpose of gathering necessary information for the provision of wholesale service on the relevant market;
- Appropriate technical standards for network access (for example for all limitations of use and other security items);
- Appropriate technical description of frequency plans and transmitting power in accordance with international standards;
- Conditions for access to minor, additional and more complex service (including support systems for operation, IT systems or databases for initial orders, inventory, order, maintenance and repair requests and invoicing), including limitations to use and work procedures to gain access to the service;
- Exact description of procedural rules, for example with respect to:
 - Permissions of the party in question, order and delivery of service;
 - transfer, switching and termination of agreement;
 - repairs and maintenance; and
 - changes in IT systems (to the extent that they impact other service providers);
- Charging, terms of payment and procedures with invoicing;
- Definition of key performance indicators;
- Description of tests that relate to interoperability between systems;
- Technical characteristics of equipment to be used in the network system;
- Exact description of the following resources:
 - Specific timeframe for acceptance or rejection of request for delivery and for completion, testing and delivery of service and facilities for the provision of support services (such as the treatment of faults/defects and repairs);
 - Obligation at service level. Particularly those quality standards that each party needs to fulfil in order to meet contractual provisions;
 - Amount of damages party pays to another party on failure to fulfil contractual obligations and conditions for possible liability for damages;
 - Definition and limitations of liability for damages and damages; and
 - Work procedures were a change of service offer is proposed, for example if a new service is to be established, or alterations to be made to existing service or tariff.
- Description of all relevant software rights;
- Procedure for resolution of disputes which the party is in question shall apply;
- Description of term and review provisions of agreements;
- Rules for dividing space between parties where such is limited (for example for co-location or location of electronic communications masts);

- General conditions and conditions for providing network access (such as with respect to duty to inform, nondisclosure, payment insurance, transfer of rights, force majeure, discrepancies, parties representatives and jurisdiction);
- Definitions of concepts that apply to wholesale access and to other related issues.

8.5.3.1 Summary

727) With Article 29 of the Electronic Communications Act in mind the PTA plans to impose the obligation on Mila for transparency in leasing of copper and fibre-optic local loops and open virtual access (VULA) where appropriate. Mila was obliged to publish information related to access to copper local loops, for example on registering local loops, technical descriptions, characteristics of networks, terms and conditions for delivery and use and tariff. Part of this obligation was that Mila was to issue a reference offer for local loops which was to be maintained and updated as required and submitted to the PTA for review and endorsement no later than six months after the PTA published its Decision on Market 4.

8.5.4 Obligation for separation of accountancy

728) Pursuant to Article 31 of the Electronic Communications Act no. 81/2003 the PTA can impose obligations on an electronic communications company with significant market power for separation of accountancy between operations that relate to interconnection or access and other operations in such a manner that it will be possible to apportion all revenue and costs to operational units that can be connected to differing services. In addition to this the Administration can demand of a company that operates both an electronic communications network and electronic communications services that its wholesale prices and prices within the company are transparent, among other things to prevent unjustified subsidies. The PTA can decide which accounting methods are to be used. To ensure transparency and non-discrimination the PTA can demand to be provided with accounting information, including information on income from third parties.

729) In Regulation number 564/2011 on accounting and cost analysis in the operations of electronic communications companies there is an explanation of the purpose of separation of accountancy and instructions on how it should be implemented. The purposes among other things to make it possible to see income, costs and sunk capital for varying operational units and to be able to show that the same conditions apply to services provided to other companies and to services supplied to other departments of the electronic communications company in question.

730) It is the view of the PTS that it is necessary to impose an obligation on Mila for accountancy separation on the relevant market, among other things to ensure non-discrimination and transparency and to enable light to be shared on real costs where appropriate.

731) The purpose of accountancy separation is among other things to be able to identify information from accounts to show as exactly as possible the results from various parts of operations as though from separate companies. Separation of costs also limits of Mila's possibilities to charge for costs that are not related to a specific service. It is important that the operation of local loops is separated to be able to assess its performance with respect to whether pricing of the wholesale service harmonises with cost, whether cross subsidies are taking place between different services and to ensure that all parties are treated equally with

respect to price and other terms and separation is a prerequisite for being able to determine costs with local loops.

732) With respect to implementation of separation of accountancy it says in Chapter II of Regulation no. 564/2011 that electronic communications companies shall record their accounts in such a manner that it is possible to apportion all revenue and costs to operational units which can then be linked to various services. Electronic communications companies that operate general electronic communications networks shall separate costs in networks such that it will be possible to equally distribute network costs to varying services, including access to networks. This shall apply equally to access by service departments of the company and by other electronic communications companies to the network. The cost of operating networks and/or services shall be distributed to operational units in with activity based accounting pursuant to Article 7 of the previously referenced regulation and to more detailed rules set by the PTA.

733) With the authority in Article 31 of the Electronic Communications Act the PTA maintains obligations on Mila for separation of accountancy. Such separation shall constitute as a minimum that the operation of local loops is separated in the accounts from other operations. The Mila wholesale prices and internal prices within the company shall be transparent, among other things to prevent unjustified subsidies. In its accounting Mila shall separate revenue, costs, assets and liabilities for access to local loops and for its local loops service. Mila is obliged to provide the PTA on an annual basis with a breakdown of the operational accounts and balance sheet for its local loop operations, which shows a division between copper local loops on the one hand and the fibre-optic on the other, along with a statement of the division of indirect costs that were not possible to assign through comparison with other cost items.

734) Pursuant to Article 25 of Regulation no. 564/2011 Mila shall send the PTA the company's annual financial statements along with an itemised profit and loss account for the company's service components that relate to obligations for separation of accountancy. The accounts shall contain the following:

- The endorsement of a chartered accountant.
- The board's report.
- Separated profit and loss accounts
- Settlement and reconciliation of internal sales.
- Reconciliation against the company's annual financial statements.

735) Pursuant to Article 24 of Regulation no. 564/2011 Mila shall annually prepare a report on accounting arrangements. The report shall contain among other things the following:

- Accountancy rules.
- Rules for the division of costs and revenue.
- Rules on internal trading.
- Description of calculation methodology.
- Information on sizes and quantity figures, other than financial.
- A list of products, services, activities and network components.
- Rules on assessment of assets and depreciation.

736) The above specified statement should have reached the Administration no later than five months after the end of the financial year. Should Mila accounting separation not be

satisfactory, the PTA reserves the right to submit demands at a later date for further separation of accountancy.

737) Mila shall furthermore deliver a report from an independent auditor to the PTA to show that there is correspondence between the Mila description to the PTA on how costs had been divided and the implementation of accounting separation by Mila.

In the report the following shall be shown as a minimum:

- The conclusions of the party that conducted the audit.
- Statement of all instances of inconsistency.
- Proposals by the party conducting the audit for remedies and their impact.
- Detailed description of how the audit was performed.
- Consolidated financial and accounting information (for example an opinion with respect to the distribution of common costs and changes to assessment of assets to value in use).

738) The PTA considers that the requirement for separation of accountancy on Mila is both normal and reasonable given the situation on the relevant market and the competition problems that have been identified and described in Section 8.2.2.

8.5.5 Obligation for price control

739) Article 32 of the Electronic Communications Act no. 81/2003 states that when market analysis indicates that a lack of active competition results in a company with SMP demanding excessively high fees or that there is an abnormally small difference in wholesale and retail prices PTA may impose obligations on an electronic communications company for a cost related tariff and obligations for cost accounting for certain types of interconnection or access. Investment by electronic communications companies shall be taken into account and reasonable return on investment, while also taking into account the risk of the investment. When an obligation for a cost related price tariff with reasonable return is imposed on an electronic communications company, the burden of proof rests on the company. As was stated in the discussion on competition problems, the PTA considers that Mila could have an incentive to demand excessively high prices if there is no price control on the company's tariff.

740) In the same provision it states furthermore that the PTA can require that an electronic communications company make a cost model for the calculation of prices. When calculating costs the PTA can use as a reference the operation of analogous service that is considered efficiently run and can also take into account tariffs in analogous competition markets and it may use cost analysis methodologies that are not related to methodologies employed by an electronic communications company.

741) It is the conclusion of the above specified market analysis for wholesale network infrastructure access at a fixed location that competition is not sufficiently active and that Mila has SMP on the relevant market. Taking into account Paragraph 1 of Article 18 of the Act on Electronic Communications, the conclusion indicates that Mila can hinder competition and can behave to an appreciable extent independently of competitors, customers and consumers. Siminn thus has the possibility of maintaining abnormally high prices and/or of exerting margin squeeze.

742) Price is in many instances the main cause of competition problems and one must therefore consider that an obligation for price control is the most effective method to deal with such matters. In the opinion of PTA, obligations concerning transparency and non-discrimination alone are not sufficient to solve competition problems such as cross-subsidy, price discrimination and excessive pricing. The PTA is of the opinion that an obligation concerning price control is necessary to establish competition in the relevant market and to strengthen competition at retail level. The PTA considers it necessary to facilitate access by independent service providers to the relevant market and to ensure that price for access is reasonable and normal and based on costs it is necessary to impose the obligation for price control on Mila with respect to copper local loops and related services, including VDSL. As will be shown later the PTA does not, for the time being, intend to impose such an obligation on Mila with respect to fibre-optic local loops.

743) There are various possible methodologies for control and for a decision on price for access. According to Article 32 of the Electronic Communications Act the PTA can demand that an electronic communications company make a cost model for the calculation of prices. As previously stated the PTA can use as a reference the operation of analogous service that is considered efficiently run and can also take into account tariffs in analogous competition markets and it may use cost analysis methodologies that are independent of methodologies employed by the electronic communications company in question. When choosing the methodology the PTA considers it proper to emphasise that the methodology can provide a conclusion that is normal and reasonable in both directions and can provide pricing that is not greatly in excess of real costs while at the same time assuring a normal return on investment.

744) The main methodologies applied when deciding wholesale prices are the following:

- *Cost orientation*

The price of services based on historical cost of the company in question (HCA)²¹⁸ or assessed costs of an efficient network operator on the relevant market. In the main, two methodologies for cost analysis have been applied on the electronic communications market, that is to say based on data from the accounts of the company in question where costs are allocated to the relevant service (FAC)²¹⁹ or on the analysis of long run incremental costs (LRIC)²²⁰ on the basis of the costs that will be incurred in an efficiently designed electronic communications network (bottom-up model)²²¹.

- *Benchmarking*

Prices on comparable competitive markets are compared and the price is decided on the basis of this comparison. Price is related to a specific sample of the comparison group.

²¹⁸ Historical Cost Accounting.

²¹⁹ All costs are allocated to the appropriate operations and services (Fully Allocated Costs: FAC).

²²⁰ Long-run incremental cost: LRIC is the cost that is added or is saved when a specific service or operation is added or discontinued, on the assumption that all costs are variable.

²²¹ One speaks of a "bottom-up" LRIC model (BU-LRIC) in the case of a cost model for calculating the price of service on the basis of costs incurred in an efficiently designed electronic communications network in the relevant electronic communications market.

- *Retail minus*

The retail minus methodology is used to find the wholesale price by subtracting a specific proportion from the retail price. The difference subtracted from the retail price is for the costs that would otherwise have been borne by the company at retail level.

745) When choosing the best methodology for deciding pricing for access, it is important to keep in mind on the one hand that the methodology is efficient and not too onerous and on the other hand to create acceptable conditions for companies that may request wholesale access on the relevant market.

746) It can be assumed that cost analysis is an onerous obligation that should only be imposed if other methods are unsuccessful. In cost analysis prices are found based on cost information from a cost model and/or accounts. To allocate costs to specific aspects of operations and services is a complicated and difficult task that can be carried out in various ways. The PTA can employ the BU-LRIC method for cost analysis, pursuant to Regulation no. 564/2011 on accounting and cost analysis in the operations of the electronic communications companies, which is a recognised methodology, among others, by the European Commission and by ESA. The methodology ensures transparency and the regulators are not dependent on information from the accounts of an electronic communications company. The methodology can, on the other hand be extremely costly and time-consuming.

747) The PTA considers that because of the high cost of implementing the BU-LRIC cost model it is not appropriate at this point in time to adopt such a methodology on this market in this country. This could entail unnecessarily high costs for the PTA and for the relevant electronic communications companies. The Administration is very small in a European context and for this reason its budget is much more limited than is normally the case. Experience in the EEA has shown that the cost in making a BU-LRIC model is in the order of ISK tens of millions for each model and for each update. It is not considered right at this stage to make this requirement as the increase in cost would in all likelihood be eventually borne by consumers in the form of higher rates. The PTA therefore considers it proper to find another more efficient manner to achieve the objective of having tariffs that reflect the operations of an efficiently operated electronic communications network on the relevant market. Cost analysis will be based on the work that has already been done in recent years in cost analysis in order to minimise costs and time spent in reaching a Decision on new cost-oriented access prices for the coming 2-3 years.

748) In the Decision of the PTA no. 26/2007, dated 21 December 2007 it was stated that Mila was to cost analyse a tariff for lease of copper local loops and related facilities and to be subject to PTA price control. The tariff was to be based on costs, including normal return on investment. The tariff for access lease should be divided into a monthly basic price (lower frequency range) and a monthly price for shared access (upper frequency range) which should together form the price for full unbundled access. A charge was furthermore prescribed for hosting and access to facilities related to access to copper local loops. It was stated among other things that the basic price for copper local loops should relate to the annual operational costs of the local loop system throughout the whole country and should be based on the company's historical costs which should apply as an average cost for the whole country. It would be authorised to add to annual operational costs depreciation of investments that had not already been written off and reasonable profit as assessed by the PTA. All changes to the Mila tariff for local loop leasing should be notified to the PTA and they will not come into

force without prior endorsement by the PTA. Furthermore the PTA reserved the right to use the authority in law to take into account operations of analogous service operated in an economical manner. The PTA would also evaluate on the basis of the conclusions of the cost analysis whether it was more suitable to use the BU-LRIC methodology as a reference rather than to base calculations on historical costs when deciding the tariff.

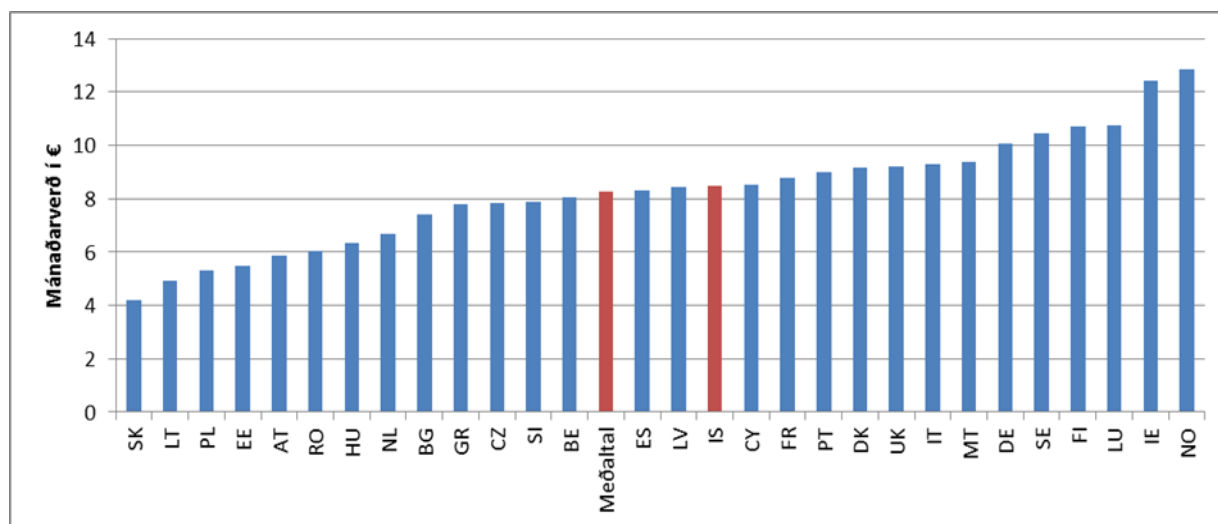
749) In accordance with the above specified obligation for cost analysis, Mila submitted its initial cost analysis for access to copper local loops on 14 July 2008 which was based on costs from the year 2007. After communications with the PTA, Mila submitted a reviewed cost analysis on 10 June 2009 which was based on costs for 2008. The above cost model from Mila took into account historical costs which were allocated to the service in question (FAC) in accordance with the PTA obligation to that effect. With the PTA Decision no. 13/2009, dated 17 July 2009 the Administration endorsed the Mila cost analysis with specific amendments recommended by the Administration in the Decision. The PTA conclusion was that the monthly basic price for local loop should be increased by about 6.18% from the tariff then in force. The Administration authorised Mila to increase its tariff on 1 September 2009. Mila appealed the PTA Decision to the Rulings Committee for Electronic Communication and Postal Affairs. The Rulings Committee confirmed the PTA criteria in the appeal decision with its ruling number 4/2009 dated 15 January 2010, with the exception of the criteria that related to taking into account capital tied up in inventory. With a letter dated 25 January 2010, the PTA endorsed the reviewed cost analysis from Mila with the above specified amendments. Local loop lease increased by about 0.45 percentage points from the PTA Decision and the total increase was 6.63% instead of 6.18% as the PTA had previously decided in July 2009. The price for full and bundled access to the local loop was to be ISK 1,223 per month ex VAT. Of this the base price was to be ISK 920 and the price for shared access ISK 303 and the Administration authorised Mila to increase its tariff on 1 March 2010.

750) In Mila communications dated 18 and 24 May 2011 the company requested that the Administration endorse an increase in setup fees for local loops and for fees for access to distribution frames. After communications with the PTA, Mila sent a revised communication dated 25 August 2011 on amendments to tariff for the setup fee and for access to distribution frames in addition to a cost analysis for lease of copper local loops which was based on costs for 2010. With the PTA Decision no. 30/2011, dated 30 November 2011, regarding review of Mila tariff for copper local loops, setup fees and access to distribution frames, the Administration endorsed the Mila cost analysis with specific amendments that were prescribed in the Decision. This was a 4.3% increase from the tariff in force for local loop lease. The tariff came into force on 1 January 2012, see Item 7 in Appendix 1a to the Mila agreement on open access to local loops.²²² The Mila tariff for lease of copper local loops was last reviewed with the PTA Decision no. 15/2013 dated 30 July 2013 on the review of tariff for copper local loops. The Decision was made subsequent to national consultation and consultation with the EFTA Surveillance Authority (ESA). The Decision was based on the cost analysis submitted by Mila on 17 April 2013. The Administration endorsed the cost analysis with specific amendments that were prescribed in the Decision. There it was stated among other things that the price for full unbundled access to the local loop was to be ISK 1,386 per month ex VAT. Of this the base price (lower frequency range) was ISK 1,042 and the price for shared access (upper frequency range) was ISK 344. This was an 8.6% increase from the tariff in force for local loop lease. The tariff came into force on 1 August 2013.

²²²http://www.mila.is/servlet/file/RUO_viðauki_1.a_1.jan_2012.pdf?ITEM_ENT_ID=14980&COLLSPEC_ENT_ID=2

751) The PTS made price comparison of the above conclusions on price for fully unbundled access to the local loop with tariffs in the EEA²²³. The price at the end of 2012 and the average exchange rate of the last quarter of 2012 were used as references. The conclusion of the comparison can be seen in figure 8.1. The new price for a fully unbundled access to the local loop corresponds to €8.5 while the average in the comparison countries was €8.3.

Figure 8.1 Monthly price for full access to local loops in the EEA at the end of 2012



Source: Cullen International.

752) In the light of this comparison the PTA considered there to be no need to apply another cost analysis methodology or price comparison for the Decision on local loop prices. In this connection reference was made to the available EU Commission Draft Directive on the implementation of harmonised non-discrimination obligations and cost analysis methodologies in order to increase competition and strengthen investments in the next generation of access networks (NGA).²²⁴

753) The draft to Decision no. 15/2013 was submitted, as stated above, for national consultation in June 2013 but no comments were received from this consultation. The draft was subsequently submitted for consultation to ESA. The ESA opinion was received by letter dated 26 July 2013. The ESA encouraged the PTA to clearly outline in the market analysis now being conducted on the local loop market, how the cost analysis methodology that would be chosen would continue to serve the objectives of the electronic communications regulatory framework. The ESA indicated the Recommendation being prepared by the EU Commission and requested of the PTA that the instructions to be presented in the Recommendation and the cost analysis methodologies, be taken into account when they emerged²²⁵. The ESA also challenged the PTA to explain clearly the main principles that should apply to price review for local loops in order to create predictability with respect to such wholesale prices for the purpose of introducing a clear framework for investments and to achieve advances in competition.

²²³ With the exception of Lichtenstein.

²²⁴ Commission Recommendation of 11.9.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

²²⁵ The Recommendation was published on 11 September 2013, see Commission Recommendation of 11.9.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

754) With the authority in Article 32 of the Electronic Communications Act the PTA intends to impose on Mila an obligation for price control for wholesale access to the company's copper network infrastructure at a fixed location and related facilities. Mila shall submit to the Administration for endorsement a wholesale tariff for access to its copper local loop networks and related facilities in accordance with the Access Options prescribed in the obligation for access here above. As stated in Section 8.4.2 on the obligation for non-discrimination here above the PTA intends to impose a strict non-discrimination obligation, Equivalence of Input or EoI, on Mila for fibre-optic local loop. Among other things for this reason, see further reasoning in the section on fibre-optic local loops here below, the PTA does not for the time being intend to prescribe an obligation for price control on the Mila tariff for fibre-optic local loops.

Copper local loops

755) The breakdown of monthly rental for access to all copper local loops which connect the street cabinet at the user's premises with the distribution frame in the telephone exchange shall be as follows:

- Fully unbundled access²²⁶. This includes both access to the lower and upper frequency ranges of the local loop (basic access)
- Shared unbundled loop²²⁷. Access for an electronic communications company to the upper frequency range of the local loop with DSL or other analogous technology while access to the lower frequency range of the local loop is used by another electronic communications company at the same time for telephone services.
- Access solely to the lower frequency range. Access for an electronic communications company solely to the lower frequency range for telephone services, while the upper frequency range is not being used at the same time.
- Access solely to the upper frequency range (naked DSL)²²⁸. Access for an electronic communications company to the upper frequency range of the local loop for xDSL services while the lower frequency range is not being used at the same time.
- Access to facilities, which is connected to access to copper local loops, such as facilities in telephone exchanges and technical spaces.

When access to the copper local loop is divided between two different electronic communications companies then the party which has access to the upper frequency range of the local loop shall pay for shared access which has access to the upper frequency range of the local loop while the one who has access to the lower frequency range pays for fully unbundled access with the fee for shared access subtracted. Where only the lower frequency range is used ("telephone only") then payment is made for fully unbundled access. The same applies if only the upper frequency range is used ("naked DSL").

756) As stated in the above description of Access Options the PTA plans to make a change to the structure of the tariff for local loop leasing that fully unbundled access is considered to be basic access (basic price) to the local loop and not the lower frequency range only as has been the case. The above means that full price is always paid for a local loop in use regardless

²²⁶ "Fully unbundled loop".

²²⁷ "Shared unbundled loop".

²²⁸ "Naked DSL".

of how it is used and not differing price depending on whether the lower or upper frequency ranges are in use as is the case currently. Fully unbundled access is considered to be 1 line equivalent instead of 1.33 as before.

757) The PTA plans to make changes to the criteria for pricing of the lower frequency range of the local loop on the one hand and the upper frequency range on the other. In the existing system pricing of the upper frequency range (for xDSL services) is calculated as 33% premium on the price for the lower frequency range (basic price) which is equivalent to the higher frequency range bearing a 25% cost share in the lease fee for fully unbundled access. On the other hand it has not been considered possible in the Mila cost analysis to demonstrate that this proportion is based on allocated costs for the upper frequency range of local loops. The existing rule for division of costs between the lower and upper frequency ranges is from the year 2000 when the introduction of DSL was in its infancy. Since then use of the upper frequency range has increased enormously and currently in about two thirds of copper local loops in use the upper frequency range is used for xDSL service parallel to or without telephone service.

758) The PTA considers it necessary to review the division of costs between the upper and lower frequency ranges of local loops. The division of the lease fee shall be based on total use on the Mila copper local loops in each instance, which is in accordance with general practice in cost analysis based on historical costs. Access prices are thus calculated by dividing the total number of leased accesses to the lower and upper frequency ranges of the local loops into the allocated costs with the addition of reasonable profit on the local loops in question. Given the available information the Administration considers it proper to allow for the lower frequency range to carry 60% of local loop cost against 40% for the upper frequency range and that the tariff should be based on this. The above means in effect that the upper and lower frequency ranges share costs in accordance with use of the local loop.

759) The above change in pricing of local loops will, all things being equal, not alter total Mila revenue for local loop leasing but the results will be the following:

- The wholesale fee for fully bundled access would decrease.
- The wholesale fee for the upper frequency range (DSL) would increase when the lower frequency range is used in parallel.
- The wholesale fee for the lower frequency range would decrease when the upper frequency range is used in parallel.
- The wholesale fee when only the lower frequency range is used would increase.
- The wholesale fee for naked DSL would decrease.

760) If this change is seen from a user perspective then the price to the user is reduced if the upper and lower frequency ranges are both in use or if only the upper frequency is in use. The majority of users are in this category which means that the price will be reduced for the majority of users. Those users who solely used the lower frequency range will however see a certain increase.

761) Mila shall also make a tariff for the above specified access to copper sub-loops²²⁹ in its street cabinets, that is to say from the intermediate connection of the copper local loop in a street cabinet to the box in the user's building. This particularly applies to the local loop upper

²²⁹ "sub-loop".

frequency range which is used for bitstream service with the VDSL technology. At the same time Mila shall also prepare a tariff for lease of facilities in street cabinets.

762) For access to street cabinets Mila shall also prepare a tariff for fibre-optic from the telephone exchange to the street cabinet on the one hand and between street cabinets on the other. This is a tariff for fibre-optic threads that are used for bitstream services with the VDSL technology.

763) In those street cabinets where VDSL equipment has already been installed and where the PTA has granted an exemption from the obligation for access to sub-loops, Mila shall offer virtual unbundled local access (VULA) with the VDSL technology, see the Mila obligation for price control on Market 5 which will be dealt with in section 10.5.5 here below.

764) Pursuant to Paragraph 4 of Article 32 of the Electronic Communications Act, the tariffs for the relevant access to copper local loops, copper sub-loops and fibre-optic in street cabinets and access to related facilities shall be cost-oriented. The PTA is authorised when calculating costs, to take into account analogous services that are considered to be operated in an efficient manner. Furthermore the PTA is authorised to make price comparison on the basis of cost analysis of tariffs in analogous markets such as in the EEA.

765) In the EU Commission recommendation dated 11 September 2013 on the implementation of harmonised non-discrimination obligations and cost analysis methodologies in order to increase competition and strengthen investments in the next generation of access networks (NGA)²³⁰ it is stated that when selecting a methodology to decide access prices one must among other things take into account the following objectives²³¹:

- The costing methodology needs to lead to access prices that replicate as much as possible pricing on an active competition market. The methodology shall be based on a modern efficient network, reflect the need for stable and predictable wholesale copper access price, supporting investment and acting as an anchor for NGA services. The methodology shall deal with the impact of declining number of connections in an appropriate and consistent manner.
- The costing methodology needs to ensure that costs of an efficiently operated electronic communications company are recovered with an appropriate return on invested capital.
- The methodology shall support the assurance of efficient entry to electronic communications networks and shall ensure the provision of the appropriate build or buy signal for efficient investments particularly in the next generation of access networks (NGA).
- The costing methodology must ensure transparency and consistency within the Union.

766) In the opinion of the Commission the BU-LRIC+ costing methodology best meets the objectives that must be taken into account when price for wholesale access is decided. The Commission has recently examined conclusions from BU-LRIC+ models and estimates that the conclusions from such models will provide prices for fully unbundled access to the copper local loop in the European Union within a specific price range²³². The objective is that the

²³⁰ Commission Recommendation of 11.9.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

²³¹ See further the specification in items 25-28 in the introduction to the Recommendation.

²³² The price range specified in the Recommendation is 8 -10 € with reference to price levels in the year 2012.

regulatory authorities that do not use the recommended cost model will endeavour to keep the price for fully unbundled access to the local loop within this price range.

767) As was mentioned here above, the PTA considers that because of the high cost of implementing the BU-LRIC cost model that it is not appropriate at this point in time to adopt such a methodology on this market in this country. According to Article 42 of the Recommendation, regulatory authorities are authorised to continue using the costing methodology that, when the Recommendation came into force, returned a price for unbundled access to the local loop that was within the price range specified in Article 41 of the Recommendation. As was stated here above, the Mila cost analysis returned a price for unbundled access to the local loop which was equivalent to 8.5 € using the average exchange rate of the last quarter of 2012, and this is a price within the price range pursuant to the Recommendation. For this reason the PTA intends to authorise Mila to review its cost analysis for deciding the price for copper local loop service, in accordance with Article 42 of the Recommendation.

768) The PTA plans to take the Recommendation into account when evaluating the conclusion of the Mila cost analysis of copper local loop service. If the Mila cost analysis for access to local loops returns a conclusion that the PTA considers unacceptable having taken into account the Recommendation, the PTA will reject such a conclusion.²³³ Should the PTA decide to reject conclusions of the cost analysis on access to copper local loops, the Administration will decide price on the basis of the average of those access prices that are decided by the regulatory authorities on comparable competition markets and that are in accordance with the above specified Recommendation. In this manner the PTA considers that the objectives that are kept in mind when selecting a methodology for deciding access prices, as defined in the Recommendation and stated here above, are met. The PTA will also have in mind that the tariff should relate logically to Mila's bitstream service prices, because of the possible over or under-pricing by the Skipti Group of the above specified services.

769) When implementing its cost analysis Mila shall base its methodology on Chapter IV of Regulation no. 564/2011 on accounting and cost analysis in the operations of the electronic communications companies, such as on evaluation of operating capital, lifetime and return on investment. Furthermore Mila shall take into account the position of the PTA on criteria and calculations that were detailed in the above specified Decisions by the Administration nos. 13/2009, 30/2011 and 15/2013. The same applies to the Mila cost analysis of tariff for leasing of facilities such as telephone exchanges and technical space, see PTA Decision no. 41/2010, dated 30 Desember 2010, and PTA Decision no. 11/2014, dated 3 June 2014, with respect to the Mila cost analysis regarding lease of facilities²³⁴.

²³³ The PTA can however endorse prices for access to local loops that lie outside the price band specified in the Recommendation in the event of special circumstances. Such circumstances could for example result from very significant changes to the exchange rate of the ISK.

²³⁴ In Section 2.8.2 in decision no. 11/2014, the main rules that apply to the Mila cost analysis for leasing of facilities are specified.

770) The Mila cost analysis for access to copper local loops, copper sub-loops and fibre-optics in street cabinets and in addition to related facilities, such as street cabinets and fibre-optic in street cabinets, shall be based on the following main criteria:

- The cost base shall be Mila historical costs (HCA) based on the preceding financial year in each instance.
- The methodology shall be based on allocating all costs to the service in question (FAC).
- Allocation of costs is based on separation of accountancy for local loop leasing, on Mila asset bookkeeping and on costs from Mila's account system where operational costs are entered into chart of accounts.
- Assessment of investment shall be based on the book value of operational equipment in Mila's asset bookkeeping where the historical cost of investments is adjusted to price levels of the year being analysed in each instance.
- A depreciation methodology shall be used that reflects the use value of an asset.
- The annuity method shall be used to calculate annual investment costs.
- The number of lines shall be calculated with reference to line equivalent where the above specified changes in definition of access are taken into account when assessing their equivalent.
- The cost of the local loop network shall be captured, including share of joint costs, management, IT and senior management in accordance with separation of accountancy.
- Reference shall be made to the imputed rate of interest which is based on weighted average cost of capital²³⁵ (WACC) for capital tied in assets that are used in connection with provision of service where the risk premium reflects the risk related to operations on the relevant market.
- Funds tied in current assets to the amount of average inventory for operations and development of the access network shall be taken into account.
- Average unit cost for the whole country is calculated from allocated operational and investment costs divided by number of lines or line equivalents.

771) When deciding the tariff Mila shall base its Decisions on the above specified main criteria in its cost analysis and shall submit this to the PTA for review and endorsement no later than six months after the publication of this Decision. The tariff shall then be reviewed annually in accordance with annual updating of the cost analysis. A new wholesale tariff for local loop lease will not come into force prior to endorsement by the PTA, subsequent to national consultation and consultation with ESA in each instance. The existing Mila wholesale tariff for copper local loops²³⁶ shall remain in force until the reviewed tariff is available and has been endorsed by the PTA.

Fibre-optic local loops

772) The PTA plans at this stage not to impose an obligation on Mila for price control for access to fibre local loops, among other things because currently the company's development of fibre-optic local loops is not at an advanced stage. The number of Mila fibre-optic local

²³⁵ In accordance with Article 16 of Regulation no. 564/2011 the PTA decided the weighted annual cost of capital (WACC) that electronic communications companies should use in their calculations.

²³⁶ Mila; Agreement on open access to local loops; Appendix 1a - Basic service See the Decision of the PTA no. 15/2013

loops in use was [...] ²³⁷ at the end of 2013 which is about [...] ²³⁸ of the total number of fibre-optic local loops in use which is [...] ²³⁹ of the total number of local loops in use.

773) The above is furthermore based on the objectives of the Icelandic government Electronic Communications Plan for supporting the introduction of next generation networks, see Section 2.1.5 and the opinion of the EU Commission on development of new generation networks, see Section 2.1.4. on the EU Commission Recommendation dated 11 September 2013 on the implementation of harmonised non-discrimination obligations and cost analysis methodologies in order to increase competition and strengthen investments in the next generation of access networks (NGA). The above is dependent on the condition that Mila respects full non-discrimination with respect to pricing, access and terms to other electronic communications companies and to Siminn sister companies or to its own downstream arm should there be one. ²⁴⁰

774) Mila shall also ensure that the price for access to fibre-optic local loops is not abnormal in comparison with pricing of access to Mila's copper local loops on the one hand and with the company's bitstream service or other wholesale/retail services of Skipti Group on the other, which among other things could lead to margin squeeze in pricing of access services within the Skipti Group. Skipti Group constitute a single economic unit in the context of Competition Law. Should the PTA consider there to be a need, among other things after having received complaints to this effect, then the Administration will perform a margin squeeze test and will require amendments to tariffs should the results of the test give reason to do so.

775) When assessing margin squeeze one can on the one hand use as a reference an electronic communications company that enjoys the same efficiency as the SMP operator (EEO – Equally Efficient Operator) and on the other hand an electronic communications company that enjoys reasonable efficiency (REO - Reasonably Efficient Operator). ²⁴¹ In the event that PTA deems it necessary to perform an ex post margin squeeze test the Authority intends to apply the EEO method. PTA refers to ERG Report on price consistency in upstream broadband markets, from June 2009 (page 21). As the PTA intends to perform the margin squeeze test on ex post basis, PTA agrees with the arguments set forth in the report in favour of EEO approach as in this situation the operator cannot rely on the cost structure of alternative operators, because this cost information is unknown to the incumbent. When performing a margin squeeze test PTA will use the approach used by competition authorities and analyse the profitability on the basis of historical cost including a required return on capital bound in the investment used for providing the service in question. In this relation PTA will consider, among other things, the methods of performing margin squeeze test used

²³⁷ Removed for reasons of confidentiality.

²³⁸ Removed for reasons of confidentiality.

²³⁹ Removed for reasons of confidentiality.

²⁴⁰ Equivalence of input (EoI).

²⁴¹ See Commission Recommendation of 20 September 2010 on Regulated Access to Next Generation Access Networks (NGA) dated 20 September 2010 where it says among other things in the introductory chapter: *“Margin squeeze can be demonstrated by showing that the SMP operator's own downstream 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).”*

by the Competition Authority in their decision no. 7/2012 on Siminn's illegal price squeeze in the mobile market.

776) As has been stated here above, the Competition Authority and Skipti made a settlement which is presented in the words of the Decision of the Competition Authority number 6/2013 "Amendments to the organisation of the Skipti Group and other measures to strengthen competition on the electronic communications market".

777) It is one of the objectives of the Settlement to prevent market squeeze within the Skipti Group as is stated on page 62 of the Decision where it states:

"The provisions of the Settlement are intended to mitigate the risk of margin squeeze. The provision on the transfer of systems (Article 2), a clear separation between Mila and Siminn (Article 4), Mila autonomy (Article 5), rules on equal access (Article 8) and the fact that Mila is unauthorised to operate on the retail market (Article 3) should that this prevent the risk of margin squeeze and access barriers to broadband service."

Electronic communications companies can approach the surveillance committee with respect to equal access for electronic communications companies²⁴² if they consider that Skipti hf. or its subsidiaries are applying margin squeeze.

778) Mila shall publish a wholesale tariff and conditions for access to fibre-optic local loops and related services in an analogous manner to access to copper local loops, no later than six months after the publication of this Decision.

8.5.5.1 Summary

779) With reference to Article 32 of the Electronic Communications Act the PTA intends to impose on Mila an obligation for price control for wholesale access to the company's network infrastructure at a fixed location with related facilities. Pursuant to Paragraph 4 of Article 32 of the same act the tariff for the access in question provided through copper local loops shall be cost-oriented.

780) When deciding prices, Mila shall use historical costs allocated to the relevant service (HCA FAC). Mila shall submit the cost analysis to the PTA for endorsement no later than six months from the publication of the Decision. The tariff shall then be reviewed annually in accordance with annual updating of the cost analysis. The Administration is authorised to reject prices that are outside the price range proposed by the EU Commission at any given time. The PTA will also have in mind that the tariff should relate logically to Mila's bitstream prices.

781) The PTA does not plan for the time being to impose an obligation on Mila for price control for access to fibre local loops, PTA intends however to impose obligation on Mila to provide open access to the company's fibre-optic local loops, as well as obligations for non-discrimination (including EoI), transparency, separation of accountancy and cost accounting. Furthermore Mila shall not apply margin squeeze. Should a margin squeeze test show abnormal pricing by Mila then the PTA can prescribe amendments to the Mila tariff.

²⁴² See <http://www.ejaf.is/>.

8.5.6 Cost accounting

782) Pursuant to Article 32 of the Act on Electronic Communications the PTA can impose obligations for cost accounting for specific types of interconnection or for access, in accordance with a cost related tariff. According to Chapter IV of Regulation no. 564/2011 on accounting and cost analysis in the operations of an electronic communications companies. An electronic communications company with SMP on whom special obligations have been imposed pursuant to the Act on Electronic Communications shall inform the PTA on the structure of separation in accounts, with respect to income and expenses, among other things for the user network and the backbone network.

783) Cost accounting is necessary when the obligation for price control has been imposed on an electronic communications company with SMP. Subsequent to the intention of the PTA to impose an obligation for price control on Mila, the PTA also intends to impose an obligation for cost accounting. The obligation for cost accounting supports the obligation that the tariff is cost related and it is necessary for the implementation of separation of accountancy and can support surveillance of the non-discrimination obligation.

784) In order for Mila to demonstrate that the tariff for a specific kind of service or product is cost-oriented, it is necessary to practise cost accounting that captures, identifies, assesses and allocates the relevant costs to the services or products in accordance with recognised rules, that is to say a causal relationship.

785) The PTA considers that without the obligation for cost accounting, Mila could price its services on the relevant market above cost and the Skipti Group could have an abnormally small difference between wholesale and retail prices which would have negative consequences for users. Without the obligation for cost accounting the PTA could not ensure that pricing took costs into account thus preventing problems of this kind.

786) The PTA plans to impose an obligation on Mila for cost accounting of those parts of the electronic communications operations necessary for giving access to network infrastructure provided at a fixed location. Mila shall submit to the PTA a description of the cost accounting for fibre-optic and copper local loops and shall publish cost categories, cost items and their relationship to the cost driver.

787) Mila shall, no later than six months after the publication of the Decision on the relevant market, submit to the PTA a description of cost accounting for fibre-optic and copper local loops and related facilities and shall publish cost categories and rules used to allocate costs. Mila shall deliver a report to the PTA from an independent auditor showing that there is correspondence between the Siminn description to the PTA of how costs are allocated and the implementation in Mila's cost accounting system.

788) In accordance with the above Mila shall maintain cost accounting for wholesale access to network infrastructure provided at a fixed location in order that Mila can demonstrate that the tariff for a specific type of service or product takes historical costs into account. Mila shall furthermore deliver a description to the PTA of the cost accounting for local loops and shall deliver a report to the PTA from an independent auditor on its cost accounting.

9.0 Assessment of impact of imposed obligations on Market 4

The necessity to impose the relevant obligations and the impact of the obligations

789) In accordance with the principle of proportionality it is normal to assess the necessity to impose the obligations described in Chapter 8. The obligations are conducive to achieving the objectives of the Electronic Communications Act no. 81/2003 for active competition in economic electronic communications. In the light of the competition problems that exist, of the strong position of Mila on the relevant market and the position of the company and of the Skipti Group in general, the PTA considers it necessary to impose all of the above specified obligations on Mila in order to support increased competition and to assure consumers' interests. In Chapter 8 there is specific reasoning to show why the PTA each individual obligation to be necessary. In the PTA examination of the relevant market the Administration has come to the conclusion that no other measures can be found that could be as effective in solving the competition problems that exist on the market.

790) The obligations are to a large extent similar to the obligations that have been in force on the relevant market but certain items have been added that experience has shown to be lacking; the content of each obligation is described in more detail and efforts are made to make them more transparent and more targeted than the obligations that have been in force to date.

791) As is shown above the PTA considers it necessary to impose the obligations in question on Mila. As other obligations are not better suited to achieve the intended results the PTA considers that with the initial investment in mind and the risk taken with the investment that this is not an unreasonable requirement.

792) The obligation for wholesale access is a pre-requisite for competition to become active in related service markets such as on the broadband market and the fixed line telephone market. It is not possible to solve the competition problems described here above in any other way than by imposing the obligation for access. Access barriers prevent competitors from developing extensive local loop networks with national coverage and it is thus a prerequisite for active competition that they can receive access to the Mila network which has national coverage.

793) The obligation for access is something of a burden on Mila but it is an essential prerequisite for active competition on the relevant markets. It is in fact necessary for electronic communications companies to gain access to the Mila local loop network in order to be able to offer their customers adequate services across the whole country. The obligation should first and foremost ensure that Mila does not discriminate in making local loop agreements and delay the entry of new companies by extending contract negotiations. It can be considered burdensome to deal with all counterparties for local loops in a satisfactory manner. Through a connection with the Mila local loop network the companies gain better use of the electronic communications equipment in which they have invested.

794) The obligation for non-discrimination with respect to access to the Mila local loop network in wholesale is thus necessary for companies, whether on the broadband or fixed line telephone market, to be able to compete on a level playing field. The obligation should mean that all electronic communications companies that purchase access to Mila local loops receive

comparable services and prices and in this way they competition problems related to discrimination will be solved.

795) The PTA considers that the obligation for non-discrimination is not particularly burdensome. The obligation is necessary in order that other companies can compete with Siminn on the markets for broadband access and fixed line telephone services. The obligation should lead to all companies leasing access to local loops receiving comparable services and thus the competition problems described above with respect to issues such as speed of reply that can provide Siminn with a competitive advantage on the broadband market, will be resolved. It is true that the PTA plans to prescribe a stricter non-discrimination obligation on Mila than has been in force to date but there is also the fact that the PTA does not intend to impose an obligation on Mila for price control of fibre-optic local loops. It is also an innovation that Mila should be obliged to make service level agreements (SLA) and service level guarantees (SLG) and should be required to publish key performance indicators (KPI). These obligations require considerable work by Mila but the PTA considers that the issues in question are essential to ensure full nondiscrimination.

796) The PTA considers it necessary to prescribe separation of accountancy for those companies that have varied operations and a large market share, among other things for the reason that it must be possible to monitor whether non-discrimination is respected with respect to fees to the company's own downstream on the one hand and to unrelated companies on the other. Separation of accountancy is also necessary to be able to determine costs for operation of local loop and associated facilities.

797) The PTA considers that is not possible to use other milder measures if one is to base cost analysis on historical costs. The PTA considers that the obligation for separation of accountancy is not too burdensome, given its purpose, as it is a normal part of company operations today to separate costs for production/operations of varying products or services sold by the company.

798) The publishing of a reference offer is in the opinion of the PTA a very important element in strengthening competition on the local loop wholesale market. It is necessary for the companies that plan entry into the electronic communications market to be able to see in advance the terms on offer for wholesale access to local loops. The obligation for transparency is also necessary to support compliance with the non-discrimination obligation.

799) The obligation for transparency, among other things the publishing of reference offers, represents a certain inconvenience for Mila. On the other hand one has to keep in mind that analogous obligations have been in force for a number of years and a reference offer has already been published. The obligation is thus in reality to maintain the reference offer and to update it. Publishing a reference offer is in the opinion of the PTA an extremely important part of strengthening competition in the product types based on the local loop leasing. The burden that Mila has to bear from the obligations is not excessive if one takes into account how necessary the obligations are to strengthen competition.

800) The PTA believes that the obligation for price control is absolutely necessary for copper local loops as Mila has no incentive to offer normal prices at its own initiative as the company is by far the largest party that provides access to such local loops and at some locations it is the only company that can offer broadband access. The PTA considers that the obligation for price control will lead to more economical operations on the copper local loop

network and to a lower price for copper local loop leasing in wholesale which will eventually lead to lower prices to consumers. The PTA plans on the other hand for the time being not to impose an obligation on Mila for price control for fibre-optic local loops but on the other hand there will be a much stricter non-discrimination obligation which ensures that goods, prices and processes are exactly analogous for related and unrelated parties. The PTA can also perform a margin squeeze test in Mila pricing on fibre-optic local loops and can prescribe amendments to the Mila tariff if the conclusions of the test indicate that the differences between wholesale and retail prices is too small.

801) The PTA considers that the obligation for price control and for making a cost model is somewhat burdensome and that complying with it will entail costs both for Mila and for the PTA. The PTA considers that the obligation for price control and for the cost model will lead to more economical operations on the local loop network and lower prices for local loop leasing which will eventually lead to a lower price for consumers for services based on the local loop leasing. The PTA considers that the obligation will not reduce Mila's possibilities of enjoying normal profit from operating local loops and related facilities. The PTA also plans for the time being only to prescribe a cost model for copper local loops. Mila has previously made such a model and so this is only a case of updating, even though the internal structure of the tariff has changed somewhat.

802) The PTA considers that the obligations that the Administration plans to impose on Mila will increase competition in sales of broadband access and telephone services and Iceland.

803) The obligations will not hinder development of access networks as the pricing of access to copper local loops will be cost-oriented and will allow for normal profits from investments. The PTA plans for the time being not to impose an obligation on Mila for price control for fibre-optic local loops. Cost control on copper local loops should thus not inhibit willingness to invest, whether in the Mila local loop network or in those of potential competitors.

804) The burden that the obligations constitute for Mila should not decide on their imposition. The PTA believes that the above specified obligations are reasonable and necessary to support active competition and should not be considered unnecessarily burdensome, given their importance in supporting competition on the relevant market and on related retail markets. The PTA considers obligations to be in the interests of competition in the long-term and that they will encourage an increase in service offers on the electronic communications market as a whole.

10.0 Imposition of obligations on Market 5

10.1 In general on obligations

805) According to Paragraph 2 of Article 17 of the Electronic Communications Act, market analysis shall be the basis for decisions on whether the PTA shall impose, maintain, amend or withdraw obligations on companies with SMP. If a market analysis reveals that there is no effective competition in the relevant market and that one or more electronic communications undertakings in that market possess SMP, the PTA is authorised to impose one or more obligations on the company, that is designated as having SMP, in accordance with Article 18 of the Electronic Communications Act. If the PTA has previously imposed specific obligations on operators pursuant to the previous Telecommunications Act, these shall be reviewed and either maintained, amended, or withdrawn in accordance with the results of the market analysis.

806) Article 27 of the Electronic Communications Act states that when an electronic communications undertaking is designated with SMP, the PTA may impose on it obligations concerning transparency, non-discrimination, accounting separation, open access to specific network facilities, price control and cost accounting, as necessary for the purpose of promoting effective competition²⁴³ These obligations are described more fully in Articles 28 – 32 of the Electronic Communications Act.

807) When selecting obligations to be imposed in order to solve specific competition problems, it is necessary to use several fundamental principles as Guidelines.²⁴⁴ All obligations imposed shall take into account the nature of the specified competition problem and shall be designed to solve it. They shall be transparent, justifiable, reasoned and in line with the objectives they are designed to achieve – that is, to promote competition – as well as contributing to the development of the internal market and safeguarding users' interests. Obligations must be proportionate and may not impose heavier burdens on operators than is considered necessary.

808) In a report from the European Regulators Group (ERG) on ex-ante obligations emphasis is placed on developing competition in the construction of electronic infrastructure and networks where this is considered desirable. In such instances the imposed obligations should support such development. When infrastructure-based competition is not considered desirable due to significant and persistent economies of scale and scope or other barriers to entry, it is necessary to guarantee sufficient access to electronic communications networks and equipment at the wholesale level. In this context, it is necessary to ensure two things: first, to encourage service-based competition; and second, to guarantee a sufficient fee for access to existing electronic communications networks, thus providing an incentive for further investment in such networks, as well as for their renovation and maintenance.

809) For the long term, service-based competition that has its foundation in steered access to a cost-analysed price can be a tool for generating competition in the regeneration of electronic communications networks. This refers to that which is called “the investment ladder,” and its objective is to create conditions that make it possible for new operators to build up their electronic communications networks step by step.

²⁴³ See also Articles 9-14 of the Access Directive.

²⁴⁴ See Article 8 of the Framework Directive.

810) In selecting the obligations that are best designed to promote competition in a given market, it is often useful to consider the position that would exist if obligations were not imposed on undertakings in the relevant market and whether it would be sufficient to use competition legislation alone to guarantee effective competition.

10.2 Competition problems

10.2.1 In general on problems in the field of competition

811) Obligations are imposed on companies with SMP with the aim of combating real and/or potential problems in the field of competition in the markets in question. Problems in the field of competition refers to any kind of behaviour by accompanied with SMP, which is intended or leads to competitors being forced out of markets, which prevents potential competitors from entering the market and or damages consumers' interests. When obligations are applied pursuant to the Electronic Communications Act, the reason for doing this is not in fact that the party is misusing market dominance. It is sufficient that competition problems could possibly arise under given circumstances.

10.2.2 Competition problems on the market in question

812) Mila, previously Siminn, has about 76% market share and operates the only system on the bitstream market with national coverage. In addition to being the strongest party on the wholesale market, Mila's sister company, Siminn, is also the largest on the retail market and is by far Mila's largest customer. The market is characterised by major access barriers where it has proven difficult for new companies to establish themselves. In addition to this the vertical integration of the Skipti Group is conspicuous, as has been shown, Siminn is by far Mila's largest customer and Siminn retail is the largest customer of Siminn wholesale. Value added services such as IPTV in addition to traditional Internet services, further add to the existing integration in the Skipti Group.

813) A company with SMP can leverage its market power in many ways. With vertical market strength the company can deny other companies access to its systems, can price services too high, discriminate against companies on the basis of price for service or resources and can take advantage of information on competitors in unfair manner. Another consequence of a company's SMP can be that a company hinders access by others to a market, practises abuse for the purposes of profit (where a company with SMP sets prices without needing to take customers or competitors into consideration) and in addition to this there is a significant risk of inefficiency in production as competition is unable to exert necessary constraints.

814) In its analysis of Market 12 (decision 8/2008) the PTA discussed potential competition problems on the relevant market. It was the opinion of the PTA that a company with vertically integrated operations might try to transfer its market power by transferring a position that it had on a wholesale market over to a related retail market which would make it possible to reject adequate access for other parties to necessary entities of operations, including co-location and support systems. In the instance here under discussion the retail market is composed among other things of Internet and various kinds of other broadband and interactive services to users and electronic communications companies can offer both wholesale and retail services in these sectors. A company which competes with other companies on such

services could be tempted to deny others access to specific parts of the service that it controls in order to limit competition and to increase its share of the retail market. Even where there is no categorical denial, discrimination in the execution progress can take place in technical possibilities of the service provided and or discrimination in the handling procedure by either giving applications from customers within its own downstream arm priority or when information to competitors is inadequate.

815) The PTA believes that as the Skipti Group has SMP on the Market 4 (upstream) for access to local loops that the Group has a great incentive to deny access to potential competitors on Market 5 (downstream). In this instance one can for example mention that it proved extremely difficult for some time for companies to be granted full access to the Mila VDSL system. Vodafone repeatedly requested access to VDSL with multicast for some months. In the PTA Decision in question number 38/2012 from December 2012 Mila began to offer such access. With such access Vodafone can offer its customers access to the company's IPTV system through Mila networks. The PTA however had a complaint from Vodafone under discussion about Siminn's alleged infringement of the obligation in question. This matter was however resolved early in 2013 without an emergency Decision being necessary. An agreement was reached between Siminn and Vodafone to the effect that Siminn postponed its plans for development of new VDSL stations for a number of months until Vodafone was prepared to offer analogous service in new areas. In addition to this, a temporary prices have applied for the service in question and the PTA intends to endorse final prices in a separate Decision in parallel to this Decision. Subsequent to the Decision there will be a settlement between the Skipti Group and other parties that have purchased the service in question since the PTA Decision no. 38/2012. In it has also proven impossible for companies to acquire Siminn IPTV service over to their own bitstream system and it is very important for companies to be able to offer IPTV service as it is extremely popular among consumers in Iceland. Siminn has however sold retail access to Tal to its IPTV system for some time now.

816) Access to the Mila VDSL system has become important at many locations in the country as the reality is that in the areas where Mila plans to develop its VDSL service and where there is no other available network based on fibre-optic, other bitstream providers that have had their own ADSL system in the area have lost a large proportion of their bitstream service customers in a matter of a few months.²⁴⁵ This is in all likelihood because the bitstream provider does not get the access to the Siminn VDSL system that serves the value added service that consumers demand to receive from one and the same service provider.

817) With respect to the Siminn IPTV system it has been discussed that for companies on the bitstream service market it is very important to be able to offer TV broadcasts as such service is uppermost in the mind of most consumers in this country. Since the last analysis, companies have however not found it easy to gain access to the Siminn IPTV system. Siminn has recently offered electronic communications companies resale of IPTV service through Siminn's systems. On the other hand Siminn has categorically refused to deliver its TV signal to other electronic communications companies on other electronic communications networks. If competition problems related to television transmission through bitstream systems are not resolved with the decision planned here and with general competition law, then the PTA can see no other option than to reconsider whether there is not a need for obligations on the former Market 18 (broadcasting transmission services). Then one must keep in mind that Vodafone also operates its own IPTV system. Then it would among other things be

²⁴⁵ Source: PTA

considered whether Siminn and Vodafone have joint dominance on the TV distribution market through networks provided at a fixed location.

818) With respect to Siminn bitstream service, the market is now subject to price obligations. This means that certain maximum prices apply to the market. Since the last analysis was published the market has changed such that GR has arrived and its service area now covers a large area of South West Iceland. This development by GR has however not resulted in Siminn and Mila having felt obliged to reduce their prices. The competition that has been created has not been sufficient to cause a reduction in price on the wholesale market. It can be very tempting for a company with SMP to price its services high in order to increase profits.

819) Apart from the entry of the GR into the market, which now has 24% market share, circumstances on the wholesale market have not fundamentally changed. The Vodafone market share on the wholesale market for bitstream has declined considerably and is almost non-existent, the company is now mostly using their bitstream network for internal use. The market share of the Skipti Group has increased and is now 76% and the Group's incentive to sell products that are not subject to obligations seems minimal. Mila has the most widely distributed system in the country and electronic communications companies are dependent on access to the company's system if they wish to provide services throughout the whole country. Development of the market has thus not given reason to assume otherwise than that the need to maintain obligations on the relevant market is as great as it was after the previous analysis, if not greater.

10.3 Obligations in force

10.3.1 Obligations imposed with PTA Decision no. 8/2008 from 18 April 2008

820) With the PTA Decision no. 8/2008 from 18 April 2008 on the imposition of obligations subject to analysis of Market 12 for wholesale market for broadband access, the PTA imposed the following obligations on Siminn. As has been previously stated the tasks prescribed were transferred from Siminn to Mila in September 2013 in accordance with the Settlement between Skipti and the CA from March 2013.

Obligation for access to networks and related facilities

821) Obligations were imposed on Siminn to meet normal and reasonable requests from other electronic communications companies for open access to special network facilities on copper local loops. The network facility in question was access to bitstream passing through the upper frequency range of copper local loops for the purpose of enabling other electronic communications companies to provide their users with access to various kinds of broadband service. Siminn should also, if this were requested, handle the sending of bitstream through its backbone network to a location where the electronic communications company in question had a connection with the Siminn network. In order to support development of the market the PTA prescribed that Siminn offer electronic communications companies who provided broadband services, including Internet services, bitstream access for resale, see point 4 here below. Electronic communications companies shall have the possibility to deliver bitstream at various locations in the network and shall have the option of changing possibilities for delivery as required:

- a) In DSLAM or equivalent equipment at the place where the copper local loops connect to the telephone exchange distribution frame. (option 1)
- b) By ATM/IP transmission in the Siminn backbone network, that is that Siminn handles transmission of signals from DSLAM to the connection point of another electronic communications company with the IP/ATM backbone network. (option 2)
- c) After transmission with ATM/IP on the Siminn backbone network to the connection point of another electronic communications company with the previously mentioned network. (option 3)
- d) With resale of Siminn's broader band service in the form of Internet connection. (option 4)

822) Furthermore the obligation was imposed on Siminn to host the equipment of other electronic communications companies and for access to other facilities necessary to make full use of bitstream so that it served the intended purpose.

823) The obligation was also imposed on Siminn to provide access to support systems and information necessary for the bitstream to serve the purchaser's needs. It was stated that such access could be:

- a) operational support.
- b) database to gather information before an order is made.
- c) delivery.
- d) orders.
- e) maintenance.
- f) handling of faults.
- g) invoicing.

Obligation for non-discrimination

824) Obligations were imposed on Siminn for non-discrimination both with respect to price and other factors necessary for providing bitstream. All electronic communications companies that purchase bitstream access were to enjoy the same conditions, the same prices and resources that applied for Siminn's service departments, its sister companies, subsidiaries, other related companies or parties cooperating with Siminn. Information on bitstream access and related services should be accessible for other electronic communications companies. It was unauthorised to provide Siminn's service departments or related party's with access to information from the applications of other electronic communications companies and that their applications be processed as quickly as applications from Siminn service departments or from related parties. Siminn should furthermore send to the PTA before 1 April each year a written statement of how non-discrimination in pricing had been maintained.

Obligation for transparency

825) Obligations were imposed on Siminn to practise transparency when providing broadband services. Siminn was obliged to publish information related to access to bitstream, for example on bookkeeping for local loops, technical descriptions, characteristics of networks, terms and conditions for delivery and use and tariff. Part of this obligation was that Siminn was to issue a reference offer for access to bitstream which was to be maintained and updated as required and submitted to the PTA for endorsement no later than six months after the PTA published its decision on Market 12.

Obligation for separation of accountancy

826) Obligations were imposed on Siminn to separate in its accounts all costs incurred on the one hand for network operation and other costs related to wholesale bitstream access and on the other hand costs related to retail of broadband services, including Internet connections and television. Siminn was obliged to submit to the PTA for endorsement a description of types of cost in the accounts which on the one hand were to be allocated to wholesale bitstream access and on the other hand to retail broadband services. Separation of accountancy was to be organised with respect to revenue, costs, assets and liabilities for the operation is in question.

827) Such separation should constitute as a minimum that on the one hand wholesale and on the other hand retail sale of broadband services should have their accounts separated from other operations. The Siminn wholesale prices and internal prices within the company should be transparent, among other things to prevent unfair subsidies. In its accounts Siminn should also separate its revenue, costs, assets and liabilities for its bitstream access and broadband services. Siminn should provide to the PTA on an annual basis a breakdown of the operational accounts and balance sheet for wholesale and retail along with a statement of the division of indirect costs that were not possible to allocate through comparison with other cost items. The above specified statement should reach the Administration no later than 1 April each year for the preceding year.

Obligation on price control and cost accounting

828) PTA imposed an obligation on Siminn for price control for bitstream access. As a temporary measure Siminn should offer registered electronic communications companies a minimum of 35% discount (retail minus) on the retail price for the ADSL connections Siminn offered in resale and that applied when the decision took force. The assumption was that the electronic communications company sold a minimum of 75 ADSL connections. This temporary price was to apply until the cost analysed a tariff was available and had been endorsed by the PTA. Siminn was to submit to the Administration for endorsement a wholesale tariff for access to bitstream at varying locations in the network in accordance with options 1-4 at the latest six months subsequent to the publication of the Decision.

829) Further to this an obligation was imposed on Siminn for cost accounting for wholesale bitstream access in order that Siminn could demonstrate that tariffs for specific kinds of services or goods were oriented to historical costs. It was therefore necessary to introduce cost accounting that captured, identified, assessed and allocated the relevant costs to the services or products in accordance with recognised rules, that is to say a causal relationship. Siminn was to deliver to the PTA a description of the cost accounting for bitstream access and to publish the main cost categories and rules that were used to allocate costs. Siminn should also at the same time submit a report to the PTA from an independent auditor that there was correspondence between the description of the cost accounting and the implementation in Siminn's cost accounting system. Siminn was also obliged to notify the PTA of all amendments to the tariff in question and the did not come into force without endorsement by the PTA.

10.3.2 The impact of existing obligations

830) Existing obligations have by the nature of things had a direct impact on access for electronic communications companies to Skipti Group systems and to the prices offered. On the other hand they have not had the effect that companies have received access to the Skipti Group systems to a greater degree than that prescribed and in addition to this prices have not

fallen more than prescribed in the obligations in question. It has proven very difficult for Vodafone to acquire access to the Siminn VDSL systems and necessary facilities related to such access in order to be competitive with Skipti Group on its networks particularly with respect to IPTV service. It was not until after the PTA Decision no. 38/2012 from December 2012 that such access has been on offer. Vodafone was however dissatisfied with Siminn's subsequent behaviour and requested at the beginning of February 2013 a temporary decision from the PTA concerning an alleged infringement by Siminn of the above specified PTA Decision for Access Option 1. As stated above a settlement was reached on this issue.

831) It is considered likely that obligations that were imposed on wholesale have affected pricing in retail as the price for bitstream connections is a significant factor in the price of retail service such as Internet services. Since the previous analysis there has been significant development in technical solutions and capacity of bitstream service. This makes price comparison more difficult than it would otherwise have been. But one can say that the prices of the main products or services that were transmitted with bitstream service and any given time changed little during the period of validity of the previous analysis and seem to follow the consumer price index (though of course download speed increases steadily as does the amount of data included).

832) Market share at retail level has remained relatively stable since the previous analysis and in reality since 2006 (see figures 2.5 and 2.6). The largest three service providers still have a combined market share of more than 90% The end of 2013 with the proportional division between these parties remaining similar. On the wholesale market Mila is still dominant with about 76% of all wholesale bitstream connections and there has been little change to the company's market share since the previous analysis. About 24% of bitstream connections are on the GR system which had a very limited share during the period of the last analysis while hive which had about 10% market share in 2007 has ceased operations and Vodafone share in the wholesale market has declined considerably.

10.3.3 The necessity to maintain obligations or to impose new obligations

833) As previously stated Mila, previously Siminn, is still the largest bitstream provider in the country with about 76% market share of the relevant market. Despite the fact that new bitstream providers like that GR have entered the market, Siminn has not shown much willingness to lease its own facilities in excess of that stipulated by the obligations, such as for example allowing other service providers adequate access to the VDSL and/or the company's IPTV systems. Changes to the retail market are relatively small. The market share of Mila and GR has increased while the Vodafone share has decreased.

834) The development in recent years does not give reason to conclude that the market has tended towards free competition for conditions to exist to withdraw obligations from the market. The same can be said about the outlook for the near future.

10.4 Decision of Competition Authority no. 6/2013

835) On 26 March 2013 the Competition Authority Decision no. 6/2013 was published. The Decision is based on a Settlement between Skipti hf., Siminn hf. and Mila ehf. and the Competition Authority with respect to seven cases involving Siminn market conduct which were being investigated by the Competition Authority. With the Settlement a clear separation was made between the Skipti Group core systems and Siminn retail operations.

836) The Decision was intended to prevent the Skipti position in core electronic communications being leveraged to create a competitive advantage over competitors. For this purpose it was among other things prescribed that Siminn competitors should enjoy the same access to the Mila electronic communications infrastructure and electronic communications services with the same terms, conditions and quality as Siminn itself at any given time. The same applies to non-discrimination with respect to all provision of information.

837) Mila's independence was strengthened with decrees on company business policy and scope of operations, with an autonomous Chairman of the Board and managerial autonomy, separate premises, obligations for confidentiality and a ban on sharing of specific services. Further to this, a number of wholesale sectors that had been transferred to Siminn were transferred back to Mila.

838) In the Settlement one can find general provisions on access to Mila services and systems. Mila is obliged to practise non-discrimination, impartiality and transparency towards the electronic communications companies that request access to electronic communications networks and other company facilities. It is specifically prescribed that Mila shall provide Siminn and its competitors with bitstream access.

839) Mila shall inform all its customers about new or planned products or services, changes or plans related to existing or planned services, at the same time and in the same manner. Furthermore Mila shall ensure with necessary measures that confidential information to which its employees are privy about individual company customers shall not be disclosed to Skipti, to Mila sister companies or other Mila customers, with the exception of those departments that are authorised to provide Mila with support services, see Article 5, should this be necessary in direct connection with the support service in question.

840) In the Settlement it is specifically stated that it has no effect on the jurisdiction of the Post and Telecom Administration pursuant to Act no. 69/2003 on those issues covered by the Electronic Communications Act no. 81/2003 and derived rules and Decisions on the basis of electronic communications legislation.

841) The settlement does not prescribe the offer of specified wholesale services by Mila, with the exception of bitstream access. There is no detailed discussion there about how the offer of bitstream access shall be structured and there are no provisions on surveillance of wholesale tariffs for such access.

842) The PTA has examined whether the above specified Decision by the Competition Authority in any way diminishes the need for obligations on the relevant market. When assessing whether general competition rules suffice to correct market failure then one must keep in mind whether substantial measures are required, whether frequent and immediate intervention is required and whether special measures are needed to create legal predictability on the market.

843) Major measures would mainly be necessary when a company that controlled critical facilities refused to provide access to other parties and where the authorities needed to establish access with decrees to the company in question or perhaps by organising the nature of access through intervention in pricing and with other conditions.

844) As stated here above there are non-transitory entry barriers to this market which among other things are manifested in the difficulty of duplicating facilities comparable to those controlled by the largest company on the market. Smaller electronic communications companies need to rely on having access to the Mila network to be able to serve their customers across the whole country. No other network covers all inhabited areas of the country.

845) On the market for bitstream access, quite substantial measures were required to ensure access at fair terms. It has been necessary to establish extensive price control with the accompanying cost analyses to ensure that all purchasers on the market can rely on getting access on an equal footing and at a price that is not far in excess of cost.

846) Experience has shown that not all problems on the market can be solved with one Decision but rather that regular intervention is required. The PTA has in recent years had to intervene on many occasions and make a Decision in matters concerning bitstream service. In this respect one can cite the following PTA Decisions:

- 8/2008 On the designation of a company with significant market power and on the imposition of obligations on the wholesale market for broadband.
- [15/2008](#) Dispute Og fjarskipta ehf. (Vodafone) and Siminn hf. on discount on price of bitstream access for resale.
- 23/2009 As a result of a complaint by Gagnaveita Reykjavíkur ehf. about hosting charges by Mila ehf.
- 7/2010 On cost analysis for bitstream access.
- [11/2010](#) On confidentiality of specific information in the publishing of PTA Decision no. 7/2010.
- [12/2010](#) On amendments to conditions of the Siminn hf. reference offer for bitstream access.
- [38/2012](#) On Access Option 1 with Siminn.
- Planned Decision with respect to cost analysis for bitstream access (Access Options 1 and 3).

847) This listing demonstrates that measures by the regulatory authorities are often required. It can hardly be expected that the competition authorities have the capacity for such frequent measures on one sub-market in the electronic communications sector. Furthermore the measures to which it has been necessary to resort have been very specialised, based on specific legal rules and on specialised knowledge of the electronic communications regulatory body.

848) There are often very substantial interests tied to gaining access to bitstream without delay. It can prove impossible for electronic communications companies to commence operations in new areas if access to bitstream in the area is not available. If new companies are denied access or if access is made uneconomic with excessive pricing or unfair terms and conditions it is possible that significant damage could result both for the company in question and for the market as a whole and as a result for consumers.

849) The risk of denial of access or of unfair conditions for access, calls for permanent measures being in place to ensure that it is always possible to gain access and that it is possible to react without delay in order to prevent new companies being repelled from the market with delaying tactics. It should be assumed that the Decisions of a specialised

authority that operates according to special rules of electronic communications legislation will, all things being equal, be a quicker way to assure access on reasonable terms, rather than Decisions based on general rules governing competition.

850) When a company plans to attempt an entry into an electronic communications market where there is a need to invest significant sunk costs, it is necessary to be able to foresee the type of access it will be possible to gain to incumbents' networks and on what terms. Uncertainty about such issues would deter companies and investors from entering the market. Mitigating measures provided by the Electronic Communications Act which are ex-ante obligations on access and related issues, are much more conducive to increasing predictability on a market like this rather than general rules of competition which allow for intervention subsequent to instances of misuse of a dominant market position coming to light. In such cases where intervention is subsequent to the event it is often extremely difficult to predict the conclusion and the length of time the case might take.

851) Obligations imposed by the PTA on companies with significant market power apply until a new Decision has been made subsequent to a new market analysis where consultation has been made with parties to the market and with ESA. Transparency and predictability of such an arrangement is much greater than is generally the case with Decisions made on the basis of the general competition law. Obligations that were imposed on Siminn with the PTA Decision no. 26/2007 do not address the needs of purchasers on the bitstream market in a detailed manner which means that there is a risk that damaging delays could occur were a party to demand access to a specific bitstream service on the basis of general provisions in the Decision by the Competition Authority.

852) The conclusion of the PTA is that the Competition Authority Decision no. 6/2013 does not lessen the need for special obligations on the market for bitstream access. Experience has shown that there is a need for frequent and substantial intervention in the market and that predictability needs to be created with respect to access for competitors of the Skipti Group to the Mila networks. The Decision of the Competition Authority is general in nature and does not specifically address issues on the relevant market. In addition to this, insufficient experience has yet been gained on the implementation of the Settlement and then there is the fact that the Skipti Group has not fully complied with the Settlement. For this reason the PTA considers it necessary to maintain obligations on the relevant market pursuant to the Electronic Communications Act.

10.5 Imposition of obligations pursuant to the Electronic Communications Act

853) In its analysis of the relevant markets for wholesale broadband access the PTA has come to the conclusion that competition is not effective enough and that this situation is primarily a result of Mila's strong position on the relevant market. The PTA came to the conclusion in Chapter 5 that Mila had SMP on the relevant wholesale market and that it is not considered that there is much likelihood of this situation changing unless appropriate obligations are still imposed on Mila. In this chapter, proposals from the PTA can be found for obligations on Mila for the purpose of resolving competition problems and facilitating more active competition on the relevant market. The obligations of the main objective of increasing competition on the relevant market and creating conditions for the entry and growth of independent service providers.

854) Given the competition problems described in Section 10.2.2, the following obligations are in the opinion of the PTA conducive to countering circumstances on the relevant market:

- a) Obligation for access to networks and appropriate facilities.
- b) Obligation for non-discrimination
- c) Obligation for transparency
- d) Obligation for separation of accountancy
- e) Obligation for price control
- f) Obligation for cost accounting

855) The PTA believes that these obligations are both in accordance with the objectives presented in the EU Framework and Access Directives and with the provisions of legislation on electronic communications and that they are appropriate for the period that is expected to pass until the market will be analysed again. Here below follows detailed discussion on the above specified obligations.

10.5.1 Obligation to provide access

856) According to Paragraph 1 of Article 28 of the Electronic Communications Act the PTA may instruct undertakings with SMP to meet normal and reasonable requests for open access to public electronic communications networks, network elements and associated facilities under certain conditions prescribed by the Administration. Paragraph 2, Item g of the same Article states that it is permissible to require that electronic communications undertakings interconnect networks or network elements.

857) In imposing an obligation to grant access, it is necessary to consider whether the access in question encourages investments in the network and promotes innovation, efficiency and sustainable competition. In Paragraph 3 of Article 28 of the Electronic Communications Act it is stated that when making a Decision to impose obligations pursuant to Paragraph 1, the PTA shall take into account whether it is:

- a. technically and financially realistic to use or install competing facilities in view of market developments and the nature and type of interconnection and access involved;
- b. feasible to provide the access proposed;
- c. justifiable, in view of the original investment by the owner of the facility and the risk taken in making the investment;
- d. to the advantage of competition in the longer term;

- e. inappropriate, in view of intellectual property rights;
- f. conducive to increasing the supply of services.

858) The PTA has assessed whether the access requirement is technologically and financially realistic and whether it would be realistic for a competitor to set up his own infrastructure in competition, considering market developments and the nature of the access in question. The PTA considers it quite feasible for Mila to grant the access that is proposed; furthermore it considers it justifiable with respect to the initial investment. The PTA considers obligations to be in the interests of competition in the long-term and that they will encourage an increase in service offers.

859) The PTA believes that Mila shall offer bitstream access with the following quality definitions:

- first, the access that uses significant bandwidth but without any quality definition (best effort) for general Internet service;
- second, access that uses little bandwidth but makes high-quality requirements for VoIP telephone service;
- third, access that uses significant bandwidth and makes high-quality requirements for TV distribution and video over IP (IPTV, VoD) where among other things multicast²⁴⁶ technology is used and the appropriate communication protocols.

860) The kinds of access mentioned here are first and foremost indicative and neither exhaustive nor do they exclude that other methods may be offered. The PTA considers that the pricing of each access service over bitstream shall depend on the bandwidth load that it entails and the quality requirements that it needs to fulfil. This includes all kinds of xDSL access, including ADSL, VDSL and SHDSL

861) Mila's current position on the wholesale bitstream market constitutes certain access barriers on the relevant market. The development of a new bitstream system with national coverage requires major investment and it is the opinion of the PTA that it will not be easy to embark on development of such a system and that the development of other systems will be directed at specific areas close to the operating premises of the service provider. Service providers currently operating all have limited distribution compared to Mila's DSL services which are provided over its own copper local loops and in addition to this the service providers do not plan for much distribution outside their existing areas of operations. The PTA believes that, access barriers will continue to characterise market circumstances for wholesale bitstream access unless access obligations are imposed on Mila's bitstream system. The PTA considers that the interests of consumers will be enhanced with increased access whether this is provided by resale parties or network operators that employed to a certain extent access to Mila's systems.

862) When imposing the obligation is, the PTA assessed whether the access requirement is technologically and financially realistic and whether it would be realistic for a competitor to set up his own infrastructure in competition with Siminn, considering market developments

²⁴⁶ In data transmission through electronic communications networks multicast is used to transmit data streams where data is sent simultaneously to many users with one transmission from source. The data is multiplied at node points in the network so that for each segment of the network the data only transmits in one copy. The copies are created automatically in network equipment such as network routers but only if the recipients on the network segment in question have requested to receive the stream.

and the nature of the access in question. The PTA considers it quite feasible for Mila to grant the access that is proposed; furthermore it considers it justifiable with respect to Mila's initial investment. The PTA considers obligations to be in the interests of competition in the long-term and that they will encourage an increase in service offers. In the imposition of obligations the PTA has taken into account other obligations that rest on Mila and on Mila's sister company Siminn. Furthermore the obligations that it is planned to impose on Mila for wholesale access to network infrastructure provided at a fixed location (market four), where among other things obligations are planned for access to local loops, distribution frames, virtual unbundled local access (VULA²⁴⁷) and access to other essential facilities, for example for DSLAM equipment etc.

863) The PTA plans to impose obligations on Mila to meet normal and reasonable requests from other electronic communications companies for open access to special network facilities on local loops. The network facility in question is access to bitstream passing through the upper frequency range of copper local loops on one hand and on the other hand access to bitstream passing through fiber-optic local loops, for the purpose of enabling other electronic communications companies to provide their users with access to various kinds of broadband service, including VoIP and IPTV.

864) Mila shall provide electronic communications companies with access to the same bitstream service, including performance and quality definitions, also what is called multicast, as Mila provides Siminn for its Siminn services. In addition to traditional Internet service one can in this respect mention IPTV service which among other things uses IGMPv2²⁴⁸ communication protocols for transmission of TV programmes and RTSP²⁴⁹ for viewing video on demand (VoD). Mila shall also meet requests for access to bitstream service which fulfil normal and objective requirements for another kind of quality control and performance guarantee though Siminn may not be using the same definitions for its service at that point in time.

865) In order that the bitstream access provided by Mila be adequate wholesale service which replaces a purchaser's operation of his own bitstream system, such as VDSL in street cabinets, the following five criteria with respect to service of access shall be fulfilled. They are:

- 1 *Access at each location* - Mila must ensure that at each of the locations where bitstream access is provided is provided, competitors receive access to local loops. Mila must maintain dynamic registration at those locations where bitstream services are provided in each instance and must provide access to this register.
- 2 *Access independent of the service provided on the line.* - Mila may not discriminate on the basis of the nature of service provided through the bitstream. Mila must ensure that the bitstream system in question provides each service provider with the same kind of service where there is no distinction made between types of services (for example IPTV).
- 3 *Specific and fixed definition of capacity of the line.* - Competitors receive the same service as the Mila wholesale provides to the Skipti Group retail arm at any given time for its bitstream services and always the capacity specified in the agreement.

²⁴⁷ Virtual Unbundled Local Access.

²⁴⁸ <http://www.ietf.org/rfc/rfc2236.txt>

²⁴⁹ <http://www.ietf.org/rfc/rfc2326.txt>

- 4 *Full access to service/service definitions.* - Service providers must receive full access to those systems that specify capacity and service for end users, such as for example the amount of capacity dedicated to TV, telephone etc. and the providers must be able to control the technical and quality specifications required by each service.
- 5 *Full control of customer point of service equipment* – Mila wholesale needs to provide a router for service providers at the same price as they are sold to Skipti Group retail. The router needs to be able to handle all the services that they competitor wishes to provide over the connection, such as VoIP, IPTV and ISP. In addition to this they competitor needs to receive full access to such a router to be able to set it up according to the service standards he requires. If Mila wholesale can provide this service/bitstream on a router owned by competitor then this requirement can be withdrawn.

866) Mila shall also, if this is requested, handle the sending of bitstream through its backbone network to a location where the electronic communications company in question has a connection with the Mila network. Electronic communications companies shall have the possibility to deliver bitstream at various locations in the network and shall have the option of changing possibilities for delivery as required (see figures 2.20 and 2.22):

1. In DSLAM or equivalent equipment at the place where the copper local loops connect to the telephone exchange distribution frame and/or telephone exchange fibre-optic distribution frame, street cabinet or other equipment space. (option 1)
2. By ATM/IP transmission in the Mila backbone network, that is that Mila should handle the transmission of signals from DSLAM and/or the fibre-optic distribution frame to the connection point of another electronic communications company with the ATM/IP backbone network. (option 2)
3. After transmission with ATM/IP on the Mila backbone network to the connection point of another electronic communications company with the previously mentioned network. (option 3)

867) The PTA plans to withdraw the obligation for access according to Access Option 4, that is to say with resale of broadband service in the form of Internet connections. In the first case, Mila does not provide access to the Internet and this obligation would therefore need to be directed at Siminn as the Internet service provider in the Skipti Group. In the second case it has been demonstrated in recent years that operation of Internet service is not such that there are significant entry barriers to the founding of such companies if they have access to adequate bitstream analogous to Access Options 1, 2 or 3. In the third case there has been no demand for Access Option 4 from the time that obligations were imposed with the PTA Decision no. 8/2008 which among other things constituted such access. In addition to this one must have in mind that Internet service is not included in the wholesale market for bitstream access. Apart from this it is part of the Settlement between Skipti and the Competition Authority that Siminn shall offer its resale Internet service as wholesale service in accordance with Access Option 4.

868) In implementing these Access Options the PTA considers it normal to take into account considerations of economy for example in the case of Access Option 1 in VDSL it can prove economic to provide access from some kind of node point where connections from many street cabinets are collected. Such an implementation could thus have the characteristics

of varying Access Options, for example it could be at a level which one could consider to be between Access Options 1 and 2

869) In the case of virtual unbundled local access (VULA) with the VDSL technology, access is provided in connection interfaces that are on Access Option 1, 2 or 3, intertwined with access to the local loop itself, that is to say the upper frequency range of copper local loop.

870) In addition to the obligation to provide special access in the form of bitstream access the obligation is imposed on Mila to provide at wholesale terms the hosting of equipment of other electronic communications companies and access to other facilities necessary for the bitstream access to be fully used and to serve the intended purpose, including connections from Mila connection points to the connection points of wholesale purchasers and equipment related to their activities.

871) Denial of a request for bitstream access and access to facilities shall be reasoned and in writing. Agreements for access to Mila's bitstream system should be completed within a normal timescale and without unnecessary delays. Mila is unauthorised to delay negotiations on agreements without reason. In order to limit Mila's possibilities to delay negotiations on agreements it is necessary to impose obligations on the company for non-discrimination and transparency and the obligation to publish a reference offer. Access that Mila has provided to its bitstream network may not be rescinded without the agreement of the PTA.

872) In order to support increased efficiency in the provision of wholesale bitstream service, Mila shall be authorised, with prior endorsement from the PTA, to withdraw the offer of Access Option 1 for specific geographical areas where Access Option 2 is a more economic option. If the economy of these changes in arrangement depends on a request from an alternative operator for an access to Mila's network (Access Option 1 or 2), the request from the operator needs to be fair and normal. The same applies to Mila's request to the PTA to withdraw the offer of Access Option 1 in relation with the offering of Access Option 2 in the area in question. The changes in Mila's access network, resulting from a request from Mila to withdraw Access Option 1 for a specific geographical area, are subject to a national consultation among stakeholders. Mila shall notify those who use Access Option 1 about such a plan with adequate notice which shall not be shorter than six months. Mila shall endeavour to arrange matters in such a way that such a party will not suffer significant financial damage or inconvenience. Access Option 2 shall fulfil all of the same requirements that are made to Access Option 1 with respect to service offer, quality control, multicast, communications protocols etc.

873) According to Item i of Paragraph 2 of Article 28 of the Electronic Communications Act it can be required that an electronic communications company with SMP provide access to other essential facilities.

874) Mila shall provide access to support systems and information necessary for bitstream access to be useful for the purchaser. Such access can be:

- a) Operational support
- b) Database to gather information before an order is made.
- c) Delivery.
- d) Orders.

- e) Maintenance.
- f) Handling of faults.
- g) Invoicing.

875) Those obligations that now rest on Mila for access to the company's bitstream systems shall not cease to apply even though Mila migrates its systems to the next generation of networks, for example if access to VDSL replaces access to ADSL, except when agreement has been reached on the migration process and the party leasing the access is thus prepared to receive a new kind of access instead of the older one when the migration has taken place. Should such an agreement not be reached then Mila shall inform parties to the market of all changes to the arrangements of bitstream access that are likely to alter companies' competitiveness on the market with 2 years notice.²⁵⁰ Deviation may be made from the above period of notice on receipt of advance endorsement by the PTA. If Mila's request for such an exemption is found to be material and proportionate the PTA would hold a consultation among stakeholders. If no material comments would arise and stakeholder proven to have sufficient alternative and not suffer undue hardship migrating between systems, the PTA would grant such an exemption.

876) Should Mila make changes to its systems it is important that:

- System downtime should be at a minimum for those wholesale customers operating on the relevant market segment.
- Costs resulting from the migration should not be so great as to act as an entry barrier to what results from the migration.
- An integrated process for transferring all parties should be in place with care taken to ensure non-discrimination between all parties on the market.
- The time taken for migration should be at a minimum given the type and scope of the request.
- There should be a service agreement and a list of key performance criteria to ensure the efficiency of the migration procedure, unless there are indications that such is unnecessary or is not cost-effective.

877) The PTA considers the requirement for access to be both normal and fair given the circumstances on the relevant market.

10.5.1.1 Summary

878) With the authority in Article 28 of the Electronic Communications Act the PTA intends to impose on Mila an obligation to meet normal and reasonable requests for open access to specific network facilities on local loops at wholesale level, see Access Options 1-3. Mila should also, if this is requested, handle the sending of bitstream through its backbone network to a location where the electronic communications company in question has a connection with the Mila network.

879) Mila shall offer wholesale broadband access for resale to electronic communications companies that provide broadband services. Mila is obliged to provide hosting of equipment of other electronic communications companies and access to other facilities necessary for the

²⁵⁰ Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) – Page 43.

bitstream access to be fully used. Mila shall also provide access to support systems and information systems analogous to those used by Skipti Group service units. In addition to this Mila is required to notify all technical migration in advance so that customers can react in a sufficiently timely manner.

880) Mila shall also offer access to the service taking place on broadband such as VoIP and multicast. Access to the Mila VDSL system is included in these obligations. In order to limit Mila's possibilities to delay negotiations on agreements it is necessary to impose obligations on the company for non-discrimination and transparency and the obligation to publish a reference offer.

10.5.2 Obligation for non-discrimination

881) According to Article 30 of the Electronic Communications Act, the PTA can impose obligations on electronic communications companies designated with SMP to practise non-discrimination when agreeing to interconnection or access. Such obligations should particularly ensure that electronic communications companies make the same conditions to other companies that provide electronic communications services for the same kind of transactions and should provide service and information with the same conditions and the same quality as it provides to its own service department, subsidiaries or collaborators.

882) The provision on non-discrimination in Article 30 of the Electronic Communications Act is in two parts. On the one hand the PTA can impose obligations on a company with SMP for non-discrimination when agreeing to interconnection and access, that is to say practise non-discrimination between unrelated electronic communications companies. On the other hand the obligations shall ensure that the company make the same conditions to unrelated electronic communications companies in analogous transactions as it makes to its own service providers or other related parties.

883) In order for this to be successful, the obligation to grant access must be imposed together with an obligation for non-discrimination. The non-discrimination obligation is intended to prevent a vertically integrated undertaking with SMP from engaging in practices that have a negative impact on competition. It is intended to prevent such an undertaking from discriminating, for example with regard to price and quality of service, that is selling less expensive and better services to its own retail departments than to other parties. Fair, moderate and justifiable conditions for access, including price are basic issues when striving to strengthen competition. The obligation for non-discrimination does not mean that all companies are subject to exactly the same conditions but rather that all difference in conditions is based on objective criteria.

884) Significant market power on the market for bitstream can lead to a company discriminating against parties that require the service, should the obligation for non-discrimination not be imposed. It could tend to sell to unrelated parties at a higher price than to its own departments and to other related parties. In order for the non-discrimination obligation to have the desired effect, it is often necessary to impose an obligation to practise accountancy separation as well.

885) Even where companies have been assured access to local loops at the same price, Mila can try to discriminate in other manners and in this way increase costs for Skipti Group competitors in order to cause them problems and even push them out of the market. Such

practices could for example be in the form of varying quality of service, differing service offers between related unrelated parties, varying processing of applications, inadequate information to unrelated parties (among other things on new service and/or planned distribution networks), unreasonable conditions for agreements and demands that other unrelated service is purchased at the same time.

886) The PTA believes that the obligation for non-discrimination is admirably suited to tackle the problems that arise in connection with discrimination with respect to price and access conditions. As an example of varying quality one could mention variations between the Skipti Group service departments and other companies with respect to speed of connection of bitstream. Discrimination can also manifest itself in varying prices and/or conditions for access to information systems and in parties being provided access to systems of varying ages and capacity.

887) The information gained by Mila from other companies when making agreements for access, or completion of agreements, shall solely be used for the purpose provided for and shall at all stages be treated as confidential. It is unauthorised to supply information from related or unrelated parties, see among other things Article 26 of the Electronic Communications Act no. 81/2003.

888) The PTA intends to impose the obligation on Mila that all electronic communications companies that purchase access to bitstream, whether this is bitstream transmitted through copper or fibre-optic local loops and having taken circumstances into consideration, enjoy the same conditions (including prices) that apply to other departments of the Skipti Group or to other related parties. The PTA intends furthermore to make the requirements that quality of access provided to unrelated parties be no less than that of services provided by Mila to its own departments or to related parties. The obligation for non-discrimination that the PTA intends to impose on Mila is what is called Equivalence of Input (EoI) obligation and is a stricter non-discrimination obligation than what is called Equivalence of Output (EoO). The main reason for choosing the stricter non-discrimination obligation is the fact that the PTA does not at this point in time intend to prescribe price control for fibre-optic local loops. Under such circumstances it is deciding factor that non-discrimination between related and unrelated parties is absolute. The PTA considers it unnecessarily complex in practice to solely specify the stricter non-discrimination obligation for bitstream access through fibre-optic local loops and the weaker one for bitstream access through copper local loops. For this reason the PTA intends to prescribe that the stricter non-discrimination obligation apply to all bitstream access provided by Mila. The non-discrimination obligation in question shall be fully implemented no later than six months after this decision has come into force. Within this period of time Mila shall submit documentation to the PTA which demonstrates that the non-discrimination obligation has been implemented. Otherwise the PTA reserves the right to prescribe a price control obligation for Mila bitstream access provided through fibre-optic local loops.

889) Equivalence of Input means that Mila is obliged to offer the same price, use the same service procedures/service systems, the same time limits and to publish the same information about the service (among other things development and distribution of information) to related and unrelated customers. In this way unrelated customers receive access to the same information, the same delivery and ordering service and receive the same treatment within the same time limits as the Skipti retail arm, Siminn and other related parties. The same applies to notification of faults and solutions and access for the staff of the unrelated party to Mila's

information systems which are used for service to end users. Mila shall open those systems for unrelated parties that are used within the Skipti Group and that are necessary in connection with bitstream access.

890) Information on access to bitstream and access to related service shall be equally accessible to other electronic communications companies as to the Skipti retail arm, Siminn and other related parties. Among other things information shall be provided on the length of local loops in each instance, where known, that is to say distance of the end user in question from the next connection point. Should a local loop be measured for some reason, data shall be updated with the results of such measurements.

891) The PTA considers it particularly important that Mila does not have the opportunity to discriminate in an abnormal manner between its own departments, the Skipti retail arm (and other related parties) and unrelated parties with respect to innovations on the market.²⁵¹ As related retail markets are in continuous development, unrelated parties need to be certain that the appropriate wholesale products are available with adequate notice in order that they can offer new, improved and less expensive retail service (for example more speed in Internet access) at the same time as Skipti units or other related parties. The PTA plans to impose the obligation on Mila that unrelated parties be informed about distribution, enlargement or other developments of the company's bitstream system (and related service and other significant innovations) with the same notice as other units of the Skipti Group and other related parties. This notice shall under no circumstances be shorter than three months. Information shall among other things contain planned prices, conditions, technical specifications, scheduled upgrades, distribution or innovation, updated position on upgrades/distribution and planned connection points. Such information is particularly important with respect to migration from ADSL to VDSL and with respect to distribution of bitstream through fibre-optic local loops. Neither Skipti units nor related parties may thus receive the information in question before unrelated parties. Mila shall give related and unrelated parties the opportunity to influence development of new wholesale products and planned interfaces. Mila may not refuse to develop new service at the request of an unrelated party simply because Skipti units or related parties have not requested such service. Such a request by an unrelated party shall however be fair and reasonable as applies to Skipti units or other related parties.

892) A VDSL operator may publish its roll-out plans of distribution and planned connection points with three months advance for each street cabinet planned for VDSL and notify the PTA of that plan. By publishing such a list and notifying the PTA the operator can assure itself priority rights to VDSL development in that specific area for those three months. The purpose of this is to protect the first mover advantage of a company willing to invest in the development of a VDSL access network and increase the willingness to invest in such a development. Mila's obligation to publish such roll out plans as discussed above also grants the company this three months priority rights to the street cabinets the company lists on its plans for VDSL expansion.

893) In order to ensure that Mila fulfils the obligation in question the PTA can perform a technical and/or economic replicability investigation as to whether unrelated parties can replicate the product offer of the Skipti Group or of other related parties. Should the PTA conclusion be that unrelated parties cannot replicate the product offer of units within the Skipti Group or of other related parties for technical or economic reasons, the PTA can

²⁵¹ Unjustified first mover advantage.

instruct Mila to alter its product offer and/or offer new wholesale products to enable unrelated parties to replicate the product offer of units within the Skipti Group or of other related parties on normal commercial grounds.

894) Mila shall take care that applications from unrelated electronic communications companies for access to bitstream or related services be processed in as timely manner as applications from units within the Skipti Group or from other related parties. Should there be a problem in processing an application, this shall immediately be notified to the applicant in writing or in an electronic manner and reasons shall be provided for the delay. Mila is not authorised to make abnormal demands on the applicant as a condition for processing the application.

895) The PTA plans to make the reservation that Mila make service agreements with all purchasers of bitstream access where among other things the quality of service shall be prescribed and issues relating to non-discrimination as itemised in the obligations that the PTA plans to impose on Mila on the relevant market. This is a service level agreement (SLA). Such agreements shall cover the various service issues that relate to bitstream access, including orders, delivery, service access, transfer of service and repairs. The service agreements shall also among other things prescribe how mutual interference of signals will be avoided between parties. They shall furthermore prescribe efficient and economic procedures with respect to transfer of service at wholesale, that is to say when a Mila counterparty decides to transfer from one service to another at Mila or related parties. In order to ensure non-discrimination and transparency with respect to quality in Mila bitstream access services, the PTA plans to prescribe that all service level agreements shall be published on the Mila website. Such agreements can among other things be part of a reference offer. Parties can consult with the PTA on the making of such agreements and the PTA can rule on matters of contention when making these agreements. Service level agreements can vary between parties, depending on the wishes of Mila counterparties. Mila shall however respect the non-discrimination obligation and for this reason it is important that all such agreements are published. Mila shall complete service level agreements with all of its counterparties no later than six months after the publication of the decision on the relevant market.

896) In addition to the obligation to make service level agreements the PTA intends to impose the obligation on Mila to issue a specific declaration on quality guarantees (Service Level Guarantees (SLG)). Such service level guarantees shall cover all necessary service issues that relate to the local loop leasing including orders, delivery, service access, transfer of service and repairs. Such service level guarantees shall among other things prescribe specific fines which Mila must pay to its counterparties should the service level guarantee not to be honoured. In this instance it could be that a specific amount is paid for each day that for example delivery or repair exceeds the time-limit prescribed by the service level guarantee. Such provisions for fines should be objective, simple and unequivocal such that the parties should not need to resort to the PTA or to the courts for interpretation. The PTA shall monitor the implementation of the Mila service level guarantee which shall be completed within six months from the time that the Decision on the relevant market is published. Mila shall ensure that interested electronic communications companies be informed of the content of the service level guarantee.

897) In order to ensure that Mila respects the obligation for non-discrimination that is intended to be imposed on the company and the making of service level guarantees, the PTA intends to impose the obligation on Mila that it should collect and publish regularly certain

key performance indicators (KPI). There is discussion on the necessity for publishing such information in the BEREC document on the relevant market from December 2012²⁵² and in the ERG document on obligations.²⁵³ The key issues mentioned are in this instance delivery of orders, delivery of service, service availability, switching of service and maintenance. In this way Mila's counterparties can compare the service they receive with the service received by companies related to Mila departments and other related parties on the one hand and with the average in the sector on the other. In this way Mila counterparties can determine whether they are being discriminated against. The publication of conclusions of measurements of key performance indicators will as shown above help in casting light on whether the non-discrimination obligation is complied with, particularly with respect to those factors related to pricing and whether Mila has fulfilled its duty to make adequate service level agreements with its counterparties.

898) As a minimum Mila shall publish the following key performance indicators as part of key performance assessment.²⁵⁴

- 5) Delivery of orders.
 - a. Number of orders delivered.
 - b. Proportion of orders rejected after having been accepted in the ordering system.
- 6) Delivery of products/services.
 - a. Average delivery time.
 - b. Proportion of deliveries at or before time limit.
 - c. Precision of delivery.
- 7) Maintenance.
 - a. Proportion of faults in equipment for which company with SMP is responsible, measured in lines per year.
 - b. Average duration of repair of fault.
 - c. Proportion of fault repairs at or before time limit.
- 8) Service switching.
 - a. Average time for switching from one wholesale service to another.
 - b. Proportion of deliveries at or before time limit.
 - c. Precision of delivery.

899) The PTA shall monitor whether Mila collects and regularly publishes the above specified key performance indicators for internal transactions on the one hand and external on the other. It is planned that Mila should publish the information in question in the first instance within three months from the publication of the decision on the relevant market and subsequently at monthly intervals.

900) The PTA considers that the publication of key performance factors is appropriate as a measure to monitor compliance with the non-discrimination obligation and with Mila's duty

²⁵² BEREC Common Position on best practice in remedies on the market for wholesale broadband access (including bitstream access) imposed as a consequence of a significant market power in the relevant market - Page 14-15, BoR (12) 128.

²⁵³ Revised ERG Common Position on the approach to Appropriate remedies in the ECNS regulatory framework.

²⁵⁴ http://www.erg.eu/streaming/erg_07_53_wla_wba_bp_final_080604.pdf?contentId=544650&field=ATTACHED_FILE.

to make service level agreements. For this reason and on the basis of minimum criteria in the BEREK and ERG documents, the PTA intends to impose the obligations on Mila to gather and publish on its website figures for key performance indicators at monthly intervals.

901) The PTA understands that the obligation in question for collection of data can be onerous for Mila. On the other hand the PTA considers that measuring these criteria is extremely important for the market and furthermore is important for Mila in its own operations. Publishing the above specified information is important for a competition on the relevant market and supports compliance with the demand for non-discrimination and that all parties can rely on this compliance.

902) The PTA believes that the demand for non-discrimination is both reasonable and normal. There is no indication that it entails significant costs or inconvenience for companies with SMP. The PTA considers it necessary to strengthen competition on the bitstream market by imposing obligations for non-discrimination but take into account at least the above specified items.

10.5.2.1 Summary

903) With the authority of Article 30 of the Electronic Communications Act the PTA intends to impose the obligation on Mila that all electronic communications companies that purchase access to local loops, whether copper or fibre-optic, enjoy the same conditions including price as apply to related parties or to those cooperating with Skipti Group units or related parties. Quality of access provided to unrelated parties shall not be less than quality of access provided by Mila to Skipti Group units or to related parties. The obligation for non-discrimination that the PTA intends to impose on Mila is Equivalence of Input which is where the company is obliged to offer the same price, use the same service procedures/service systems, the same time limits and publish the same information about the service to related and unrelated customers. Mila shall open those systems for unrelated parties that are used within the Skipti Group and that are necessary in connection with bitstream access.

904) The non-discrimination obligation in question shall be fully implemented no later than three months after this decision has come into force. Within this period of time Mila shall submit documentation to the PTA which demonstrates that the non-discrimination obligation has been implemented. Otherwise the PTA reserves the right to prescribe a price control obligation for Mila bitstream access provided through fibre-optic local loops.

905) The PTA plans to impose the obligation on Mila that unrelated parties be informed about distribution, enlargement or other developments of Mila bitstream system with the same notice as Mila departments and other related parties, and this notice shall not be shorter than three months. Furthermore Mila shall give related and unrelated parties the opportunity to influence development of new wholesale products and planned interfaces. Should Mila have published a three-month development and distribution plan with respect to the development of the VDSL system in a specific area, Mila can assure for itself priority rights for that specific area for three months.

906) In order to ensure that Mila fulfils the obligation in question the PTA can perform a technical and/or economic investigation as to whether unrelated parties can replicate the product offer of Skipti Group units or of other related parties in a sustainable manner (technical and/or economic replicability). This should the PTA conclusion be that unrelated

parties cannot replicate the product offer of Skipti Group units or of other related parties for technical or economic reasons, the PTA can instruct Mila to alter its product offer and/or offer new wholesale products to enable unrelated parties to replicate the product offer of related parties on normal commercial grounds.

907) The PTA plans to impose the obligation on Mila to make service level agreements with all purchasers of bitstream. Such agreements shall cover the various service issues that relate to bitstream access, including orders, delivery, service access, transfer of service and repairs. Mila shall complete service level agreements with all of its counterparties no later than six months after the publication of the Decision on the relevant market. All service level agreements shall be published on the Mila website.

908) In addition the PTA intends to impose the obligation on Mila to issue a specific declaration on quality guarantees (Service Level Guarantees (SLG)). Such service level guarantees shall cover all necessary service issues that relate to non-discrimination in local loop leasing including orders, delivery, service access, service switching and repairs. Such service level guarantees shall among other things prescribe specific fines which Mila must pay to its counterparties should the service level guarantee not to be honoured. Mila shall issue the service level guarantees within three months from the publication of this decision. Mila shall inform interested electronic communications companies about the content of the service level guarantee.

909) Furthermore the PTA intends to impose the obligation on Mila that the company gather and regularly publish specific key performance indicators, including criteria that relate to processing of orders, delivery of service, repair services and service switching - for internal transactions on the one hand and external on the other. It is planned that Mila should publish the information in question in the first instance no later than three months after this decision has been published and subsequently at monthly intervals.

910) The information gained by Mila from other companies when making agreements for access, or completion of agreements, shall solely be used for the purpose provided for and shall at all stages be treated as confidential. It is unauthorised to supply information from related or unrelated parties, see among other things Article 26 of the Electronic Communications Act no. 81/2003.

10.5.3 Obligation for transparency

911) Provisions on transparency can be found in Article 29 of the Electronic Communications Act no. 81/2003. There it says in Paragraph 1 that in order to increase transparency of interconnection or access to the facilities of an electronic communications company the PTA can oblige an electronic communications company with SMP to publish specific information, for example accounting information, technical information, information on the characteristics of networks, terms and conditions for delivery and for use and tariffs. It is authorised to make an exemption to the publication of information if an electronic communications company can show that it concerns important financial or business interests that it is fair and normal to keep confidential.

912) In Paragraph 2 of Article 29 of the same Act it states that when an electronic communications company is obliged to practise non-discrimination then the PTA can demand that it publishes a reference offer that contains a breakdown description of interconnection or

access, along with terms and conditions, including tariffs. The Administration can prescribe changes to the reference offer. PTA is authorised to set rules on the content of interconnection agreements and reference offers.

913) Conditions that apply to access to networks and services are of extreme importance to new parties and can have a decisive impact on their possibilities to gain market share. It is clear that the competitive position of such parties is at risk if they must endure discriminatory conditions. Furthermore, it facilitates the entry of companies into the market if the conditions on offer for access and service that they must purchase are foreseeable and the same applies to the basis for pricing and other conditions.

914) The publication of a reference offer gives all parties to the market the opportunity to see what is on offer and it ensures that companies will not be required to pay for service and facilities for which they have no need. The PTA considers that the existence of a reference offer for wholesale bitstream access is necessary for the entry of independent service providers. In this way interested parties can for example see how it would be possible to operate such service and on what terms.

915) It was stated here above that The PTA considers it necessary to impose an obligation on Mila for non-discrimination. In this context, it is also stated that in order for the non-discrimination obligation to be truly effective, it is also necessary to impose a transparency obligation on the company. This is done in order to try to prevent attempts to discriminate between parties.

916) The PTA considers it proper to use the provisions of the Electronic Communications Act on transparency to assure to the extent possible that the obligations for access non-discrimination achieve results. It is the opinion of the Administration that transparency in information can facilitate and shorten negotiations between parties on bitstream access which includes terms and conditions being clear at the outset.

917) The PTA intends to impose the obligation on Mila to publish a reference offer for bitstream access and related facilities and services that will be itemised to the extent that ensures that other electronic communications companies do not buy facilities and service that they do not need. Further to this the reference offer should be broken down in accordance with the needs of the market and should contain a description of Mila terms and conditions along with the relevant tariff.

918) At least the following items shall be specified in the Mila reference offer:

- Description of the network access being offered including technical characteristics (which shall contain information on necessary configuration in network equipment to enable the most effective network access); this includes the VULA open virtual access;
- Locations where network access is provided;
- Work procedures and conditions used for the purpose of gathering necessary information for the provision of wholesale service on the relevant market;
- Appropriate technical standards for network access (for example for all limitations of use and other security items);

- Conditions for access to minor, additional and more complex service (including support systems for operation, IT systems or databases for initial orders, inventory, order, maintenance and repair requests and invoicing), including limitations to use and work procedures to gain access to the service;
- Exact description of procedural rules, for example with respect to:
 - Permissions of the party in question, order and delivery of service;
 - transfer, switching and termination of agreement;
 - repairs and maintenance; and
 - changes in IT systems (to the extent that they impact other service providers);
- Charging, terms of payment and procedures with invoicing;
- Definition of key performance indicators;
- Description of tests that relate to interoperability between systems;
- Technical characteristics of equipment to be used in the network system and the service that is necessary;
 - Flexible use of virtual channels/virtual networks;
 - Control of performance of end user connections;
 - Access to security factors;
 - Choice of terminal equipment
 - Access to multicast;
 - Access to independent service;
 - Support for variable service quality with respect to:
 - Delay;
 - Jitter;
 - Packet loss;
 - Contention ratio;
- Exact description of the following resources:
 - Specific timeframe for acceptance or rejection of request for delivery and for completion, testing and delivery of service and facilities for the provision of support services (such as the treatment of faults/defects and repairs);
 - Obligation at service level, particularly those quality standards that each party needs to fulfil in order to meet contractual provisions;
 - Amount of damages party pays to another party on failure to fulfil contractual obligations and conditions for possible liability for damages;
 - Definition and limitations of liability for damages and damages; and
 - Work procedures were a change of service offer is proposed, for example if a new service is to be established, or alterations to be made to existing service or tariff.
- Description of all relevant software rights;
- Procedure for resolution of disputes which the party is in question shall apply;
- Description of term and review provisions of agreements;
- Rules for dividing space between parties where such is limited (for example for co-location or location of electronic communications masts);

- General conditions and conditions for providing network access (such as with respect to duty to inform, nondisclosure, payment insurance, transfer of rights, force majeure, discrepancies, parties representatives and jurisdiction);
- Definitions of concepts that apply to wholesale access and to other related issues.

919) Mila is required to maintain and update as required the existing reference offer²⁵⁵ for wholesale bitstream access in accordance with obligations here imposed and in the light of new technology such as fibre-optic and VDSL connections on the relevant market and new obligations imposed on Mila. An updated reference offer shall be submitted to the PTA no later than six months after the publication of the decision on Market 5.

920) Mila shall send the PTA all agreements made on bitstream access.

921) With the authority of Article 29 of the PTA intends to impose the obligation on Mila for the publication of an updated and itemised reference offer for bitstream access and related facilities and service. Publication on the Mila website is deemed adequate. The reference offer shall contain a description of Mila's terms and conditions and tariff. It shall be submitted to the PTA for endorsement and scrutiny and published no later than six months after the Decision on the market for wholesale broadband access comes into force. The updated reference offer does not come into force until endorsed by the PTA.

922) The PTA considers that the requirement for transparency is both normal and reasonable given the situation on the relevant market and the competition problems that have been identified and described in Section 10.2.2.

10.5.3.1 Summary

923) With reference to Article 29 of the Electronic Communications Act the PTA intends to impose an obligation on Mila for transparency in wholesale sales and access to bitstream. Mila shall be obliged to publish information related to access to the company's systems, including VULA open virtual access, for example on accounting for the bitstream service, technical descriptions, characteristics of networks, terms and conditions for delivery and use and tariff. Part of this obligation was that Mila was to issue a reference offer for access to bitstream which was to be maintained and updated as required and submitted to the PTA for endorsement no later than six months after the PTA published its decision on Market 5. The reference offer shall also fulfil the requirements specified by the PTA.

10.5.4 Obligation for separation of accountancy

924) Pursuant to Article 31 of the Electronic Communications Act no. 81/2003 the PTA can impose obligations on an electronic communications company with significant market power for separation of accountancy between operations that relate to interconnection or access and other operations in such a manner that it will be possible to apportion all revenue and costs to operational units that can be connected to differing services. In addition to this the Administration can demand of a company that operates both an electronic communications network and electronic communications services that its wholesale prices and prices within the company are transparent, among other things to prevent unjustified subsidies. The PTA

²⁵⁵ "Reference offer for bitstream access" edition 1.0-A, dated 15 June 2010 as amended, see appendices 1-4 etc. See i.a. Appendix 1- "tariff" ed. 1.4.C, dated 3 February 2012.

can decide which accounting methods are to be used. To ensure transparency and non-discrimination the PTA can demand to be provided with accounting information, including information on income from third parties.

925) In Regulation number 564/2011 on accounting and cost analysis in the operations of electronic communications companies, there is an explanation of the purpose of separation of accountancy and instructions on how it should be implemented. The purposes among other things to make it possible to see income, costs and sunk capital for varying operational units and to be able to show that the same conditions apply to services provided to other companies and to services supplied to other departments of the electronic communications company in question.

926) It is the view of the PTS that it is necessary to impose an obligation on Mila for accountancy separation on the relevant market, among other things to ensure non-discrimination and transparency and to enable light to be shared on real costs where appropriate.

927) The purpose of accountancy separation is among other things to be able to identify information from accounts to show as exactly as possible the results from various parts of operations as though from separate companies. Separation of costs also limits of Mila's possibilities to charge for costs that are not related to a specific service. It is important that the operation of bitstream access is separated from other operational units to be able to assess its performance with respect to whether pricing of the wholesale service harmonises with cost, whether cross subsidies are taking place between different services and to ensure that all parties are treated equally with respect to price and other conditions. Separation is a prerequisite for being able to determine costs for bitstream access.

928) With respect to implementation of separation of accountancy it says in Chapter II of Regulation no. 564/2011 that electronic communications companies shall record their accounts in such a manner that it is possible to apportion all revenue and costs to operational units which can then be linked to various services. Electronic communications companies that operate general electronic communications networks shall separate costs in networks such that it will be possible to equally distribute network costs to varying services, including access to networks. This shall apply equally to access by service departments of the company and by other electronic communications companies to the network. The cost of operating networks and/or services shall be distributed to operational units in with activity based accounting pursuant to Article 7 of the previously referenced regulation and to more detailed rules set by the PTA.

929) With the authority in Article 31 of the Electronic Communications Act the PTA maintains obligations on Mila for separation of accountancy. Such separation shall constitute as a minimum that the operation of bitstream access is separated in the accounts from other operations. The Mila wholesale prices and internal prices within the company shall be transparent, among other things to prevent unjustified subsidies. In its accounts Mila shall separate revenue, costs, assets and liabilities for access to bitstream and to its bitstream service. Mila is obliged to provide the PTA on an annual basis with a breakdown of the operational accounts and balance sheet for its bitstream access with DSL technology on the one hand and fibre-optic on the other, along with a statement of the division of indirect costs that are not possible to assign through comparison with other cost items.

930) Pursuant to Article 25 of Regulation no. 564/2011 Mila shall send the PTA the company's annual financial statements along with an itemised profit and loss account for the

company's service components that relate to obligations for separation of accountancy. The accounts shall contain the following:

- The endorsement of a chartered accountant.
- The board's report.
- Separated profit and loss accounts
- Settlement and reconciliation of internal sales.
- Reconciliation against the company's annual financial statements.

931) Pursuant to Article 24 of Regulation no. 564/2011 Mila shall annually prepare a report on accounting practices. The report shall contain among other things the following:

- Accountancy rules.
- Rules for the division of costs and revenue.
- Information on rules concerning internal transactions.
- Description of calculation methodology.
- Information on sizes and quantity figures, other than financial.
- A list of products, services, activities and network components.
- Rules on assessment of assets and depreciation.

932) With reference to the above Mila shall furthermore provide the Administration with the following information and data on the operation and balance sheet for the company's bitstream services for the year 2012 and then annually while the obligation for separation of accountancy is in force on the company. There should be separation between access with DSL technology and fibre-optic.

- There shall be a separate profit and loss account for Mila's bitstream services along with a statement of the division of indirect costs. The consolidated profit and loss statement for operational divisions shall reconcile with the base on which the cost analysis is grounded.
- The minimum itemisation in the profit and loss account shall be the following:
Breakdown of revenue and expenditure, on the one hand according to the general ledger accounts of the company's financial accounts and on the other hand a breakdown in the same manner as the Mila financial accounts system does for individual sub-accounts. There shall be a particularly clear breakdown that distinguishes between wholesale and retail, where applicable, and also for internal transactions for each operational unit, both for revenue and expenditure. Wholesale revenue shall be broken down to each individual service.
- A statement showing a breakdown for the services belonging to the relevant market and quantity figures, such as number of connections in the relevant service.
- The company's depreciation list for the year in question showing a breakdown of all booked assets attributable to Mila bitstream service.
- The operations and balance sheet of the company's bitstream services shall be clearly separated from other related wholesale services, such as Internet service, distribution of television material and user equipment. An itemised statement of related services shall be included with a statement of the company's bitstream service with an analogous breakdown of individual revenue and cost items.

933) The above specified statement should have reached the Administration no later than five months after the end of the financial year. Should Mila accounting separation not be satisfactory, the PTA reserves the right to submit demands at a later date for further separation of accountancy.

934) Mila shall furthermore deliver a report from an independent auditor to the PTA to show that there is correspondence between the Mila description to the PTA on how costs had been divided and the implementation of accounting separation by Mila.

935) In the report the following shall be shown as a minimum:

- The conclusions of the party that conducted the audit.
- Statement of all instances of inconsistency.
- Proposals by the party conducting the audit for remedies and their impact.
- Detailed description of how the audit was performed.
- Consolidated financial and accounting information (for example an opinion with respect to the distribution of common costs and changes to assessment of assets to value in use).

936) The PTA considers that the requirement for separation of accountancy on Mila is both normal and reasonable given the situation on the relevant market and the competition problems that have been identified and described in Section 10.2.2.

10.5.5 Obligation for price control

937) In Article 32 of the Electronic Communications Act no. 81/2003 it states that when market analysis indicates that a lack of active competition results in a company with SMP demanding excessively high fees or that there is an abnormally small difference in wholesale and retail prices PTA may impose obligations on an electronic communications company for a cost related tariff and obligations for cost accounting for certain types of interconnection or access. Investment by electronic communications companies shall be taken into account and reasonable return on investment, while also taking into account the risk of the investment. When an obligation for a cost related price tariff with reasonable returns is imposed on an electronic communications company, the burden of proof rests on the company. As was stated in the discussion on competition problems, the PTA considers that Mila could have an incentive to demand excessively high prices if there is no price control on the company's tariff.

938) In the same provision it states furthermore that the PTA can require that an electronic communications company make a cost model for the calculation of prices. When calculating costs the PTA can use as a reference the operation of analogous service that is considered efficiently run and can also take into account tariffs in analogous competition markets and it may use cost analysis methodologies that are not related to methodologies employed by an electronic communications company.

939) It is the conclusion of the above specified market analysis for wholesale broadband access that competition is not sufficiently active and that Mila has SMP on the relevant market. Taking into account Paragraph 1 of Article 18 of the Act on Electronic Communications, the conclusion indicates that Mila can hinder competition and can behave to an appreciable extent independently of competitors, customers and consumers. Mila thus has

the possibility of maintaining abnormally high prices and/or of creating margin squeeze. In the same manner, the PTA considers that the Mila position on the market in question also gives the company the opportunity to maintain excessively high prices at wholesale level and thus to deter new operators from entering the market.

940) Price is in many instances the main cause of competition problems and one must therefore consider that an obligation for price control is the most effective method to deal with such matters. In the opinion of PTA, obligations concerning transparency and non-discrimination alone are not sufficient to solve competition problems such as cross-subsidy, price discrimination and excessive pricing. The PTA is of the opinion that an obligation concerning price control is necessary to establish competition in the relevant market and to strengthen competition at retail level. The PTA considers it necessary to facilitate access by independent service providers to the relevant market and to ensure that price for access is reasonable and normal and based on costs it is necessary to impose the obligation for price control on Mila.

941) There are various possible methodologies for control and for a decision on price for access. According to Article 32 of the Electronic Communications Act the PTA can demand that an electronic communications company make a cost model for the calculation of prices. As previously stated the PTA can use as a reference the operation of analogous service that is considered efficiently run and can also take into account tariffs in analogous competition markets and it may use cost analysis methodologies that are not related to methodologies employed by the electronic communications company in question. When choosing the methodology the PTA considers it proper to emphasise that the methodology can provide a conclusion that is normal and reasonable in both directions and can provide pricing that is not greatly in excess of real costs while at the same time assuring a normal return on investment.

942) The main methodologies applied when deciding wholesale prices are the following:

- *Cost orientation*

The price of services based on historical cost of the company in question (HCA)²⁵⁶ or assessed costs of an efficient network operator on the relevant market. In the main two methods have been used for cost analysis on the electronic communications market, that is to say based on the relevant company's accounts where costs are allocated to the relevant service (FAC)²⁵⁷ or on the analysis of long run incremental costs (LRIC)²⁵⁸ on the basis of costs incurred in an efficiently operated electronic communications network (bottom-up model)²⁵⁹.

- *Benchmarking*

Prices on comparable competitive markets are compared and the price is decided on the basis of this comparison. Prices related to a specific sample of the comparison group.

²⁵⁶ Historical Cost Accounting.

²⁵⁷ All costs are allocated to the appropriate operations and services (Fully Allocated Costs: FAC).

²⁵⁸ Long-run incremental cost: LRIC is the cost that is added or is saved when a specific service or operation is added or discontinued, on the assumption that all costs are variable.

²⁵⁹ One speaks of a "bottom-up" LRIC model (BU-LRIC) in the case of a cost model for calculating the price of service on the basis of costs incurred in an efficiently designed electronic communications network in the relevant electronic communications market.

- *Retail minus*

The retail minus methodology is used to find the wholesale price by subtracting a specific proportion from the retail price. The difference subtracted from the retail price is for the costs that would otherwise have been borne by the company at retail level.

943) When choosing the best methodology for deciding pricing for access, it is important to keep in mind on the one hand that the methodology is efficient and not too onerous for Mila and the PTA and on the other hand to create acceptable conditions for companies that may request wholesale access on the relevant market.

944) In the EU Commission Recommendation on the implementation of harmonised non-discrimination obligations and cost analysis methodologies in order to increase competition and strengthen investments in the next generation of access networks (NGA)²⁶⁰ it is stated that when selecting a methodology to decide access prices one must among other things take into account the following objectives²⁶¹:

- The costing methodology needs to lead to access prices that replicate as much as possible pricing on an active competition market. The methodology shall be based on a modern efficient network, reflect the need for stable and predictable wholesale copper access price, support investment and act as an anchor for NGA services. The methodology shall deal with the impact of declining number of connections in an appropriate and consistent manner.
- The costing methodology needs to ensure that costs of an efficiently operated electronic communications company are recovered with an appropriate return on invested capital.
- The methodology shall support the assurance of efficient entry to electronic communications networks and shall ensure the provision of the appropriate build or buy signal for efficient investments particularly in the next generation of access networks (NGA).
- The costing methodology must ensure transparency and consistency within the Union.

945) In the opinion of the Commission the BU-LRIC+ costing methodology best meets the objectives that must be taken into account when price for wholesale access is decided.

946) It can be assumed that cost analysis is an onerous obligation that should only be imposed if other methods are unsuccessful. In cost analysis prices are found based on cost information from a cost model and/or accounts. To allocate costs to specific aspects of operations and services is a complicated and difficult task that can be carried out in various ways. The PTA can employ the BU-LRIC method for cost analysis, pursuant to Regulation no. 564/2011 on accounts and cost analysis in the operations of the electronic communications companies, which is a recognised methodology, among others, by the European Commission and by ESA. The methodology ensures transparency and the regulators are not dependent on information from the accounts of an electronic communications company. The methodology can, on the other hand be extremely costly and time-consuming.

²⁶⁰ Commission Recommendation of 11.9.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

²⁶¹ See further the specification in items 25-28 in the introduction to the Recommendation.

947) The PTA considers that because of the high cost of implementing the BU-LRIC cost model it is not appropriate at this point in time to adopt such a methodology on this market in this country. This could entail unnecessarily high costs for the PTA and for the relevant electronic communications companies. The Administration is very small in a European context and for this reason its budget is much more limited than is normally the case. Experience in the EEA has shown that the cost in making a BU-LRIC model is in the order of ISK tens of millions for each model and for each update. It was not considered right at this stage to make this requirement as the increase in cost would in all likelihood be eventually borne by consumers in the form of higher rates. The PTA therefore considers it proper to find another more efficient manner to achieve the objective of having tariffs that reflect the operations of an efficiently operated electronic communications network on the relevant market. Cost analysis will be based on the work that has already been done in recent years in cost analysis in order to minimise costs and time spent in reaching a Decision on new cost-oriented access prices for the coming 2-3 years.

Bitstream through copper local loops

948) In the Decision of the PTA no. 8/2008 from 18 April 2008 concerning the wholesale market for broadband access, it was stated that Siminn should offer a registered electronic communications companies a minimum of 35% discount (retail minus) on the retail price of ADSL connections until a cost-oriented tariff was available and had been endorsed by the PTA. In addition to this it was stipulated that Siminn was obliged to submit to the Administration for endorsement a cost-oriented wholesale tariff for access to bitstream at various locations on the network (Access Options 1-4). It was stated that the price should be calculated from annual operational costs which should be based on historical costs and should apply as an average price for the whole country. The PTA Decision on tariff for bitstream access on the basis of costs would initially be based on Siminn's historical costs having taken into account analogous service considered to be operated in an efficient manner. The PTA would also ensure that the tariff harmonised reasonably with the price of local loop leasing. The PTA would also evaluate on the basis of the conclusions of the cost analysis whether it was more suitable to use the BU-LRIC methodology as a reference rather than to base calculations on historical costs when deciding the tariff.

949) On 12 January 2009 Siminn submitted a cost analysis for its DSL system in accordance with the obligation imposed on Siminn with the above specified PTA Decision no. 8/2008 on price control. It was stated that the consultants Analysys Mason (AM) had made the cost analysis for Siminn and that the cost of the AM work had been considerable. Subsequent to comments made by the PTA the cost analysis in question was corrected and Siminn submitted the final version of the analysis from AM on 26 May 2009 (Cost analysis of Siminn's DSL services). The above cost model took into account historical costs which were allocated to the service in question (FAC) in accordance with the PTA obligation to that effect and cost criteria for the DSL system for the year 2007 were used. In the Siminn conclusions there was a cost-oriented tariff for Access Options 1-4 in accordance with the above obligation to this effect.

950) With the PTA Decision no. 7/2010 on cost analysis for bitstream access dated 26 March 2010, the PTA endorsed the above cost analysis from Siminn with the amendments prescribed by the PTA. The main changes prescribed by the PTA lead to lower yearly payment because of a reduction of initial investment and of the WACC percentage and in addition to this more costs were subtracted for transmission of images than had been initially

allowed for. Furthermore, the PTA rejected Siminn's demand that the tariff should be indexed and its demand on not having to publish the tariff. Since Decision no. 7/2010 was made, Siminn increased its wholesale service offer and has among other things offered "ADSL one speed" and VDSL connections (Siminn's product "Ljósnet"). Prices were based on the above specified cost analysis and endorsed by the PTA in each instance with appealable decisions. Mila has now taken over Siminn bitstream service pursuant to the CA Decision no. 6/2013 and now offers this service in the place of Siminn.

951) In January 2013 Siminn published cost-oriented temporary prices for Access Option 1, ADSL and VDSL connections with the possibility of TV services which came into force 1 February 2013 pursuant to the PTA Decision no. 38/2012 on Siminn Access Option 1, dated 14 December 2012. At the same time Siminn submitted a cost analysis for bitstream access according to Access Options 1 and 3 which the PTA received for scrutiny. Mila then took over responsibility for the cost analysis after bitstream access was transferred from Siminn to Mila in September 2013, subsequent to the settlement. On 9 October 2013 Mila submitted cost analysis for wholesale switches. With the draft Decision that the PTA plans to make in parallel to this Decision here under discussion, the Administration plans to endorse the Mila cost analysis with specific amendments. In the draft, prices for bitstream connections according to Access Options 1 and 3 are decided, as are prices for TV multicast service, VoIP service and access to wholesale switches in Access Option 1. Furthermore it is prescribed that Mila shall review its cost analysis for Access Option 2 and that analysis shall be completed and delivered to the PTA no later than three months from the publication of the final Decision. In that draft Decision the PTA furthermore declares its intentions to review the structure of pricing for wholesale switches.

952) The PTA considers that the above specified PTA Decision no. 38/2012 is not as relevant after Mila took over the bitstream service from Siminn in the beginning of September 2013 subsequent to the settlement. Mila is a pure network operator at wholesale level and does not conduct retail operations in competition with unrelated parties as Siminn does. For this reason the PTA considers it not to be normal that a network operator like Mila should collect a special setup fee and monthly charge for specific system elements, such as network switches as the wholesale switches in question are categorised. Such an arrangement is not common practice when providing bitstream service in wholesale nor is it common practice in Mila wholesale service in the form here under discussion.

953) With the authority in Article 32 of the Electronic Communications Act the PTA intends to impose an obligation on Mila for price control for bitstream access with DSL technology (such as VDSL and ADSL standards). Mila shall submit to the Administration for endorsement its wholesale tariff for access to bitstream at various locations on the network in accordance with the Access Options that are prescribed in more detail in Section 10.4.1 in compliance with the obligation to provide access, where variations in bandwidth and quality are also taken into consideration. In addition to this Mila shall submit to the Administration for endorsement a wholesale tariff for hosting equipment of other electronic communications companies and for access to other facilities related to bitstream and access to support systems and information necessary for a customer to be able to utilise bitstream. It shall be ensured in each instance that the tariff includes all the wholesale bitstream service on offer from Mila, to related companies, including multicast to enable IPTV service and technology to enable VoIP service. Furthermore Mila is obliged to review the product offer in its tariff in step with market requirements at any given time and if reasonable requests are received in accordance with the access obligation. Mila shall publish its wholesale tariff and conditions for all of its

DSL bitstream services provided through copper local loops. All additions and amendments to the tariff shall be endorsed in advance by the PTA and will not come into force until this endorsement has been granted.

954) In the PTA Decision no. 7/2010 on cost analysis for bitstream access (Market 12) dated 26 March 2010, it was stated that the review of the Siminn cost analysis of bitstream access should include a detailed analysis of the share in transmission of visual content through its DSL system. In the above specified decision it was prescribed that Siminn should immediately begin to record information for this purpose. Subsequent to the CA Decision, Mila will undertake Siminn obligations in this respect. The Mila cost analysis shall assess costs of the share of Internet service, telephone service (VoIP) and the distribution of visual content (IPTV/VOD) in the use of Mila's bitstream system when deciding prices for various services. This shall be done on the basis of the number and size of connections, traffic volume and varying requirements for priority and quality control (QoS) in Mila's systems.

955) Mila shall prepare a special tariff for priority and quality controlled access for transmission of visual content using multicast technology (IPTV) through Mila's DSL systems and for interactive transmissions for video on demand (VoD). The same applies to priority and quality controlled transmission of bitstream for IP telephone service (VoIP). The tariff shall relate to Access Options 1-3 to the extent that this is technically possible and in the main shall use the following structure for the tariff.

- a) Access that uses a significant bandwidth but without any quality definition (best effort) for general Internet service.
- b) Access using a large bandwidth with high quality requirements (QoS) for IP television distribution (IPTV) with multicast technology.
- c) Access using a large bandwidth with high quality requirements (QoS) for IP video on demand (VoD) with interactive bitstream transmission.
- d) Access that uses little bandwidth but makes high-quality requirements for VoIP telephone service.

956) The above delivery of bitstream through copper local loops (DSL technology) with varying quality control and performance shall be on offer at different locations on the network in accordance with the Access Options 1-3 in the following manner:

1. In DSLAM or equivalent equipment at the place where the copper local loops connect to the telephone exchange distribution frame, street cabinet or other equipment space. (Option 1)
2. After ATM/IP transmission in the Mila backbone network, that is Mila handles transmission of signals from DSLAM to the connection point of another electronic communications company with the ATM/IP backbone network. (Option 2)
3. After transmission with ATM/IP on the Mila backbone network to the connection point of another electronic communications company with the previously mentioned network. (Option 3)

957) In those street cabinets where Mila has taken advantage of the exemption from the obligation to provide access to sub-loops, see discussion on the access obligation on the market for in Section 8.4.1 here above, Mila shall offer virtual access to sub-loops (VULA).

958) In accordance with Article 32 of the Electronic Communications Act the tariff for the DSL bitstream services in question shall be cost-oriented.

959) The PTA intends to alter the arrangement for wholesale switches which came into force with its Decision no. 38/2012 on Access Option 1, that is to say that costs for wholesale switches is paid directly by the purchaser of the Access Option, as system design is the responsibility of Mila and the Decision on whether one should use wholesale switches or other solutions is the responsibility of that company. Should Mila make the Decision to continue to use wholesale switches then this cost shall be calculated into the traditional access price.

960) When implementing its cost analysis Mila shall base its methodology on Chapter IV of Regulation no. 564/2011 on accounting and cost analysis in the operations of the electronic communications companies, such as on evaluation of operating capital, lifetime and return on investment. Furthermore account shall be taken of the PTA position on criteria and calculations in the Administration's Decision no. 7/2010 with respect to cost analysis for bitstream access. When assessing the conclusion of the Mila cost analysis the Administration will keep in mind the average price on analogous competition markets where a recognised methodology is applied, such as BU LRIC+ methodology, when deciding price. The PTA will also have in mind that the tariff should relate logically to local loop leasing prices, with respect to the possible over or under-pricing by the Skipti Group of the above specified services. Account shall be taken of the PTA instructions on varying Access Options and to varying bandwidths and quality control. The PTA is however authorised to reject costs that the Administration considers to have resulted from uneconomical investments, see among other things Article 32 of the Electronic Communications Act no. 81/2003.

961) If the Mila cost analysis for bitstream access returns a conclusion that the PTA considers unacceptable with the above considerations in mind, the PTA will reject such a conclusion. The Administration will review the criteria applied in the Mila cost analysis for the purpose of returning a conclusion which is in accordance with the above considerations and with the objectives of the EU Commission according to the Recommendation on the implementation of consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment in next generation access networks (NGA).²⁶²

962) The Mila cost analysis for bitstream access with DSL technology shall be based on the following main criteria:

- Cost analysis shall cover access with DSL technology (such as ADSL and VDSL standards), given Access Options 1-3. The cost for virtual network access to sub-loops (VULA) with the VDSL technology shall also be calculated.
- Basic price for bitstream services for general Internet service (best effort) without endpoint equipment shall be shown and the price for quality controlled (QoS) bitstream access, that is to say the transmission of TV material with multicast, video rental material (Unicast) and IP telephone service (VoIP).
- In addition to the above the Mila tariff shall contain as a minimum the price for all bitstream services and for connections provided today to its own service Department's

²⁶² Commission Recommendation of 11.9.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

or to other related parties or parties cooperating with Siminn and to other electronic communications companies.

- The cost base shall be Mila historical costs (HCA) based on the preceding financial year in each instance.
- The methodology shall be based on allocating all costs to the service in question (FAC).
- Allocation of costs is based on separation of accountancy for wholesale bitstream service, on Mila asset bookkeeping and on costs from the company's accounting system where operational costs are entered into chart of accounts.
- The operational costs (OPEX) of the bitstream system shall be captured, including the share in indirect costs, that is to say management and IT in accordance with separation of accountancy.
- When assessing investments (CAPEX) the replacement cost of the operational assets shall be used taking into account the next generation access networks (NGA).
- When assessing costs for the Access part of the system, the share of installation, capex and opex of wholesale switches shall be taken into account.
- Evaluation of the lifetime of operational assets shall reflect their economical lifetime.
- The tilted annuity depreciation method shall be used to calculate annual costs for operational assets. It is authorised to use the tilted annuity depreciation method based on value in based on an estimate of replacement cost or repurchase value of the bitstream system.
- The cost of the total number of connections and bandwidth is calculated.
- Real return on investment shall be used as a reference, based on WACC²⁶³ real from capital tied in assets used in connection with providing service where the risk premium reflects the risk related to operations on the relevant market.
- It is authorised to assume that a working capital is tied up for 30 days to assure normal operations.
- The average unit cost for individual bitstream access service is calculated as an average cost for the whole country on the basis of allocated operational and capital costs having taken into consideration varying Access Options, number of connections, bandwidth and their quality management.

963) When deciding the tariff Mila shall base its Decisions on the above specified main criteria in its cost analysis and shall submit this to the PTA no later than six months after the publication of this Decision. The tariff shall then be reviewed annually in accordance with annual updating of the cost analysis. A new wholesale tariff for bitstream access will not come into force prior to endorsement by the PTA, subsequent to national consultation and consultation with ESA in each instance.

964) The existing Mila wholesale tariff for bitstream access shall remain in force until the reviewed tariff is available and has been endorsed by the PTA.

²⁶³ In accordance with Article 16 of Regulation no. 564/2011 the PTA decided the weighted annual cost of capital (WACC) that electronic communications companies should use in their calculations.

Bitstream through fibre-optic local loop

965) The PTA plans at this stage not to impose an obligation on Mila for price control for the company's bitstream service offered through fibre-optic local loops, among other things because the Mila development of bitstream service over fibre-optic local loops is in a very early stage of development. The number of Mila bitstream connections through fibre-optic local loops was [...] ²⁶⁴ at the end of 2013 which is about [...] ²⁶⁵ of the total number of bitstream connections through fibre-optic local loops and which represents [...] ²⁶⁶ of the total number of bitstream connections access networks at a fixed location.

966) The above is furthermore based on the objectives of the Icelandic government Electronic Communications Plan for supporting the introduction of next generation networks, see Section 2.1.5 and the opinion of the EU on development of new generation networks, see Section 2.1.4 on the EU Commission recommendation dated 11 September 2013 on the implementation of harmonised non-discrimination obligations and cost analysis methodologies in order to increase competition and strengthen investments in the next generation of access networks (NGA). The above is dependent on the condition that Mila practises full non-discrimination with respect to pricing, access and conditions to other electronic communications companies as it does with companies within the Skipti Group ²⁶⁷.

967) Mila shall ensure that the price for access to the company's bitstream service provided through fibre-optic local loops is not abnormal in comparison with the pricing of bitstream access through copper local loops. Furthermore, Mila shall not participate in pricing which could lead to margin squeeze in pricing of the wholesale and retail bitstream services within the Skipti Group, since the companies within the Skipti Group constitute a single economic unit in the context of Competition Law. Should the PTA consider there to be a need, among other things after having received complaints to this effect, then the Administration will perform a margin squeeze test and will require amendments to tariffs should the results of the test give reason to do so.

968) When margin squeeze is measured it is on the one hand possible to use as a reference an electronic communications company that is an Equally Efficient Operator or on the other hand with one that is a Reasonably Efficient Operator. ²⁶⁸ In the event that PTA deems it necessary to perform an ex post margin squeeze test the Authority intends to apply the EEO method. PTA refers to ERG Report on price consistency in upstream broadband markets, from June 2009 (page 21). As the PTA intends to perform the margin squeeze test on *ex post* basis, PTA agrees with the arguments set forth in the report in favour of EEO approach as in this situation the operator cannot rely on the cost structure of alternative operators, because this cost information is unknown to the incumbent. When performing a margin squeeze test

²⁶⁴ Removed for reasons of confidentiality.

²⁶⁵ Removed for reasons of confidentiality.

²⁶⁶ Removed for reasons of confidentiality.

²⁶⁷ Equivalence of input (EoI).

²⁶⁸ See here also Commission Recommendation of 20 September 2010 on Regulated Access to Next Generation Access Networks (NGA) where it states in the introductory Section: "*Margin squeeze can be demonstrated by showing that the SMP operator's own downstream 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).*"

PTA will use the approach used by competition authorities and analyse the profitability on the basis of historical cost including a required return on capital bound in the investment used for providing the service. In this relation PTA will consider, among other things, the methods of performing margin squeeze test used by the Competition Authority in their decision no. 7/2012 on Siminn's illegal price squeeze in the mobile market.

969) As stated here above the Competition Authority and Skipti made a Settlement which is presented in the words of the Decision of the Competition Authority number 6/2013 "Amendments to the organisation of the Skipti Group and other measures to strengthen competition on the electronic communications market".

970) It is one of the objectives of the Settlement to prevent market squeeze within the Skipti Group as is stated on page 62 of the Decision where it states:

"The provisions of the Settlement are intended to mitigate the risk of margin squeeze. The provision on the transfer of systems (Article 2), a clear separation between Mila and Siminn (Article 4), Mila autonomy (Article 5), rules on equal access (Article 8) and the fact that Mila is unauthorised to operate on the retail market (Article 3) should that this prevent the risk of margin squeeze and access barriers to broadband service."

Electronic communications companies can approach the surveillance committee with respect to equal access for electronic communications companies²⁶⁹ if they consider that Skipti hf. or its subsidiaries are applying margin squeeze.

971) Mila shall publish a wholesale tariff and terms for all of its bitstream services through its fibre-optic local loops in a manner analogous to that of its xDSL service.

10.5.5.1 Summary

972) With the authority in Article 32 of the Electronic Communications Act the PTA intends to impose an obligation on Siminn for price control for wholesale bitstream access with xDSL technology and related facilities.

973) Mila shall therefore submit to the Administration for endorsement a wholesale tariff for access to bitstream at differing locations on the network with differing DSL standards, such as VDSL and ADSL. In addition to this Mila shall submit to the Administration for endorsement a wholesale tariff for hosting equipment of other electronic communications companies and for access to other facilities related to bitstream and access to support systems and information necessary for a customer to be able to utilise bitstream. The tariff shall be cost-oriented in accordance with Paragraph 4 of Article 32 of the Electronic Communications Act.

974) When deciding prices for the above specified bitstream service, Mila shall use historical costs allocated to the relevant service (HCA FAC). Emphasis shall be placed on determining the division of costs of the company's DSL wholesale service between general bitstream service (best effort) on the one hand and priority service on the other hand (IPTV, VoD and VoIP). Mila shall submit the cost analysis to the PTA for endorsement no later than six months from the publication of the Decision. The tariff shall then be reviewed annually in accordance with annual updating of the cost analysis. The Administration shall have in mind

²⁶⁹ See <http://www.ejaf.is/>.

tariffs from analogous competition markets when assessing the conclusions of the Mila cost analysis. The PTA will also have in mind that the tariff should relate logically to Mila's local loop leasing prices.

975) The PTA plans at this stage not to impose an obligation on Mila for price control on the company's bitstream service offered through fibre-optic local loops but instead PTA intends to impose obligation on Mila to provide open access to the company's bitstream service offered through fibre-optic local loops, as well as obligations for non-discrimination (including EoI), transparency, separation of accountancy and cost accounting. Furthermore Mila shall not apply margin squeeze. The PTA may implement a margin squeeze test to clarify whether Mila has breached the above specified conditions. Should the margin squeeze test show abnormal pricing by Mila then the PTA can prescribe amendments to the Mila tariff.

10.5.6 Cost accounting

976) Pursuant to Article 32 of the Act on Electronic Communications the PTA can impose obligations for cost accounting for specific types of interconnection or for access, in accordance with a cost related tariff. According to Chapter IV of Regulation no. 564/2011, on accounting and cost analysis in the operations of an electronic communications companies, an electronic communications company with SMP on whom special obligations have been imposed pursuant to the Act on Electronic Communications shall inform the PTA on the structure of separation in accounts, with respect to income and expenses, among other things for the user network and the backbone network.

977) In order to make it possible to calculate total cost of bitstream access in accordance with Section 10.5.1 and keeping in mind that separation of accountancy pursuant to Regulation no. 564/2011 does not particularly cover the equipment on which bitstream access is based, the PTA plans to impose an obligation on Mila for cost accounting for those parts of the electronic communications that are required to provide bitstream access.

978) Cost accounting is necessary when the obligation for price control has been imposed on an electronic communications company with SMP subsequent to this the PTA intention to impose an obligation for price control on Mila, the PTA also intends to impose the obligation for cost accounting. The obligation for cost accounting supports the obligation that the tariff is cost related and it is necessary for the implementation of separation of accountancy and can support surveillance of non-discrimination.

979) In order for Mila to be able to demonstrate that the tariff for a specific kind of service or product is cost-oriented, it is necessary to practice cost accounting that captures, identifies, assesses and allocates the relevant costs to the services or products in accordance with recognised rules, that is to say a causal relationship.

980) The PTA considers that without the obligation for cost accounting, Mila could price its services on the relevant market above cost and the Skipti Group could have an abnormally small difference between wholesale and retail prices which would have negative consequences for users. Without the obligation for cost accounting the PTA could not ensure that pricing took costs into account that is preventing problems of this kind.

981) The PTA plans to impose an obligation on Mila for cost accounting for those parts of the electronic communications operations necessary for bitstream access through copper or fibre-optic local loops. Mila shall submit to the PTA a description of the cost accounting for bitstream access and shall publish cost categories, cost items and their relationship to the cost driver.

982) Mila, no later than six months after the publication of the decision on the relevant market, submit to the PTA a description of cost accounting for bitstream access and shall publish cost categories and rules used to allocate costs. Mila shall deliver a report to the PTA from an independent auditor showing that there is correspondence between the Siminn description to the PTA of how costs are split and the implementation in Mila's cost accounting system.

983) In accordance with the above Mila shall maintain cost accounts for wholesale bitstream access in order that Mila can demonstrate that the tariff for a specific type of service or product takes historical costs into account. Mila shall furthermore deliver a description to the PTA of the cost accounting for bitstream access and related facilities and shall deliver a report to the PTA from an independent auditor on its cost accounting.

11.0 Assessment of impact of imposed obligations on Market 5

The necessity for assessing the relevant obligations and their impact

984) In accordance with the principle of proportionality it is normal to assess the necessity to impose the obligations described in Chapter 10. The obligations are conducive to achieving the objectives of the Electronic Communications Act number 81/2003 on active competition and efficient electronic communications. In the light of the competition problems that exist, of the strong position of Mila on the relevant market and the position of the company and of the Skipti Group in general, the PTA considers it necessary to impose all of the above specified obligations on Mila in order to support increased competition and to assure consumers' interests. In Chapter 10 there is specific reasoning to show why the PTA shows the necessity of each individual obligation. In the PTA examination of the relevant market the Administration has come to the conclusion that no other measures can be found that could be as effective in solving the competition problems that exist on the market.

985) The obligations are to a large extent similar to the obligations that have been in force on the relevant market but certain items have been added that experience has shown to be lacking; the content of each obligation is described in more detail and efforts are made to make them more transparent and more targeted than the obligations that have been in force to date.

986) As is shown above the PTA considers it necessary to impose the obligations in question on Mila. As other obligations are not better suited to achieve the intended results the PTA considers that with the initial investment in mind and the risk taken with the investment that this is not an unreasonable requirement.

987) The obligation for wholesale access is an essential pre-requisite for competition to become active on the broadband market. It is not possible to solve the competition problems described here above in any other way than by imposing the obligation for access. Access barriers prevent competitors from developing extensive broadband networks with national coverage and it is thus a prerequisite for active competition that they can receive access to the Mila bitstream network which has national coverage.

988) The obligation for access is an insignificant burden on Mila but it is an essential prerequisite for active competition on the relevant markets. It is necessary for electronic communications companies to gain access to the Mila systems in order to be able to offer their customers adequate services across the whole country. The obligation should first and foremost ensure that Mila does not discriminate between related and unrelated parties when making access agreements and delay the entry of new companies by extending contract negotiations. It cannot be considered burdensome to deal with all counterparties in a satisfactory manner. Through a connection with the Mila system the companies gain better use of the electronic communications equipment in which they have invested.

989) The obligation for non-discrimination with respect to access to Mila's systems in wholesale is necessary if companies are to be able to compete on a level playing field. The obligation should mean that all electronic communications companies that purchase access to Mila systems receive comparable services and prices and in this way the competition problems related to discrimination will be solved.

990) The PTA considers that the obligation for non-discrimination is not particularly burdensome. The obligation is necessary in order that other companies can compete with Mila on the wholesale market for broadband access and related retail markets. The obligation should lead to all companies leasing access to Mila's systems receiving comparable services and thus the competition problems described above with respect to issues such as speed of reply, that can provide Mila with a competitive advantage on the broadband market, will be resolved in the markets in question. It is true that the PTA plans to prescribe a stricter non-discrimination obligation on Mila than has been in force to date but there is also the fact that the PTA does not intend to impose an obligation on Mila for price control of bitstream access provided through fibre-optic local loops. It is also new that Mila is to make service level agreements (SLA), service level guarantee (SLG) and to publish key performance indicators (KPI). These obligations require significant work input by Mila but the PTA considers the above measures to be necessary to assure full non-discrimination.

991) The PTA considers it necessary to prescribe separation of accountancy with those companies that have varied operations and a large market share, among other things for the reason that it must be possible to monitor whether non-discrimination is respected with respect to fees to the company's own downstream arm on the one hand and to unrelated companies on the other. Separation of accountancy is also necessary to be able to determine costs for operation of bitstream service and related facilities in an adequate manner.

992) The PTA considers that it is not possible to use other milder measures if one is to base cost analysis on historical costs. The PTA considers that the obligation is not too burdensome, given its purpose, as it is a normal part of company operations today to separate costs for production/operations of varying products or services sold by the company.

993) The publishing of a reference offer is in the opinion of the PTA a very important element in strengthening competition on the wholesale broadband market. It is necessary for the companies that plan entry into the electronic communications market to be able to see in advance the terms on offer for wholesale broadband. The obligation for transparency is also necessary to support compliance with the non-discrimination obligation.

994) The obligation for transparency, among other things the publishing of reference offers, represents a certain inconvenience for Mila. On the other hand one has to keep in mind that analogous obligations have been in force for a number of years and a reference offer has already been published. The obligation thus constitutes in reality the maintenance and updating of the reference offer. Publishing a reference offer is in the opinion of the PTA an extremely important part of strengthening competition in the product types based on broadband access. The burden that Mila has to bear from the obligations is not excessive if one takes into account how necessary the obligations are to strengthen competition.

995) The PTA believes that the obligation for price control is absolutely necessary for bitstream access provided through copper local loops as Mila has no incentive to offer normal prices at its own initiative as the company is by far the largest party that provides bitstream access through such local loops and at some locations it is the only company that can offer wholesale broadband access. The PTA considers that the obligation for price control will lead to more economical operations on the Mila systems which will eventually lead to lower prices to consumers. The PTA however does not at this point in time intend to impose an obligation on Mila for price control for bitstream access provided through fibre-optic local loops but on the other hand there will be a much stricter non-discrimination obligation which ensures that

goods, prices and processes are exactly analogous for related and unrelated parties. The PTA can also perform a margin squeeze test on Mila's pricing for bitstream access provided through fibre-optic local loops and reserves the right to prescribe amendments to prices should the results of the test be abnormal.

996) The PTA considers that the obligation for price control and for making a cost model is somewhat burdensome and that complying with it will entail costs both for Mila and for the PTA. The PTA considers that the obligation for price control and for the cost model will lead to more economical operations on the local loop network and lower prices for broadband access which will eventually lead to lower prices for consumers for services based on wholesale broadband access. The PTA considers that the obligation will not reduce Mila's possibilities of enjoying normal profit from operating its bitstream system and related facilities. At this point in time the PTA only plans to prescribe the making of a cost model for bitstream access provided through copper local loops.

997) The PTA considers that the obligations imposed by the Administration on Mila will increase competition in broadband services and Iceland.

998) The obligations will not hinder development of bitstream services as the pricing of such access through copper local loops will be cost-oriented and will allow for normal profits from investments. The PTA however does not at this point in time intend to impose an obligation on Mila for price control for bitstream service provided through fibre-optic local loops. Cost control on bitstream access through copper local loops should thus not inhibit willingness to invest whether in the Siminn system or in those of potential competitors.

999) The burden that the obligations constitute for Siminn should not decide on their imposition. The PTA believes that the above specified obligations are reasonable and necessary to support active competition and should not be considered unnecessarily burdensome, given their importance in strengthening competition on the relevant wholesale market and related retail markets. The PTA considers obligations to be in the interests of competition in the long-term and that they will increase service offers on the electronic communications market as a whole.