Forward-looking review of the future AFL element of USO in Ireland: appropriate level and scope of the various proposed obligations of an AFL USO

Phase 2 report

ComReg

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0 Introduction

0.1 Context

Universal Service Obligations (USOs) aim to ensure end-users benefit from basic electronic communications services that would potentially not be delivered by the market to all in normal conditions and absent regulation (e.g. in rural or sparsely populated areas and/or less economic customers). Along with other basic services (Directory, Public call boxes, etc.), ComReg is required to ensure that end-users have the ability to connect to a public communications network at a fixed location (Access at Fixed Location or AFL) and are able to make use of basic telephony services (voice, facsimile and functional internet).

The existing AFL USOs imposed by ComReg were in force until 31 of December 2015 and have been recently extended for 6 months until 30 of June 2016[1]. Prior to the expiry of the AFL designation, ComReg, of the preliminary view that an AFL USO continues to be needed, is reviewing the existing scope of the AFL USO *inter alia* the nature of associated USO elements and of the USO implementation process to make sure it is appropriate for the years to come. ComReg committed to undertaking a review of the future requirement of AFL USO in its consultation 14/48 and in its AFL Decision, D10/14.

The design of future AFL USOs needs to take into account current market trends and likely evolutions in the coming years. In the specific context of Ireland, these include, among other things, the intensification of competition from UPC, the deployment of NGA infrastructure and FTTH networks by SIRO (joint venture Vodafone with ESB) and by Eir (formerly 'Eircom'), the development of the National Broadband Plan (NBP) and selection of a company to deploy and operate a funded NBP network, the adoption of VoIP services, further development of mobile networks, regulation of Wholesale Line Rental, etc.

ComReg wishes to assess the most appropriate structure of any AFL USOs components if relevant inter alia associated with reasonable request for connections, affordability and geographically averaged prices (GAP), control of expenditures, and Quality of Service (QoS), and for which time period it should apply and whether it should apply in the whole of Ireland, or in certain geographic areas.

0.2 Previous steps conducted by ComReg

In May 2014, ComReg undertook a consultation on the provision of AFL under USO in the Irish market (Ref: 14/48). Operators were asked to express their views on, among other things, the proposed maintenance of a USO for the provision of AFL for a period of three to five years after the designation period commencing on 1 July 2014.

[1] http://www.comreg.ie/_fileupload/publications/ComReg15144.pdf

In August 2015, ComReg issued a second consultation where it sought the views of stakeholders on the need for and proposed evolution of the USOs in relation to AFL (the "August 2015 consultation")[2]. This public consultation was supported by an expert report produced by TERA Consultants ("Phase 1 TERA report")[3], which described the AFL USO context in Ireland, studied the latest fixed access services market evolution, assessed counterfactual scenarios, notably, the consequences of ceasing AFL USOs and/ or some aspects of AFL USO. We concluded by giving our preliminary recommendations on the possible scope of future AFL USOs. This report also included a review of AFL USOs in other European Member States[4]. The main findings of the Phase 1 TERA report are summarized hereafter:

- **First,** it cannot be ruled out that for the coming years, absent any AFL USOs, the necessary requirements regarding AFL as set out in the Universal Service Directive (transposed in Ireland as the Universal Service Regulations) would not be met. The counterfactual assessment showed that, in TERA Consultants' view, there is a continued need for an AFL USO in Ireland, having regard to the RAT component, the FIA component, the QoS component and the GAP component.

- **Second,** even though in principle it could be appropriate to impose AFL USOs at a sub-national level, we do not recommend such an approach at this time. This is in view of the specific national circumstances at least over the next 5 years and, as long as the NBP network is not fully deployed. However, this does not mean that any specific obligations could not be defined differently or apply differently from one area to another. For example, because of different levels of QoS over the Irish territory, defining QoS targets at a sub-national level could, depending on the nature of incentives it creates, potentially have some benefits.

- **Third,** Eir's copper network has significant advantages over other technologies and networks for the provision of AFL USO in Ireland at the national level. Eir's current ubiquitous coverage and the fact that it supports FIA are advantages that are not easily and or universally met by any other network in Ireland (e.g., 3G, 4G, other wireless networks, UPC and FTTH networks do not have sufficient coverage; FCS and 2G do not support FIA). However, in specific instances and for some customers, Eir's copper network could be complemented by other technologies (such as, 3G or 4G) to provide connection and/or FIA at a potentially cheaper cost relative to the copper solution.

In response to the August 2015 consultation, ComReg received the views of 5 respondents (Alto, BT, Eir, UPC and Vodafone). In particular, Eir and UPC were in

[2] http://www.comreg.ie/_fileupload/publications/ComReg1589.pdf

[3] http://www.comreg.ie/_fileupload/publications/ComReg1589a.pdf

[4] This benchmark has also been used to prepare this report.

disagreement with the findings by TERA Consultants and preliminary views expressed by ComReg.

On the 31 of December 2015 (and following a consultation[5] issued in November 2015), ComReg published a decision[6] to extend by 6 months (until 30 of June 2016) the period during which the current obligations on Eir in respect of AFL apply.

0.3 Objective and scope of the report

After the initial findings of Phase 1 TERA Report that because of the counterfactual analysis and other relevant developments there is a continued need for an AFL USO in Ireland, this report sets out TERA Consultants' views on the proposed imposition of elements associated with an AFL USO. This includes possible amendment or lapse of particular USOs, criteria for assessing options in relation to reasonable requests and options regarding affordability measures, quality of service targets and specifications in respect of terms and conditions.

In doing so, TERA Consultants has taken into account the views of respondents to the August 2015 consultation and subsequent consultation. TERA Consultants have also taken into consideration the practices of other NRAs and the AFL USOs that have been imposed in other Member States as detailed in Phase 1 TERA report (annex B).

All components of the USO obligations are considered in this report. For each component, the following approach will be taken:

- Summary of our findings and recommendations of Phase 1 TERA report and what could happen in the absence of AFL USO in the worst-case scenarios. TERA Consultants addresses the comments of respondents following the August 2015 consultation, as relevant
- A list of methodological questions on the form of obligations is then set out;
- With respect to each of the questions identified, a list of options is presented and an impact assessment of each option is performed by studying the impact on the different stakeholders and comparing the pros and cons of the option.
  The determination of the USP is not considered at this stage as the current USP network could be the most efficient way to provide AFL elements but it could also be an alternative supplier using another technology. The impact assessment is made on the basis of the status quo i.e., that Eir is the USP for the specific element (as it is currently the USP for all AFL elements). If another operator is proposed to be a USP for a specific element, then this means it has been identified that it can address a USO(s) in a more efficient way than Eir. As a consequence, the assumption that Eir is the USP is a conservative approach for

[5] http://www.comreg.ie/_fileupload/publications/ComReg15124.pdf

[6] http://www.comreg.ie/_fileupload/publications/ComReg15144.pdf

the impact assessment (as it will tend to overestimate the impact on the USP); and

- Our recommendations for the most appropriate regulatory options for each element associated with AFL USOs.

Each element of AFL USO is analysed separately in sections 2 to 6. Section 7 summarizes main conclusions. More precisely, the report is structured as follows:

- Presentation of the approach followed and discussion on transversal issues (See section 1);
- Definition of the most appropriate approach to the specification of Functional Internet Access at this time (Section 2);
- Definition of the most suitable USOs for reasonable request for connections (See section 3);
- Definition of the most suitable USOs for affordability and geographically averaged prices(See section 4);
- Definition of the most suitable USOs for quality of service (See section 5);
- Definition of the most suitable USOs for control of expenditures (See section 6); and
- Conclusion on our recommendations for USOs (See section 7).

0.4 Approach to the specification of Functional Internet Access (FIA)

In Ireland, the Universal Service Provider (USP) is currently obliged to provide AFL connections which support Functional Internet Access (FIA). Additionally, the minimum data rate is determined and therefore FIA is set to 28.8 kbps for 94% of installed telephone lines which has remained unchanged since June 2006.[7]

The Phase 1 TERA report identified that *"the current specification of FIA in Ireland does not allow the use of basic Internet functionalities"* (most end-users have speed greater than 10 Mbps, demand for narrowband Internet is very low, with a narrowband connection it takes several minutes to download a webpage).

Based on this analysis, there can be little doubt that today and for the years to come, FIA requires more than 28.8kbps. However, what needs to be considered is what USOs are appropriate in light of national conditions, including, the NBP objective.

Considering the high investment required to upgrade internet speeds within the network, any re-definition or extension of the FIA universal service obligation, such as, an increased minimum data rate and/or a different proportion of installed telephone lines should be performed with caution.

[7] ComReg D09/05 (http://www.comreg.ie/_fileupload/publications/ComReg0570.pdf)

Many private operators have indeed announced over the last few years and again more recently that they will provide speeds greater than 30 Mbps to a significant proportion of the population. These announcements are in the context where the NBP will lead to the building of a new NGA network providing ultra-fast broadband to the rest of the population in the years to come; in the context where 4G networks are being similarly planned and deployed and in the context where there are discussions at the European level about the inclusion of broadband in the scope of USO, etc. In this dynamic and rapidly changing environment, it is too early to get a clear and certain view on retail offers which will be available over advanced new networks in the short to medium term, as a result of private players' investments or via the NBP. Because of these developments, assessing fully or with any reliable degree of certainty, the likely impact of imposing different FIA USOs in a meaningful way would be too difficult at this time and with the current data available.

As a consequence, it is considered that any review of the re-definition or otherwise of the FIA universal service obligation requires a more stable view on the different players' market deployments as well as offers to be launched. ComReg plans to conduct a more in depth analysis and separate consultation. In this respect, ComReg is gathering data from Eir regarding its plan to invest on a commercial basis and to what extent future deployments will map with NBP networks deployments. ComReg is also seeking the views of all stakeholders in relation to this key economic and social consideration.

While these analyses are performed and until relevant milestones in the NBP have been reached, we recommend that the current FIA obligations should not be amended. Accordingly, a possible enhancement of the FIA component of the AFL USO or otherwise is not within the scope of this TERA report. It will be addressed in a separate consultation planned by ComReg for a future date. What are considered in this report are the options available to ComReg in respect of the FIA obligation and current FIA rate. These options are considered in Section 2.

1 Approach followed and common issues

While the rest of the report addresses each component of AFL USO separately, there are some issues related to AFL USO which are common to all components:

- The period of time over which the recommended AFL USO should be imposed on the USP(s) (Section 1.1); and
- The role of alternative infrastructures (alternative to Eir's network) when defining the nature of the components of AFL USO (Section 1.2).

These common topics have been grouped in this section as these considerations should be addressed upfront for all USO components to ensure the consistency of the overall approach. As an example, there would be limited interest in considering alternative infrastructures when designing the most relevant USOs for RAT if alternative infrastructures are disregarded when it comes to QoS obligations.

1.1 Period of time for which we recommend the AFL USO should be imposed on the USP

While some Member States do not define specific periods of time for the imposition of AFL USO, ComReg is of the view that specification of the designation period will provide more certainty and clarity to stakeholders, especially in a context where many changes will occur in the Irish electronic communications markets in the years to come. Therefore, ComReg needs to define the period during which the USO definitions remain valid and the USP is designated.

In defining the duration of any designation of USP(s), it is necessary to balance the objective of providing regulatory certainty (which tends to require a longer period of time) and the objective of having AFL USOs that reflect the fast changes in the market (which tends to require a shorter period of time).

In Europe, designation periods are very heterogeneous and go from 2 years to 10 or even 30 years within the BEREC countries. Some countries have designated the USP for an indefinite period (11 BEREC countries)[8].

In the August 2015 consultation, ComReg proposed a period of 5 years or more as a preliminary view:

> *"It is ComReg's preliminary view therefore that, in light of market and technological developments, including the planned rollout of the NBP, if it is determined that there is a continued need for an AFL USO in the whole or parts of Ireland post 31 December 2015, it would appear to be most appropriate to*

[8] BEREC Report on Universal Service – reflections for the future. BoR (10) 35. June 2010.

> *designate a USP(s) for the provision of AFL USO(s), to be specified, for the next **5 years and possibly longer**."*[9] *[Emphasis added by the author]*

In response to this consultation, ALTO did not give any opinion on the duration of the upcoming obligation. BT supported the period of 5 years "*to ensure market and technology developments are reviewed whilst maintaining a level of market stability*". Vodafone agreed with the proposed period of 5-7 years and added that *"The time period should be co-ordinated with the completion of the National Broadband Plan."* UPC and Eir proposed shorter review period. UPC proposed to review AFL USOs by 2018 at the latest *"in order to account for the dynamic nature of the market-place and significant progress in the National Broadband Plan ('NBP') rollout by 2018."* Eir considered that the USO should be reviewed in 12-18 months in order to account for the NBP and the results of the current consultation on the European Regulatory Framework:

> *"…**issues pertaining to the interaction of AFL USO and the NBP and the current consultations on the European Regulatory Framework must be addressed upfront**. They cannot be addressed retrospectively in 5 to 7 years after significant irreparable damage has been done. The outcome of the EC review and changes to the regime will be known in the next year and any national policy implications should be addressed immediately thereafter. We note ComReg's observation (Para. 249 of the Consultation) that "ComReg envisages that it would need to reconsider any designation after the NBP infrastructure and services rollout is fully completed (possibly post 2020) in order to take into account the full impact of the NBP and any other relevant market and technological developments at that time. It is also conceivable that any individual elements of the USO could be reviewed within this designation period if the circumstances justified it." ComReg's administrative track record on USO reviews is poor and in order to balance the interests of the USP, any designation should be time-bound such that if there is to be one it should be **no longer than 12 to 18 months**." [Emphasis added by the author]*

As noted by all the respondents to the consultation, the NBP deployment is the main market evolution expected in the years to come in Ireland. According to the NBP timetable, network deployments are planned to start in late 2016 and could be rolled out within 3-5 years of contract award with 60% of intervention area addresses passed by 2018[10]. Considering the deployment along with service take-up time, the NBP is unlikely to have a significant impact on the AFL USO in the very first years of any new designation. Indeed, if some parts of the network are deployed in 2020 (as planned in

[9] ComReg 15/89.

[10] http://www.dcenr.gov.ie/communications/Lists/Publications%20Documents/Updated%20Strategy%20December%202015.pdf (section 8.9).

the current scenario) then it is likely that existing copper customers will take several years to fully migrate onto the NBP network[11].

Also, in light of technological and market developments including migration to NBP, it is likely that the AFL USO will need to evolve. A dynamic approach can ensure that the AFL USOs will be flexible and adaptable during the period for which the USP is designated. For example, if some or all AFL USOs lighten while customers migrate over the NBP network (which is what is proposed in the rest of the report), AFL USOs will remain targeted and appropriate.

In any case, ComReg could also anticipate a review of AFL USO and/or a USP designation if there are significant and unplanned market changes before the end of any designation period or, if the outputs of the consultation on the European Regulatory Framework require doing so.

As a consequence and in accordance with ComReg's preliminary views, **TERA Consultants is of the view that the designation period should be at least 5 years**. The next question to address is whether a longer period than 5 years (e.g. 7 years) would be more suitable.

A 7-year period, compared to a shorter period provides stability for market players, is less resource-consuming and enables to collect more markets inputs to complete the new assessment at the end of this period. Indeed, 2023 will be two after years after the full expected deployment of the NBP and the planned deployment of FTTN/FTTC/FTTH network by private operators[12]. ComReg should therefore have sufficient feedback to assess whether these networks are successful, whether they provide minimal USO services at an affordable price and with a sufficient level of QoS, what is their penetration and coverage. It will help ComReg to determine as relevant AFL USO more easily and precisely in the future. However, given the difficulties to anticipate market developments 7 years in advance and since it is very likely that sufficient feedback will already be available in 2021, **TERA Consultants considers that setting a 5-year period for any designation over which AFL USO should be imposed is a more conservative and robust approach.** Pros and cons of the two periods of time are listed below.

[11] On 18 June 2015, ComReg published a preliminary position in its response to a call for input (ComReg Document No 15/57):

"Our [ComReg's] consent will be required if Eircom is to be allowed to phase out its copper network. Eircom has an obligation in several regulated markets not to withdraw access to services and facilities already granted (as well as obligations as part of its current USO designation). In the context of SMP obligations (in particular ComReg documents 08/104 and 10/39) a notice period of five years was proposed in the context of exchanges which had been unbundled. We note that there are likely to be few, if any, unbundled exchanges in the NBP intervention area and accordingly, many of the considerations set out this document may need to be revisited in an NBP."

[12] SIRO has announced that its new network would enable to reach 500,000 premises in 51 towns by the end of 2018 (http://siro.ie/more-about-siro/). On the 4th June 2015, Eir announced an extension of its NGA roll-out plan to 1.9 million premises instead of the 1.6 million premises initially planned (http://www.openeir.ie/news/NGA_rollout_extended_to_1_9M_premises/). According to Eir, 80% of the country should have access to high speed broadband on open eir's network by 2020.

Table 1 – Pros and Cons of a 5-year designation period versus a 7-year designation period

Option	Pros	Cons
5 years (until end of 2020)	• Easier to set obligations within a shorter period since easier to predict the future market structure • Market implications on the developments of NBP-based offers and latest alternative infrastructure developments will be considered earlier • Lower risk that the AFL USOs will be outdated	• Need to reconsider obligations earlier which is resource-consuming for ComReg and market players • Lower regulatory certainty for market players as rules are known for a shorter period
7 years (until end of 2022)	• 2022 is 2 years after the planned completion of the NBP and this will provide sufficient visibility on the NBP success / affordability for the purposes of the next AFL USO assessment • Better visibility for market players • No need to reconsider obligations too early which would be resource-consuming for market players	• Market will develop with the deployment of the NBP network and private operators' network deployment (Eir, SIRO, UPC, 4G, etc.) and therefore higher risk that the AFL USOs will be outdated • Difficult to predict long-term market development for the future 7 years, in particular offers, prices, and penetration in NBP areas

Source: TERA Consultants

Even though TERA Consultants considers that setting a 5-year period for any designation over which AFL USO should be imposed, to make the AFL USO more flexible and responsive to the likely evolution of the Irish electronic communications market, we also recommend reviewing several components, values or parameters associated with the AFL USO (but not the overall need for AFL USO) before the end of the 5-year period. We recommend earlier reviews for the FIA (further detailed in section 2) and the QoS (further detailed in see section 5) components of the AFL USOs.

1.2 Role of alternative infrastructures in the definition AFL 'reasonable access'

According to the Universal Service Directive[13], when the market alone does not provide the defined set of basic services with sufficient quality levels and at affordable prices, one or more undertakings may be designated to provide all or some of these services.

[13] 2002/22/EC.

In other words, in areas where ComReg judges that the market provides AFL USOs with the required features on the basis alternative platforms, AFL USOs could be lightened or removed.

In these cases where the market alone does provide the defined set of basic services with sufficient quality levels and at affordable prices, in order for ComReg to lighten or remove AFL USOs, it is required to check whether the services proposed by alternative infrastructures satisfy the features of AFL USO (as defined in the Universal Service context) or not:

- **Basic services**: Ability to connection to the network at a fixed locations and capability to provide the services over that connection voice, fax, and FIA: they must be technically capable of providing minimal USO services;
- **Affordability**: the price of corresponding universal services needs to be affordable; and
- **Quality of Service**: the service is provided with a minimum level of QoS measured by several metrics (connection time, Line Fault Index (LFI), and repair time).

In the current section of the report, TERA Consultants assesses whether alternative infrastructure platforms can in practice, in the areas where they are available, provide the defined set of basic services in line with AFL USOs. Three groups of alternative infrastructures are considered: mobile networks, NBP network and other non-copper fixed networks[14].

1.2.1 Technical capability to provide voice, fax, and FIA

Any modern fixed wired network, either FTTN/H or HFC, is in principle technically capable of providing all of three basic AFL USO services: voice, facsimile, and FIA. These networks generally rely on the VoIP technology to provide the voice service while the voice AFL service has generally been provided on the basis of the PSTN technology. In response to the August 2015 consultation, Eir claimed that it was not sufficiently clear whether VoIP would be eligible for the provision of the AFL voice service. Phase 1 TERA report however indicated: "*As a consequence, the managed VoIP technology has the potential to secure the provision of voice AFL USOs from new deployed networks relying on the IP technology"* (p28). This has also recently made clear by ComReg: *"However, in principle a managed VOIP service over a high speed quality network could satisfy the requirements of a voice AFL USO if provided at an affordable price"*[15].

3G and 4G mobile networks are capable of providing voice, facsimile and FIA. While these networks are predominantly designed to provide mobile services (i.e. services when the users is moving), they can also be used to provide services broadly similar to those at a fixed location. However, 2G mobile networks are unable to provide FIA (even

[14] The copper network is therefore not included. This is because it is already the platform over which AFL USO are imposed.

[15] ComReg 15/57, §70 (http://www.comreg.ie/_fileupload/publications/ComReg1557.pdf)

at the current rate of 28Kbps) and consequently would not provide connections which meet the legal definition of Universal Services.

As compared to fixed networks, availability and continuity of services provided over mobile networks at a fixed location is more complex to determine. This is because the availability of the mobile service outdoors does not automatically mean the service is continuously available indoors. In contrast, by construction, a fixed network provides the service inside the premises (because the extremity of the network is a socket inside the premises). Therefore, if the services are available outdoor at a fixed location but not indoor at the same fixed location, it is questionable whether AFL USOs could be fulfilled at this location by a mobile network. The power of the available signal can also be an issue.

Considering the features of AFL Universal Service historically provided by fixed wired networks, it seems relevant to conclude that in order to be suitable for the AFL Universal Service, the services provided using a mobile network at a fixed location must be available indoor and at a reasonable fixed location within the dwelling for the daily use of the end-user (e.g. if the indoor coverage is only in the attic, this would not be sufficient, nor it would be sufficient if the indoor coverage is only provided in very specific weather conditions or in very specific parts of the day).

To clarify, in the absence of outdoor coverage as defined in the licences[16], services provided by mobile networks cannot be considered as capable of providing AFL Universal Services. If there is outdoor coverage but no indoor coverage at a fixed location within the dwelling for the daily use of the end-user, it could still be possible for services provides by mobile networks to be considered as capable of providing AFL Universal Services if an antenna is installed on top of the roof of an accommodation to "translate" the outdoor coverage in an indoor coverage. The cost of such a solution should not be prohibitive[17] and is used in some Member States[18] but is only available currently for business services in Ireland[19].

[16] The absence/presence coverage is defined by the licenses by criteria of Field Strength, Block Error Rate and Ec/Io (The ratio of the received energy per chip and the interference level). See http://www.comreg.ie/_fileupload/publications/SI_251_of_2012.pdf, Part 4, Section 3.

[17] €300 as noted in the Phase 1 TERA report.

[18] As noted in the Phase 1 TERA report.

[19] Fixed-like solutions using mobile access solutions have already been offered in Ireland although for business users only, for example by Vodafone:

"Vodafone also launched a service branded as 'One Net Express' in 2012 which is a telephone service that is provided directly by Vodafone over its mobile network, but with a geographic telephone number associated with a fixed location. This highlights the possibility for a MSP to use non-wired or wireless-based network inputs to also provide RFTS services. This One Net Express product is targeted at business customers and enables incoming calls made to the businesses' geographic telephone numbers (which are usually associated with a fixed telephone) to be received on employees' mobile telephones. The One Net Express product is marketed by Vodafone as an integrated fixed and mobile voice communications solution."

ComReg 1426, "Market Review - Fixed Voice Call Origination (FVCO) and Transit Markets."

In its response to the August 2015 consultation, Eir stated: *"it is important for TERA and ComReg to pay more regard to the role of mobile for the delivery of voice services in Ireland when considering the strategic direction of USO, particularly in view of the very high number of mobile only households and high mobile penetration."*

UPC also stated that *"ComReg has not given sufficient weight in the Consultation to the role that mobile networks are playing in meeting the basic electronic communications needs of consumers. Mobile networks are used widely for the provision of basic voice calls and internet services. A mobile network, and a mobile handset, are capable of providing a basic electronic communications service at a fixed location. UPC Ireland therefore disagrees with ComReg's preliminary view that a mobile handset cannot be used to provide a basic electronic communications service at a fixed location."*

However, phase 1 TERA report did recognise the role of mobile. Indeed, it was said that *"Mobile networks are capable of providing voice and Internet access services while in motion. However, it is generally accepted currently that the substitutability between fixed and mobile offers for either voice and or broadband is not yet effective. For example, the European Commission has recently concluded that substitutability between fixed and mobile offers is limited"* (p49), it was also added just after: *"Also mobile technologies can be used to provide fixed service (sometimes called fixed wireless) through the use of an antenna on top of houses and buildings (typical cost of antenna + installation is €300). 3G and 4G provide broadband Internet access (typically 1Mbps with 3G and 10 Mbps with 4G). Mobile-based technologies can in principle be considered in certain cases as efficient ways to provide AFL services i.e. a connection upon reasonable request."* (p50)

1.2.2 Affordability

For an alternative infrastructure platform to be considered as providing AFL Universal services in the area where it is available, this alternative infrastructure platform must offer prices which are affordable. Indeed, an alternative infrastructure platform which would be capable of providing AFL universal services but for which prices would not be affordable, could not be considered as meeting the requirements of providing AFL universal services.

This was outlined in the Phase 1 TERA report in respect of mobile networks as well as the NBP network:

> *"As explained by ComReg in its recent consultation about the regulatory implications of the National Broadband Plan, "in principle a managed VOIP service over a high speed quality network could satisfy the requirements of a voice AFL USO if provided at an affordable price". However, that does not automatically imply that retail operators relying on the NBP network will provide universal type service amongst others, voice services for example. In the context of affordability of services, while the EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks provide some broad rules and indications about the level of wholesale access prices of the NBP*

infrastructure, this is not sufficient to establish whether retail prices for AFL will be affordable if delivered in the longer term over the high capacity broadband network." (p49)

The criterion of affordability is not clearly defined at the European level. According to the US Directive:

- Affordable price should be determined at the national level: *'**Affordable price means a price defined by Member States at national level** in the light of specific national conditions, and may involve setting common tariffs irrespective of location or special tariff options to deal with the needs of low-income users.'* [Emphasis added].
- ***National regulatory authorities shall monitor the evolution and level of retail tariffs** of the services identified in Articles 4 to 7 as falling under the universal service obligations and either provided by designated undertakings or available on the market, if no undertakings are designated in relation to those services, **in particular in relation to national consumer prices and income**.*
- The affordable price can be below competitive price, especially for some categories of users: *'**Member States may**, in the light of national conditions, **require that designated undertakings provide to consumers tariff options or packages which depart from those provided under normal commercial conditions**, in particular to ensure that those on low incomes or with special social needs are not prevented from accessing the network or from using the services.'* [Emphasis added].

To assess whether the price of AFL USO services using a given platform is affordable, ComReg may therefore envisage monitoring the prices of AFL Universal Services (i.e. voice service, basic Internet and fax) provided through that platform and to compare them with one of the following indicators:

- the existing level of Eir copper retail line rental price, which is subject to a price cap obligation and cannot currently increase by more than CPI,
- retail prices in the different areas of the country,
- customers' incomes.

The most relevant indicator seems to be the existing level of copper retail line rental price because it has generally been considered as affordable until now. This affordability limit is easy to use since Eir's copper retail line rental price is well-known and it ensures that customers do not have to pay more for the alternative infrastructure than they would have paid for the basic copper service. **As a consequence the AFL service price provided by an alternative infrastructure should be considered affordable if it is not higher than the copper retail line rental price.**

Call prices should be considered as well (because access prices could be lower but call prices prohibitive).

The issue of affordability is detailed more generally in section 4.

1.2.3 Sufficient level of QoS

For an alternative infrastructure platform to be considered as providing AFL Universal services in the area where it is available, this alternative infrastructure platform must offer services with a sufficient level of QoS. TERA considers that this level must be at least equal to the current targets imposed on the USP.

As regards new fixed networks (either FTTN/H or HFC), it can be assumed that QoS features are likely stricter than those of current AFL USOs pertaining to the copper network because among other things, the new technology is likely to result in higher quality of services, investment in quality of service being driven in areas with relatively greater levels of competition. As regards the NBP, it is likely that the QoS obligations will be greater than the AFL QoS USO, as the announced 0.05% network unavailability requirement during the NBP process is lower (and therefore stricter) than AFL USOs QoS requirements (see Table 2):

> *"The Department requires the following technical standards to be met by the winning bidder(s) in the procurement process:*
>
> - *A minimum of 30Mbps download*
> - *A minimum of 6Mbps upload or twice the maximum upload speed of existing broadband in the intervention area, whichever is greater*
> - *Latency (one-way) – no more than 25 milliseconds*
> - *Jitter – no more than 25milliseconds*
> - *Packet loss – not more than 0.1%*
> - *Service availability – at least 99.95% of the time"*[20]

However, there is a risk that operators using NBP wholesale products would not provide sufficient levels of QoS for low ARPU users for example (e.g. if when fixing network faults, high ARPU ultrafast broadband customers are prioritized over low ARPU users). In this scenario, even if quality targets are met at the national level, this might not be the case for low ARPU users).

As regards mobile networks, QoS targets are usually addressed by spectrum licenses. In the case of Ireland, even if they are expressed differently, these are stricter than AFL USOs (see Table 2). As a consequence, it can be reasonably assumed that obligations within the mobile licences enable these services to meet AFL Universal Service QoS requirements (as currently defined in terms of LFI and time to repair faults targets). However, in order to meet AFL Universal service requirements, the mobile solution has to enable indoor coverage (see section 1.2.1).

[20] http://www.dcenr.gov.ie/communications/Lists/Publications%20Documents/Updated%20Strategy%20December%202015.pdf

Table 2 – Comparison of mobile licences and AFL USOs QoS requirements

QoS obligation	Target
Mobile licence	The network unavailability is less than 35 minutes per 6 month period[21]. $Network\ Unavailability = \frac{35}{\frac{365}{2} \times 24 \times 60} = 0.013\%$
AFL QoS USO	According to PIP3[22], the LFI target is 14.5%. Target to repair faults are: 82% within 2 days, 95% within 4 days, 96% within 5 days and 99% within 10 days (1.6 days on average[23]). $Network\ Unavailability = \frac{14.5\% \times 1.6}{365} = 0.064\%$

Source: TERA Consultants analysis of mobile licences and PIP3 targets

1.2.4 Conclusion on the role of alternative infrastructures in the definition AFL 'reasonable access'

The table below summarizes the comparison of three types of alternative infrastructure networks – mobile, NBP and other non-copper fixed networks – on the basis of the three criteria relevant to considering when providing AFL USO: they must be technically capable of providing AFL USO, at affordable prices, and with sufficient level of QoS.

Table 3 – Do alternative infrastructure networks satisfy AFL USO criteria?

Criterion	Presence of an infrastructure alternative		
	Mobile	**NBP**	**Other fixed (private FTTH, HFC)**
Technical capability to provide voice, fax, and FIA	Does not provide access at a fixed location but may be an acceptable alternative if a voice service is provided indoor (an antenna could be provided if there is	Satisfied	Satisfied

[21] Liberalised Use Licences ("LUL") (All Licensees)

http://www.comreg.ie/_fileupload/publications/SI_251_of_2012.pdf

[22] See ComReg 1546 for example

[23] Assessed using the average of each range: 82% within 2 days (1 day in average), 13% between 2 and 4 days (3 days in average), 1% between 4 and 5 days (4.5 days in average), 3% between 5 and 10 days (7.5 days in average), 1% above 10 days (10 days considered): 82%x1 + 13%x3 + 1%x4.5% + 3%x7.5 + 1%x10 = 1.6 days.

	currently only outdoor coverage - typical cost of antenna + installation is €300)		
Affordability	Difficult to predict or control without any possibility for obligations.	Difficult to predict if no obligation but should be affordable if NBP is designed with the goal to provide Universal Service (i.e. packages with basic AFL Universal Services are proposed, not bundled with ultrafast broadband). However, an obligation could be imposed if necessary.	Difficult to predict if no obligation. An obligation could be imposed if necessary
Sufficient QoS	QoS obligations are set in mobile operators' licences in terms of % of time the service is available during the year, equivalent to LFI multiplied by time of repair. Mobile QoS obligations appear therefore sufficient compared to current AFL USO QoS obligations	Strict QoS obligations to be imposed on the NBP wholesale operator have been discussed but the final version is unknown yet	Probably OK because of competitive conditions but there is a risk that operators will serve some groups of customers with insufficient levels of QoS

Source: TERA Consultants

To conclude, the simple presence of alternative infrastructure networks seems difficult to guarantee in practice the requirements for AFL Universal services are made available on these networks at affordable prices and with sufficient QoS. It is possible that operators will only offer costly bundled services instead of basic Universal Services which could then be unaffordable.

Therefore, the implication is that when an alternative infrastructure is present, AFL USOs imposed on the USP may be relaxed if and only if the services provided by the alternative infrastructure networks satisfy all the necessary US criteria. NBP-based services are more likely to fulfil them, since the quality of service and access offers will be controlled. However, ComReg will need to make an assessment in order to check that the retail services are sold at affordable prices, by comparing them with the existing level of copper retail line rental price and voice only service prices and to verify that the level of QoS is equivalent to the one imposed on the USP. If it is the case, ComReg could allow derogation from certain AFL USOs in corresponding area(s), as explained in sections 3.2 and 5.2.4.

In response to the August 2015 consultation, respondents agreed on the importance of NBP in the future USO definition. BT suggested that *"there should be a dialogue with the DCENR concerning the NBP to ensure that the USO can be supported by whoever wins the bid(s)".* According to UPC Ireland, *"attempting to address FIA within the USO, concurrent to the implementation of the NBP, would be unwieldy and could lead to*

inefficiency and duplicative funding of broadband networks." Vodafone underlines the same problem: *"The proposition that a USO would apply in the intervention areas in parallel with an implemented NBP intervention would appear administratively inefficient."*

The opportunity to relax AFL USOs on the basis of the presence of alternative non NBP platforms should be studied on a case by case basis on the grounds that these platforms do or do not meet AFL Universal service features (see following sections).

2 AFL must be capable of supporting voice (originating and receiving national and international call), facsimile and a Functional Internet Access

According to the Universal Service Directive, the AFL connection must be capable of supporting voice (originating and receiving national and international call), facsimile and a Functional Internet Access. However, it is the NRAs' role to define what a "functional internet access" is (e.g. by setting a speed floor).

In Ireland, the minimum data rate enabling FIA is set to 28.8 kbps for 94% of installed telephone lines which has remained unchanged since June 2006.[24]

2.1 What if the obligation to satisfy reasonable requests for connection was ceased?

In the absence of this obligation, it is very likely that in any event, customers already connected to the USP network would have AFL capable of supporting voice (originating and receiving national and international call) and facsimile because voice and facsimile core platforms already exist. The same applies to FIA because most of Internet subscriptions are provided over broadband or narrowband access and Eir's narrowband/dial-up Internet core platform already exists. Therefore, Eir is likely to maintain this core platform over the next years.

However, absent any AFL USO, while the USP is likely to maintain its voice, facsimile and dial-up Internet core platforms, it is also likely that Eir would not use its copper access network in some areas because the copper access network could be too expensive to maintain. Typically, in such cases, Eir may prefer to use the FCS technology. As FCS is not capable of supporting FIA, some customers would not be able to get FIA anymore which would mean that the requirements of the Universal Service Directive would not be met in Ireland.

It is however difficult to assess how many customers would not get FIA anymore since it depends on the incremental costs and incremental revenues generated by each customers or group of customers.

[24] ComReg D09/05 (http://www.comreg.ie/_fileupload/publications/ComReg0570.pdf)

2.2 Current AFL USO for FIA appears outdated in a fast evolving market

Phase 1 TERA Consultants' report identified that *"the current specification of FIA in Ireland does not allow the use of basic Internet functionalities"* and this was supported by several observations that:

- The majority of end users have access to Internet through a broadband connection which, in many cases has a speed greater than 10 Mbps;
- Demand for narrowband Internet access is low and decreasing.
- Narrowband Internet access, however, remains demanded possibly for people with low income or for people whose copper line is too long.
- With a narrowband (28.8 kbps) connection, it takes on average 7 minutes and 24 seconds to download a webpage illustrating speeds which are significantly less than those achievable by way of a broadband connection

Based on this analysis, there can be little doubt that today and for the years to come, the functional use of internet requires more than 28.8kbps. However, what needs to be considered is what USOs are appropriate in light of national conditions, in particular the NBP.

Any re-definition or extension of the FIA universal service obligation, such as, an increased minimum data rate and/or a different proportion of installed telephone lines (currently 94% of installed telephone lines) should be performed with caution. One consideration is that the cost of upgrading the network for higher speeds may be material (e.g., deployment of fibre local loops, backhaul upgrades, implementation of fixed wireless access solutions, etc.). In addition, it would make little sense from an efficiency perspective, to impose significant network upgrades on the USP in advance of alternative investments enabling an achievement of higher data speeds (FIA) which are planned in the short term and on a commercial basis (by the USP itself or by another market player) or by way of programs for higher broadband speeds funded with public money (e.g. National Broadband Plan).

Many private operators have indeed announced over the last few years and again more recently that they will provide speeds greater than 30 Mbps to a significant proportion of the population. These announcements are in the context where the NBP will lead to the building of a new NGA network providing ultra-fast broadband to the rest of the population in the years to come; in the context where 4G networks are being similarly planned and deployed; in the context where there are discussions at the European level about the inclusion of broadband in the scope of USO, etc. In this dynamic and rapidly changing environment, it is probably too early to get a clear and certain view on the likely retail offers which will be available over these advanced new networks in the short to medium term, thanks to private players' investments or via the NBP. Assessing fully the likely impact of imposing different FIA USOs in a meaningful way would be challenging at the current time and with the current data available.

As a consequence, it is considered that any review of the re-definition or otherwise of the FIA component of AFL USO requires a more stable view on the different players' market deployments as well as offers to be launched, more in depth analyses and separate consultation. In this respect, ComReg is gathering data from Eir regarding their plan to invest on a commercial basis and to what extent future deployments will map with NBP networks deployments. ComReg is also seeking the views of all stakeholders in relation to this key economic and social consideration.

As a consequence, possible enhancement of FIA component of the AFL USO is not considered further in this report and will be addressed in a separate consultation planned by ComReg at a relevant date.

2.3 Options for USOs and impact assessment during the interim period

While consideration of any enhancement of the FIA component of the AFL USO is being considered, the most suitable approach to FIA USOs for the interim period (until the separate consultation process is completed) have to be defined.

Two options can be envisaged: the "*statu quo*" option for which the existing FIA obligations are kept and the "No USO" option for which FIA is set to 0 kbps.

Pros and cons of these two options are summarized in the table hereafter.

Table 4 – Pros and cons of the FIA obligation

#	Option	Pros	Cons
1	Keep the existing FIA obligations (28.8 kbps for 94% of installed telephone lines)	• As compared to today's situation, the level of customers without FIA would remain the same although different customers' circumstances may change. • 28kbps is the absolute minimum speed at which data can be transmitted and in light of the current developments this should be far exceeded in most cases. • The 94% threshold allows for flexibility.	• 'The USP may face higher costs in areas where it would have used the FCS technology and therefore there may be implications for the net cost.
2	Remove the FIA obligations	• This would allow the USP to use the FCS technology (not supporting FIA) when relevant • No competition distortion • Eir has not indicated that it has plans to withdraw its copper network in favour of FCS and therefore the impact on Eir should be minimal.	• Absent any FIA USO, risk that more customers would remain without FIA, at least in the short term until planned high speed networks are fully deployed

Recommended option highlighted in grey

Source: TERA Consultants

In a context where the existing FIA obligations are currently met by the USP and platforms enabling to meet these obligations are unlikely to be switched off by the USP in the short term, the financial impact on the USP to maintain these obligations is unlikely to be material.

As a consequence, we recommend keeping existing FIA obligations until a further more in-depth review of FIA (separate consultation process) is completed. The "No USO" approach would be inconsistent with the requirements of the Universal Service Directive/Universal Service Regulations.

2.4 Conclusion

In summary, we recommend keeping the existing FIA USO with a minimum data rate set to 28.8 kbps for 94% of installed telephone lines.

The impact on end-users is difficult to assess as determining how many customers would not get FIA anymore absent obligations is challenging.

Any net cost for the USP should remain very limited during this interim period as the existing target is met for now and it is unlikely the USP will remove the platform enabling provision of FIA in the short run.

3 All reasonable requests for connection at a fixed location to a public communications network must be met

According to the Universal Service Directive, all reasonable requests for connection at a fixed location to a public communications network shall be met. It is however up to each Member State to define what a reasonable request is.

ComReg currently defines a reasonable request as follows: the USP must treat all requests as reasonable if the expenditure involved based on the least cost technology providing AFL US features is lower than €7,000 or greater than €7,000 but the applicant agrees to pay the standard connection plus charges above €7,000[25].

Section 3.1 explains what could happen in the absence of any obligation to satisfy requests for connections by summarizing conclusions of the Phase 1 TERA report. Section 3.2 studies whether the obligation should be applied to the national territory or whether the obligation should be more geographically targeted (sub-national targets) in certain areas: it considers different options, studies their advantages and disadvantages, and concludes on the best approach. Once it is determined where it is relevant to impose the obligation, ComReg needs to specify the parameters of the obligation, more specifically how reasonable access criteria should be defined. Section 3.3 considers different methods for calculation of a RAT as appropriate. In Section 3.4 we provide our recommendations.

3.1 What if the obligation to satisfy reasonable requests for connection was ceased?

In the absence of this obligation, Eir would be able to choose whether a given request would be considered or not. In addition, Eir would have flexibility as to whether and to what degree the connection costs would be passed to the end-user, if in Eir's view the cost of connectivity is too expensive. In this case, Eir, acting as a profit-maximising operator, would likely make connection decisions by comparing the cost of connecting a customer to its estimated future revenues.

In respect of revenue, the period over which Eir can expect future revenues depends on the competitive pressure of the different areas:

- In **market-driven infrastructure-based competition areas**, the expected customer lifetime is **circa 4 years[26].** However, part of the churners from Eir retail would subscribe with a traditional supplier (see Table 6 and Table 7 of TERA's phase 1 report), the latter often relying on Eir's SB-WLR input services. Consequently, while Eir may lose retail revenues it will continue generating

[25] ComReg D09/05 (http://www.comreg.ie/_fileupload/publications/ComReg0570.pdf)

[26] 110610_USO_eircom_Response - 13D request.pdf

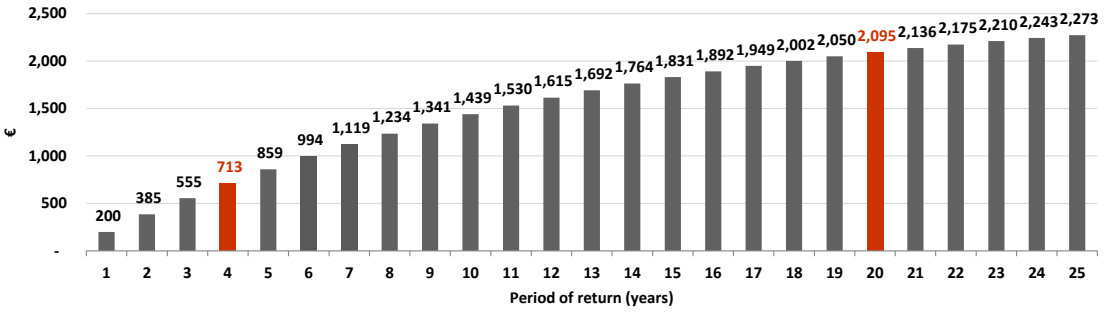
wholesale revenues. The average lifetime for Eir is thus slightly greater than 4 years;

- In **NBP areas**, Eir can expect future revenues from a new connection as long as customers do not migrate away from the PSTN network to the NBP network. The NBP network rollout is planned to be completed in about **5 years by 2020 and is planned to be available even earlier in some areas.** It means that if the USP connects a new customer for example in 2019 to the copper network, it will have less time to cover the connection cost if the NBP network is available in 2020. The lifetime also depends on the time that customers will take to migrate to the new technology. Four years is therefore a reasonable assumption that takes into account both the time to build the NBP and customers' churn time;
- **In "Eir only" areas where Eir faces no competition** from any fixed infrastructure networks but only from mobile operators **and there will be no NBP**, the connection cost can be depreciated over the whole lifetime of the equipment, approximately **20 years** according to Eir (the impact of selecting 15 or 20 is small):

  "Eircom has highlighted in previous submissions that it considers the RAT at €7,000 to be unreasonable relative to the potential return Eircom could earn on that investment over a reasonable period such as 20 years. Eircom is not of the view that the RAT should be increase. It is Eircom's view that the RAT should be decreased."[27]

The expected discounted net revenues from AFL can be estimated on the basis of the monthly price of SB-WLR, €18.02 per month VAT excluded. Figure 1 shows the sum of discounted net revenues expected depending on the period of return: the profitability threshold is likely to be between €700 and around €2,000 depending on the competition environment.

Figure 1 – Sum of discounted net revenues during the expected period of return (SB-WLR at €18.02/line/month)



Source: TERA Consultants analysis

In respect of cost, Figure 2 illustrates the number of connections by cost range.

[27] Source: Response to IR on RAT & FIA 20Nov14

Among the ✂ connections that were requested during FY2013/14, ✂ were in-situ connections that are normally electronically enabled (corresponding costs are below ✂, see Figure 2). The remaining ✂ connections were new connections. In respect of the new connections, ✂ connections were completed at a cost greater than €500 and ✂ connections at a cost greater than €1,000.

Figure 2 – Number of connections to the network by cost range (FY2012/13 & FY2013/14)

✂

Source: Response to IR on RAT & FIA 20Nov14

The vast majority of connections are completed by Eir with a copper path, the use of FCS solution remains very limited.

As highlighted in the TERA phase 1 report, if AFL USOs are ceased, in the worst case scenario, ✂ new connections[28] (✂) may not be provided by Eir if €700[29] is used as a threshold by Eir[30]. This represents ✂ customers over 5 years. The number of new connection that may not be addressed would fall to ✂ (or over 5 years = ✂) if €2,000 was considered the appropriate threshold.

However, in principle, a proportion of these users whose connection cost is above the threshold could be connected at a fixed location through 3G or 4G. However, it is estimated that at least ✂ customers over the 5 years would remain unserved (even through a 3G or 4G based solution) and therefore universal service inter alia the ability to connect to a public communications network at a fixed location and ability to access basic telephony services would not be provided. FCS could also be used in respect of the voice service but it does not support FIA[31].

Mobile operators cover almost all the population – more that 99% – in 2G and 3G (see Table 5). Indoor coverage is lower. However in principle outdoor coverage can be translated into indoor coverage through fixed wireless offers using mobile networks, with special customer premises equipment (as explained in section 1.2.1). Therefore, it is highly likely that almost all the customers who require a new connection can be served by the mobile network (from Eir or another operator), with a connection cost lower than €700.

Table 5 – Stated coverage of mobile operators (% of population)

	Eir	Vodafone	Three

[28] ✂

[29] Corresponding to the sum of discounted net revenues for 4 years (see Figure 1)

[30] This analysis considers new connections to the network only, existing uneconomic lines (those which are already connected) are addressed below in section 4.4.

[31] However, it is to be noted that based on current FIA USOs, FIA targets should be fulfilled for 94% of installed telephone lines

Outdoor Pop – 2G	✂	✂	✂
Indoor Pop – 2G	✂	✂	✂
Outdoor Pop – 3G	✂	✂	✂
Indoor Pop – 3G	✂	✂	✂

Source: operators

If the obligation to meet a reasonable request for connection is kept but the exiting RAT level is reduced, for example, to the average level of RAT in other countries (€1,900 - €5,000), there is a risk that several requests for connection at a fixed location would not be met (see further section 3.3).

3.2 Need for an obligation to meet all reasonable requests for connection in the presence of alternative infrastructures?

According to the US Directive, "Member States shall ensure that all reasonable requests for connection at a fixed location to a public communications network are met by at least one undertaking." Therefore, it is possible to relax obligations on the USP where the connection is provided to all consumers on competitive grounds. ComReg could set obligations depending on the presence of alternative infrastructure. Alternative connections can be provided either through fixed technologies, including NBP, or mobile.

Four different options are presented below with respect to the relevant AFL USOs to be imposed in the presence of alternative infrastructures.

The option 1 is the "*statu quo*" option for which the obligation is kept for the whole of Ireland. This is irrespective of the presence of alternative infrastructure. Its advantage is the simplicity and its consistency with the current approach. However, it may imply unnecessary infrastructure duplication where an alternative infrastructure is present in an area. It may result in an unnecessary additional net cost as compared to options for which the presence of alternative infrastructure is considered.

In the remaining three options, reasonable request for connection AFL USOs are partially relaxed in the presence of alternative infrastructure: if any alternative fixed infrastructure is present (option 2), or if any fixed or mobile infrastructure is present (option 3), going from the least to the most relaxed conditions for the USP. Option 4 introduces a number of exemptions for which obligations could be released on a case-by-case basis.

Table 6 – Options for the obligation to meet all reasonable requests for connection with respect to the presence of an alternative infrastructure network

#	Options	Pros	Cons
1	The obligation does not depend on the presence of alternative infrastructure networks, all connections are considered reasonable subject to RAT	• All the customers are treated equally • Consistent with the current approach	• Risk of inefficient infrastructure duplication and unnecessary cost where an alternative operator is present
2	No obligation in areas where alternative to USP fixed wired infrastructure is present (including NBP) and prices of such alternative services are considered affordable.	• No inefficient infrastructure duplication if an alternative fixed infrastructure is present • Lower costs to provide AFL USO	• Risk that price is not affordable or QoS insufficient • Prices can rise in future or operators can stop offering minimal package
3	No obligation in areas where alternative to USP fixed wired or mobile infrastructure is present and prices of such alternative services are considered affordable	• No inefficient infrastructure duplication if a suitable alternative fixed or mobile infrastructure is present • Has already been implemented in some countries that considered the presence of mobile coverage in their definition of reasonable request (e.g. Czech Republic, Greece)	• Risk that price is not affordable or QoS insufficient • Prices can rise in future or operators can stop offering minimal package – need to monitor • Mobile services are not equivalent to fixed services if no indoor coverage • Mobile services are not access at a fixed location and cannot have USOs imposed – EU Judgement.
4	No obligation in areas where alternative to USP infrastructure is present and prices are considered affordable in specific cases for which the market already provides the service (duty on the USP to prove the availability of an alternative AFL solution, i.e. affordable and with appropriate levels of QoS as described in section 1)	• No inefficient infrastructure duplication in NBP areas • Case-by-case assessment in non-NBP areas in order to avoid unnecessary expensive connections • Reasonable access request are met, at an affordable price and with the required QoS	• Potential administrative burden but the number of cases should be limited and the USP can make a judgement between not serving the customers (and supporting the administrative burden) and serving the customer (as imposed today). • Administrative burden on ComReg to intervene to solve any disagreement that would arise between the USP and the end-user on whether the alternative is acceptable.

Recommended option highlighted in grey
Source: TERA Consultants

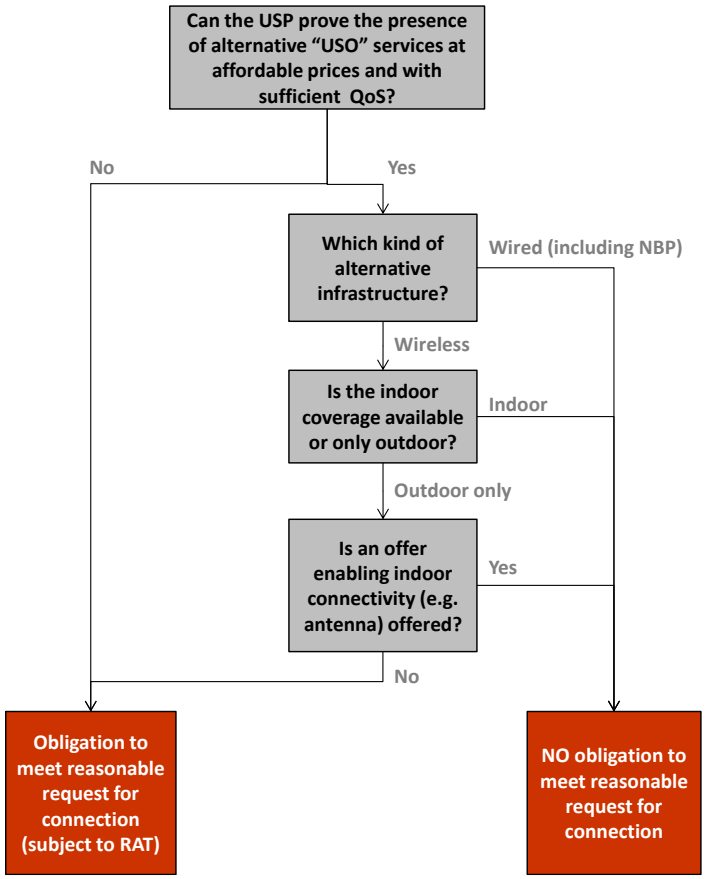
Even though the 'reasonable request' obligations are kept, exemptions can be envisaged in certain specific cases (option 4 in the table above).

The USP may in principle be exempted from the obligation to meet requests for connection in specific cases where the AFL service is met by a broadly comparable service already provided by the market:

- The USP has no obligation to meet the request for connection if it demonstrates that in the specific case in question another infrastructure is present and is capable of providing voice services and Internet access with sufficient level of QoS and at affordable prices as described in section 1. It could be a private fixed infrastructure or a fixed wireless access provided by 3G or 4G networks. In the case of the mobile solution, the USP has to demonstrate that the indoor coverage is satisfactory (the definition of a satisfactory indoor coverage is discussed in section 1.2.1).

The approached is summarized in the following figure:

Figure 3 – Where the connection obligation can be relaxed



** Internet access refers to narrowband (and not broadband) with the current FIA definition*

Source: TERA Consultants

The advantage of this approach is its flexibility and the assurance that end-users will be provided with basic AFL USO services at affordable prices and with sufficient levels of QoS. A case by case assessment is preferred as it is difficult to establish one rule that would apply in all situations of a given area. This also ensures the absence of inefficient infrastructure duplication. This can generate some administrative burden for the USP but the USP has the ability to make a judgement between not connecting the customer (because the request is not reasonable) and fulfilling the administrative requirements. . This exemption mechanism enables the USP to decide on the most efficient way to fulfil a reasonable access request but only where there is an alternative infrastructure enabling to provide AFL USOs services, that is to say without prejudice to the end-user.

While this approach is for new connection requests, it may occur that exceptional cases of repair (weather conditions or vandalism) can lead to highly significant costs. In certain limited circumstances, a repair of an existing connection(s) may require it to be looked at as a new connection request. In that scenario, this connection request could be assessed in terms of whether it is 'reasonable' based on the proposed criteria set out above in Figure 3 for new connections. These cases should be identified on a case-by-case basis (and subject to ComReg's prior agreement). In such cases, it is proposed

that the USP would ensure that documentary evidence of the repair details are made available to ComReg for consideration.

3.3 RAT calculation method

Once the case for which an obligation to meet a reasonable request for connection is identified, the next step is to define what is a reasonable request in monetary terms (reasonable access threshold (RAT)).

There are two broad approaches to setting a RAT. One approach is for ComReg to define the approach for calculating the RAT. Another approach is to leave the analysis and connection decision up to the USP since ComReg is not required to set a monetary value for RAT (as presented in the benchmark section of the Phase 1 TERA report, this is the approach followed in some countries). Different options for setting the RAT are presented in Table 7 below.

Option 1 involves keeping the current RAT level determined by ComReg i.e. €7,000, which is higher compared to other European countries. In practice in Ireland, there are almost no connections that cost more than €✂ (✂ per year on average for FY2012/13 and FY2013/14). Although this cost level is unlikely to be recovered by any reasonable future revenues generated from the customer; in view of the small number of connections currently at issue it may not be burdensome on the USP to meet such requests. The average connection cost is only ✂. With the existing RAT level of €7,000, only ✂% of customers (✂ customers per year) had a connection cost exceeding €7,000 in FY2012/13 and FY2013/14. As discussed in Figure 1, the sum of discounted revenues over the customer lifetime is likely to be within the €700-€2,000 range. With these assumptions, the corresponding potential net cost of having a €7,000 RAT for the USP is between €✂ and €✂[32] per year. It is to be noted that this estimate is a cap that is probably highly overstated - this does not take into account the exemption mechanism (when alternative infrastructures are available) presented above (see Figure 3). Considering the current mobile network indoor coverage, the cost for the USP could be significantly reduced as compared to this estimate.

Option 2 involves setting the RAT at the level of expected net revenues, which guarantees cost recovery (€700-€2,000 as discussed in section 3.1). This also would minimise possible distortion in the market (since this is a profit-maximising operator approach). Only reasonable requests have to be satisfied, and the level of cost is a criterion defining whether a request is reasonable. In such a scenario, a net cost of the RAT AFL USO component is equal to zero. The estimated number of customers for which connection request will be considered reasonable depends on the parameters used when calculating the expected revenue, as explained in section 3.1. It is to be noted

[32] If the sum of discounted revenues is €700 (resp. €2,000), the net cost is the difference between the sum of connection costs of lines with connection costs over €700 (resp. €2,000) and the €700 (resp. €2,000) revenues multiplied by the number of lines considered.

that the risk of customers' exclusion would be mitigated by the existence of significant 3G outdoor[33] mobile network coverage in Ireland.

Option 3 involves defining the RAT level from the European benchmark but this approach is not straightforward since the RAT level is not clearly defined in many countries. Where it is specified it is done so on the basis of each country's specific national circumstances.

Option 4 involves determining a reasonable proportion of connection requests to be met (for example 99% of connections) and then from the historical data to determine the corresponding level of cost threshold (for example, €✂ as 99% of connections requests have corresponding costs below €✂ based on historical data from years FY2012/13 and FY2013/14). However, the problem with such an approach is the difficulty in establishing the reasonable proportion of demands for connections and services; whether the request is reasonable should be determined from the cost and not from the proportion of customers to be served.

Option 5 involves calculating the RAT from the value that users attach to the service. However, there is currently no information available and while a survey could provide some information, it would reflect the valuation of a given individual without taking into account the external positive effect from one caller to another, essentially the broader benefit to society.

Option 6 involves not defining a precise threshold and leaving the USP to decide on every connection request. However, there is a risk that the USP will not satisfy all reasonable connections from customers (see section 2.1 and TERA phase 1 report); in addition, it does not give any visibility to the USP or other stakeholders who would prefer to understand the USO rules with more legal certainty as ComReg would have to settle any dispute that would arise.

[33] If no indoor coverage is available, with an antenna on the roof, indoor coverage enabling AFL services could be provided.

Table 7 – Pros and cons of the possible RAT calculation approaches

#	Option	Pros	Cons
1	Keep the €7,000 threshold	• Based on historic connection trends, almost all the consumers obtain access with no extra fee (except about ✂%)	• On the high range as compared to other European countries • In favour of non-USP operators that would not have to face these connection costs (however, USP could be compensated if unfair burden)
2	Set based on expected future net revenues (€700-2,000)	• Investments are covered so net cost is zero or close to zero • In line with the figures observed in the European benchmark • Less in favour of non-USP operators (however, USP could be compensated by them if unfair burden)	• Based on historic connection trends, up to ✂% of connections requests would not be met (but probably much less due to the presence of alternative infrastructure, mobile…) • Large detriment to consumers who have no alternative available to them and who cannot afford the higher connection fee.
3	Set based on benchmark	• Approach based on European common practices	• Difficult to implement because many countries do not give a threshold • Problem to define comparable countries since costs differ • Not tailored to the specific requirements of Ireland • Detriment to customers: based on historic connection trends circa ✂% of connections requests would not be met (but probably much less due to the presence of alternative infrastructure, mobile…)
4	Set based on an acceptable % of users (for example 99% of all users must be connected for free → ~€✂ from historical data)	• Depending on %, investments are likely to be recovered	• Detriment to customers: some users are excluded by definition and the service is not “universal” • Subjective/ Difficult to define which portion of customers to exclude

5	Calculate the RAT from the value each customer attaches to the service (based on surveys)	• RAT based on the real value for customers and therefore close to social optimum	• Any consumer survey may be of limited use if consumers are not able to assess the value they attach to the service. • Detriment to customers: some users are excluded by definition and the service is not "universal"
6	No RAT defined, it is up to the USP to show whether demand is reasonable	• Simplicity • In practice, historically there were very few cases where customers had to pay extra fees for connection	• Detriment to customers: risk that the USP will refuse more connections • No clear rules and therefore not enough visibility for the USP /other stakeholders and the end user

Recommended option highlighted in grey

Source: TERA Consultants

The first option – keep the €7,000 threshold unchanged – seems to be the most appropriate taking a balanced approach to a potential burden on a USP and the consumer right of AFL. This is particularly so given that account would be taken of the existence of alternative infrastructures which will meet the reasonable access request. In that scenario, if RAT is being considered in the next step then it has already been determined that no suitable alternatives exist to meet the 'reasonable request'. The option to keep the RAT unchanged guarantees that almost all the consumers who may be at risk obtain access with no extra fee and is consistent with the current practice in Ireland. The positive impacts of keeping the RAT at €7000 for end-users outweigh any potential net cost on the USP. Furthermore, the impact on the USP of any associated costs with the obligation to provide reasonable access should be mitigated or least burdensome by the implementation of the exemption mechanism proposed (when alternative infrastructures are available, see Figure 3). This option also provides visibility to stakeholders as it sets a clear rule to accept/deny connections requests.

3.4 Conclusion

In summary, we recommend keeping the obligation to meet each reasonable request for connection. However, ComReg may release the USP from this obligation through the use of an exemption mechanism (case-by-case basis with the USP having the burden of proof) outlined in Figure 3:

- **If it can show that the connection can be provided by an alternative infrastructure network at affordable prices, with the sufficient QoS and with satisfying indoor coverage, in that scenario the USP does not have to**

provide the connection, the "reasonable access" test is met by reference to an alternative infrastructure;

We also recommend keeping the RAT level unchanged over the whole national territory at €7,000.

The impact on end-users is limited because the obligation now allows (under specific conditions) that a connection request is not necessary to be met by the USP if alternative infrastructures delivering adequate USO services can be proposed by the USP: however, the criterion to consider a request as "reasonable" is unchanged in respect of the monetary amount (RAT).

Any net cost for the USP could be significantly reduced due to the exemption mechanism if implemented.

Table 8 - Impact of the recommendation on RAT USOs on stakeholders (as compared to the current USOs)

Stakeholder	Impact
USP	• Net cost estimated to €✂ per annum would be reduced due to the exemption mechanism (this could be less considering the current indoor coverage from mobile networks for example)
End user	• The impact is likely to remain limited as no additional customer would remain without connection thanks to the use of alternative infrastructure compliant with AFL services features.

Source: TERA Consultants

4 AFL prices must be affordable / Member states can impose geographically averaged prices

According to the Universal Service Directive, each Member State may impose all or some of the following AFL USOs if required:

- Require the USP to provide consumers with tariff options or packages which depart from those provided under normal commercial conditions;
- Set an AFL price cap;
- Impose that AFL prices are geographically averaged.

The USO retail price cap possibility has not been applied in Ireland for now. However, there currently exists a retail price cap which relates to consumer's standalone fixed voice access services i.e. line rental and connection fees (excluding voice calls). This price cap does not allow Eir to increase the retail line rental price more than the rate of inflation (i.e. CPI-0). This obligation has been imposed in the context of the market analysis process[34]. Any cessation of the RPC would be considered in the context of an assessment of significant market power (SMP). As a consequence, the possibility to cease the existing price cap obligation will not be studied in the context of the AFL USO scope review. The current retail price cap ensures that prices remain overall affordable (however this issue is further discussed in section 4.2).

ComReg has also imposed an obligation on the USP that AFL prices shall be geographically averaged.

4.1 What if GAP is ceased? (Phase 1 TERA report conclusions)

4.1.1 Constraints on the retail line rental price

The Phase 1 TERA report showed that Eir's ability to increase prices was in part constrained due to several factors:

- The existing retail price cap,
- ComReg recently entered into a consultation process,[35] proposing to impose cost oriented SB-WLR prices instead of retail-minus. This should give alternative operators more room to compete with Eir in respect of the voice service.

[34] http://www.comreg.ie/_fileupload/publications/ComReg1489.pdf

[35] Eir's Wholesale Access Services:

Further specification and amendment of price control obligations in Market 4 and Market 5 and further specification of price control obligation in Market 2 http://www.comreg.ie/publications/consultation_on_current_generation_wholesale_access_services.583.104879.p.html

- Outside market-driven fixed infrastructure-based competition areas, wireless technologies can generate constraints in respect of a proportion of retail consumers and hence on the line rental price. These constraints are likely to increase in time because of developments in relation to mobile coverage extension, QoS improvements, development of fixed wireless technologies, etc. In addition, in the long term, the NBP high-capacity broadband network will exert further competitive pressures.

The Phase 1 TERA report concluded that customers' price sensitivity and competition could constrain Eir's ability to increase its retail line rental price. However, outside market-driven infrastructure-based competition areas where take-up or availability of bundled offers is less, competitive constraints on the line rental from bundled offers are lower. In respect of potential other constraints on the AFL services, customers can in time move away from the existing copper network to the NBP network (though this is not likely to be fully available in the next 5 years and for which it is not yet known whether AFL will be available and prices affordable), to mobile and fixed wireless networks (which is not currently an effective substitute to the fixed voice service) and to OAOs reselling Eir's line rental product relying on SB-WLR.

4.1.2 What if the GAP USO is ceased?

If the GAP USO were to be ceased, considering the analysis conducted above, Eir would be likely to act differently in the different areas depending on the degree of price constraint. Thus, for example,

- In market-driven infrastructure-based competition areas, absent any GAP USO, Eir may be forced to maintain or decrease its line rental price.
- In "Eir only areas", the level of infrastructure-based competition is lower (fixed operators essentially make use of Eir's wholesale inputs (SM-WLR), although there is competition from the mobile network). However, Eir could in principle be constrained by some customers' price sensitivity. If the current retail-minus regime for SB-WLR prices is kept, Eir will have much greater incentives to maintain or increase its retail line rental price compared to a situation where SB-WLR becomes cost oriented as operators purchasing SB-WLR will have less room to build aggressive offers at retail level[36]. While on the one hand Eir would have greater pricing flexibility absent a GAP obligation, on the other it would be bound to meet the commitments of the retail price cap. More specifically, any increase in Eir's retail line rental price in Eir only areas would only be possible if at the same time a decrease in other areas is observed. This pricing flexibility

[36] Eir's Wholesale Access Services:

Further specification and amendment of price control obligations in Market 4 and Market 5 and further specification of price control obligation in Market 2 http://www.comreg.ie/publications/consultation_on_current_generation_wholesale_access_services.583.104879.p.html

(de-averaging of prices) may be to the detriment of a proportion of consumers. At least in areas where mobile coverage is not available, there is a risk standalone fixed voice customers would not be able to easily switch to any alternative operator (relying on SB-WLR) because of switching costs or because alternative operators would follow Eir's price strategy. In this scenario, consumers would have no choice but to have no AFL if Eir decides to locally increase prices and they are unwilling to pay the increased charges.

- In NBP areas, the situation is similar to the Eir only areas at least in the next 5 years.

For the above reason and those set out in more detail in the TERA phase 1 report, absent any GAP USO and, despite some existing constraints on the level of retail line rental price given the existing retail price cap, it cannot be ruled out that Eir may wish to increase prices in specific areas, such as areas with no wireless coverage to the detriment of consumers.

4.2 Options for USOs and impact assessment

There are two main questions to be considered with respect to affordability: whether the GAP obligation should be kept and whether or not social tariffs should be imposed.

4.2.1 The GAP obligation

Keeping the GAP obligations guarantees that customers in rural areas will not suffer from high prices compared to customers in urban areas. This may be important to assist in avoiding social exclusion and to bridge the digital divide. The problem with this approach is potential market distortion. Because of the GAP obligation, the USP may be unable to set competitive prices in areas where alternative operators are present. This could lead to some market distortions and potentially could give alternative operators the possibility to implement cream skimming strategies by entering only in highly profitable areas. The USP could be unable to act as a profit-maximising operator and set prices at competitive levels. However, since the GAP applies only to the connection and voice only services (in light of the proposed retention of the 28kbps data rate for the time being), the impact on the competition is very limited. In fact, today more advanced products especially bundles with broadband are mostly demanded by customers and are central to competition (see section 3.1.1 of TERA Consultants' phase 1 report[37]). For example, UPC does not sell standalone voice products, excluding broadband. In addition, if the SB-WLR product becomes cost-oriented with a national average price, the constraints related to the GAP USO will not be much stricter than those related to the new proposed SB-WLR regulation. The price constraint imposed by cost-oriented SB-WLR would probably outweigh the one imposed by the GAP as OAOs purchasing cost-oriented SB-WLR will probably be in a position to launch retail offers below the current GAP level.

[37] ComReg1589a.

Table 9 – Pros and cons of the GAP obligation

#	Option	Pros	Cons
1	Keep the GAP obligations	• Ensures equal treatment of all the customers	• Competition distortion: the USP may not be able to be competitive in urban areas (but only with respect to basic products i.e. standalone voice – for which there is limited competition)
2	Remove the GAP obligations	• This would allow USP flexibility to have lower prices in market-driven infrastructure-based competition areas for connections and standalone voice.	• Absent any GAP USO, a USP may discriminate between consumers and could increase prices for basic connections and standalone voice in non-competitive areas

Recommended option highlighted in grey

Source: TERA Consultants

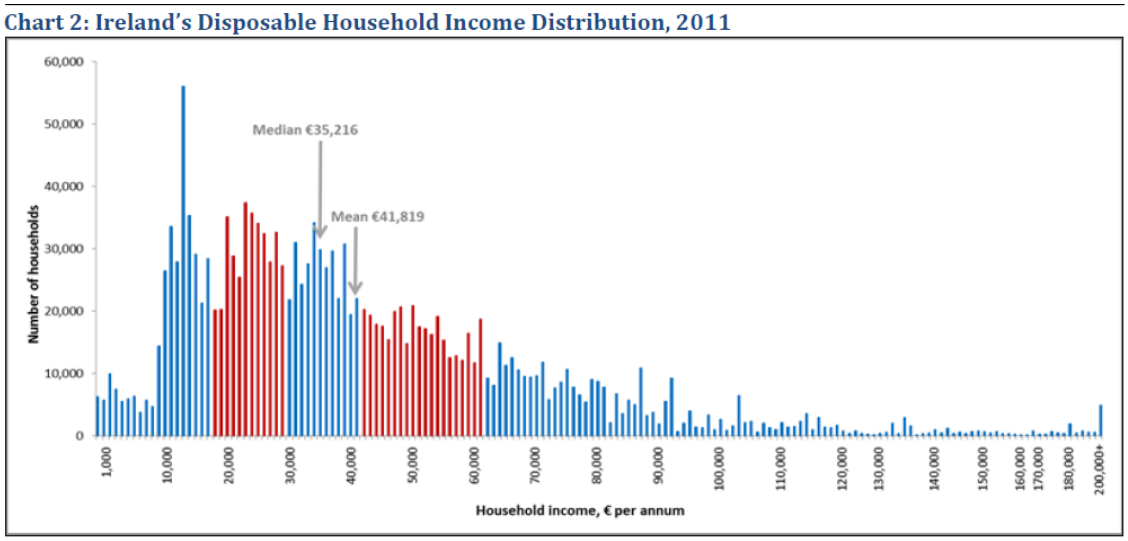
4.2.2 Introduction of social tariffs

It would also be possible to introduce social tariffs. The Phase 1 TERA report highlighted that several countries had been mandating social tariffs: Belgium, Czech Republic, France, Italy, Poland, Portugal, Romania, Spain, UK, and Austria. The Phase 1 TERA report also added: *"It is important to note that these criteria are the results of Government policies (not NRA USO decisions)".* As a consequence, it is not necessarily only up to ComReg to decide on the need for social tariffs or to implement them. Previously the Irish Government provided an allowance for certain vulnerable consumers. Eir offered a special discounted tariff for customers receiving this allowance. Since the removal of this allowance by the Government, Eir introduced 'Talktime Control'.

In its response to the August 2015 consultation, Eir said: "*It is clear that affordability should be viewed through the lens of whether vulnerable segments of society can afford the market price for fixed voice services. The TERA analysis is limited to looking at the market price. Neither TERA nor ComReg consider affordability from the perspective of vulnerable members of society".* It is indeed relevant to try to identify these vulnerable users. The latest available useful data is from 2012: in the annex A to the consultation on the review of the Retail Access to the Public Telephone Network at a Fixed Location for Residential and Non Residential Customers market, it appeared that 36% of

households had no fixed line[38]. Of these households however 87% said that it was because *"I use my mobile phone and don't need a fixed line phone"*[39]. For the 13% remaining (13%x 36% = 4.6% of households) which do not wish to use an alternative or have no alternative and would therefore need a fixed line phone, 60 to 80% explain that this is related to the price of the fixed line phone service. In summary, for around 3% of the Irish households, i.e. around 50,000 households, indicated that the fixed line prices would not be affordable. Even if the survey is more than 3 years old, it is likely that the results today would be similar since the survey was conducted several years after the economic downturn and prices have remained stable for the line rental. Another way to identify the existence of vulnerable users is to analyse the disposable income distribution in Ireland. The survey "Household income distribution in the Republic of Ireland" (NERI research inBrief, February 2014)[40] provides this distribution.

Figure 4 – Ireland's disposable household income distribution in 2011



Source: Household income distribution in the Republic of Ireland" (NERI research inBrief, February 2014)

In Spain, vulnerable users are those whose income is lower than around €10,000 per annum. In Italy, vulnerable users are those whose income is lower than around €7,000 per annum[41]. Considering the current actual line rental price (€25.78 VAT included), the annual expenditure for a household is around €300, i.e. 3-4% of a household with an annual income of €7,000-€10,000. On the basis of the disposable household income distribution provided above, this corresponds to a number of vulnerable households of around 50,000 – 75,000 households. This is consistent with the figure estimated above.

[38] See slide 50

[39] See slide 51

[40] http://www.nerinstitute.net/research/household-income-distribution-in-the-republic-of-ireland/

[41] For both countries, see Phase 1 TERA report

Assuming 50,000 vulnerable households and assuming the maximum discount they would have with social tariffs (i.e. free line rental), the direct cost of social tariffs would be around M€ 13 per annum[42]. However, considering that these vulnerable users would generate very small incremental costs (because the cost of the fixed access network is a sunk cost), the net cost of social tariffs would probably be much lower.

Social tariffs can be focused on special categories of end-users, especially those that cannot afford basic electronic communications services. These tariffs enable an increase in network effects and economies of scale. However, introducing social tariffs would require setting precise criteria to define which customers would be eligible to avail of these tariff plans which can be subjective. It would also be difficult for ComReg or service providers to assess the eligibility of consumers for such tariffs. It would imply a differentiated treatment of different customers and would introduce market distortion since the USP would be able to connect and retain more customers.

Another argument against mandating a social tariff(s) at this stage is that customers are already protected by the existence of the retail price cap and obligation of GAP. Also Eir on a voluntary basis provides a low user package (Vulnerable User Scheme (VUS)[43]) and has previously offered and still has customers availing of "Talktime Control"[44]. Similarly other networks including mobile already offer commercially plans for low usage customers. Considering the fact that the incremental cost of a given user on the network is very low, the provision of a low user package like the VUS or targeted package such as 'Talktime Control' is economically rational for an operator like Eir since it generates small revenues but greater than incremental costs. It is also noted that such tariffs are not provided by Eir on a wholesale basis, something which could be considered is mandating social tariffs on a wholesale basis as a USO.

It is to be noted that Eir and other undertakings must offer specific measures[45] for disabled end-users: TextRelay Service and rebate scheme[46], free directory enquiries for those unable to use the online or printed phonebook due to a sensory or physical disability or medical condition, accessible bills, accessible complaints handling etc. As a consequence, these categories of vulnerable users have improved affordable access to AFL services.

[42] €20.96 VAT excl. x 12 months x 50,000 customers = €13m

[43] http://www.eircom.ie/bveircom/pdf/Part2.3.3.pdf

[44] Eir Talktime Control is a package for low income users (available for sale from 1st February 2013 to 30th June 2015). From 1 January 2014 Talktime Control is only available to existing Eir customers who were in receipt of the Department of Social Protection's "Telephone Allowance" at 31st December 2013 via their Eircom phone bill. (http://www.eircom.ie/bveircom/pdf/Pt2.3.7.pdf)

[45] https://www.eir.ie/accessibility/

[4646] This service allows for the translation of text into voice and voice into text to facilitate a person with a hearing disability in making and receiving calls from a landline.

Table 10 – Pros and cons for social tariffs in the context of the Universal Service

#	Option	Pros	Cons
1	Not introduce social tariffs	• Easy to implement • Less costly for the USP • Less market distortion • The USP can still decide to provide specific packages since the incremental revenues are likely to be greater than incremental costs • Specific measures for disabled end-users assist in protecting these users	• Standard Prices may be too high for certain categories of users
2	Introduce social tariff for special categories of users	• Special categories of users which would otherwise not be able to afford to be connected are served • Increases network effects and economies of scale • If introduced at wholesale level benefits are created for more customers	• Need to set a criterion (but should be easy to define – low-income, unemployed, students, etc.) • Administratively difficult and inappropriate for service providers to test eligibility • Other customers have to pay more (directly or indirectly)

Recommended option highlighted in grey

Source: TERA Consultants

It is noted that mandating a social tariff(s), which is generally a policy choice, could perhaps be somewhat inconsistent with the recent Government policy choice to remove the telephone allowance (the telephone allowance was discontinued from the 1st of January 2014). In any case, there are at present other mechanisms that ensure that basic voice services are broadly affordable for consumers.

4.3 Conclusion

We recommend keeping the GAP obligation since it will only cause constraints on the USP only in competitive areas where standalone voice offers are not predominantly used and where competition mainly focuses on bundles. Hence, such an obligation is not burdensome. Moreover, if SB-WLR becomes cost-oriented as a result of the current access pricing consultation, the GAP obligation will not create significant additional constraints on the USP if Eir is designated.

The retail price cap, the GAP but also the VUS package provided by Eir are therefore the mechanisms proposed to make sure AFL prices are affordable.

5 AFL has to be provided with the QoS levels defined by the Member State

With respect to QoS USOs, ComReg has until now defined a number of targets to be met at the national level. Historically, under the Performance Improvement Programme (PIP) penalties have been defined in case Eir as the USP fails to meet these targets.

The AFL USO QoS under PIP3 were defined under 3 metrics:

- Connection time,
- LFI – 14.5 faults per 100 lines,
- Repair time.

5.1 What if QoS AFL USOs are ceased? (Phase 1 TERA report conclusions)

In the Phase 1 report[47] published in August 2015, TERA Consultants studied possible scenarios absent any AFL QoS USO. In respect of the scenarios considered, TERA's assumptions have been updated to take into account the information provided by Eir in response to the consultation i.e., information on the future evolution on the number of working lines and its investments as agreed in the PIP3 context. The new assumptions are detailed in annex B.

To assess Eir incentives to invest or not absent any AFL QoS USO, two scenarios are compared. In the "keep investing" scenario, the LFI would remain stable around 14.5% until 2022 (and hence would be aligned with the PIP3 LFI target). In the "stop investing" scenario, the LFI would reach ✂% in 2022. Therefore, in the latter scenario more faults would have to be repaired which would increase the level of operating expenditures. A decrease in QoS (greater fault occurrence) would affect in the same way both Eir and OAOs relying on Eir's copper network (with SB-WLR or with ULMP)[48].

The savings generated by the "stop investing scenario" can be significant as compared to the "keep investing scenario". As set out below, the savings difference between the two scenarios can be even greater in a context of ceased USOs when there are implications (such as penalties) for non-compliance with QoS targets:

- Total 2015-2022 estimated cost for the "keep investing" scenario: €✂ (without penalties);
- Total 2015-2022 estimated cost for the "stop investing" scenario: €✂ (without penalties).

[47] http://www.comreg.ie/_fileupload/publications/ComReg1589a.pdf

[48] The impact is therefore different from an increase in the retail line rental price if SB-WLR is cost oriented since in this latter case, Eir and OAOs are differently impacted by an increase in Eir's retail line rental.

- Not investing is therefore estimated to be less costly by €✂.
- With penalties in play, the situation in respect of incentives would be significantly different since the cost under the "keep investing" scenario would be €✂ while it would be €✂ in the "stop investing" scenario. In the presence of a penalties mechanism, Eir would have stronger incentives to invest, which shows that the calibration of the QoS targets is adequate.

The qualitative and quantitative analysis on investment performed corresponds to the "worst case but possible scenario". However, this remains true in the short and medium term: in the long run the costs of repairing faults may exceed "no investment savings".

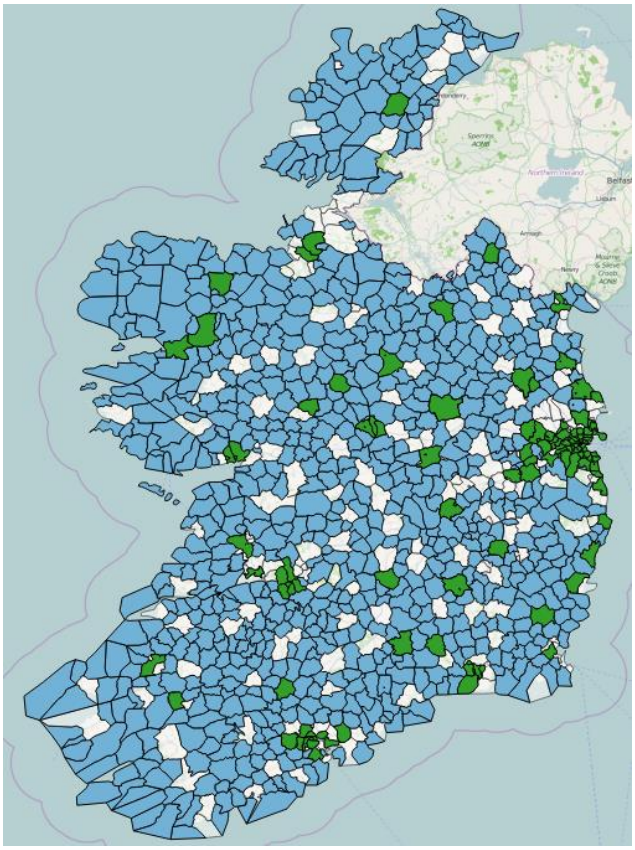
Acting as a profit maximising company and absent any AFL QoS USO, Eir would have financial incentives not to invest significantly in the short to medium term to maintain or improve the QoS. Additionally, Eir's incentives to maintain an adequate level of QoS are different across the country:

- In **market-driven infrastructure-based competition areas**, Eir is likely to need to maintain / improve its QoS to be able to effectively compete.
- In **NBP areas**, incentives to invest to maintain QoS are difficult to predict at this stage especially as the incentives may be different if Eir wins the NBP bid and if it does not and the winning contractor is an alternative operator;[49]
- In **"Eir only" areas**, Eir may have lower incentives to invest in QoS but competition from mobile and wireless technologies may mitigate this risk over time.

Based on information available from Eir, Figure 5 maps Eir's active PSTN lines onto the different geographical areas.

[49] In the Phase 1 TERA report, TERA said: *"If Eir wins the NBP bid, Eir may not want to improve QoS in these areas in order to facilitate migration from copper to the NGA infrastructure"* and "*If Eir loses, it could be forced to maintain or improve QoS in order to compete with NBP."* In its response to the August 2015 consultation, Eir indicated that the opposite could also be true. While we believe that the cases envisaged in the Phase 1 TERA report are possible, TERA prefers to refer here to the uncertainty about Eir's behaviour in these areas.

Figure 5 - 3 different competitive environments – location and number of Eir lines



Area	Legend	Active PSTN lines	%
Market driven infrastructure-based competition (Vodafone/ESB, UPC)		590k - 720k	45% - 55%
NBP		330k - 460k	25% - 35%
Eir Only		195k - 330k	15% - 25%
	TOTAL	**1,310k**	

Source: TERA Consultants' Phase 1 report

In the Phase 1 TERA report, TERA highlighted that the level of LFI is very different in the 3 areas:

- The LFI in market-driven infrastructure-based competition areas is ✂% (1 fault every ✂ years) in 2014;
- The LFI in Eir only areas is ✂% (1 fault every ✂ years) in 2014;
- The LFI in NBP areas is ✂% (1 fault every ✂ years) in 2014.

Such disparities in LFI can largely be explained by the fact that a significant amount of infrastructure is underground in market-driven infrastructure-based competition areas (and therefore cables are less prone to faults) while a significant share of infrastructure

is overhead in other areas. As indicated by Eir in its response to the August 2015 consultation, the impact of weather events is an important consideration also for the level of LFI. The LFI in areas with less competition did not increase or decrease faster than in market-driven infrastructure-based competition areas. As a consequence, the disparities in the LFI between areas can be somewhat explained by technical reasons.

In the last 5 years, the level of investment in market-driven infrastructure-based competition areas increased significantly while the level of investment in NBP areas decreased a lot and the level of investment in Eir only area slightly increased. This is reflected in investments per retail line fault by Eir which have been significantly higher in market-driven infrastructure-based competition areas over the last couple of years. Despite a higher level of fault occurrence in areas with limited competition, Eir tends to invest relatively more in areas with market-driven infrastructure-based competition (in terms of € per fault).

In contrast to the level of fault occurrence target, there are no technical reasons to believe that repair times should be higher in areas with market-driven infrastructure-based competition, NBP areas and "Eir only" areas. This is because the number of staff ensuring the maintenance of the access network can be adjusted and distributed according to the number of faults. Despite this flexibility, the share of faults repaired in less than 2 working days is significantly lower in NBP areas (✂% in 2013) as compared to market-driven fixed network competition areas (✂% in 2013).

The longer repair times seem to be explained by the way staff responsible for the maintenance of the access network is distributed across the country: the number of faults to be handled per staff member is significantly lower in market-driven infrastructure based competition areas compared to other areas.

In its response to the August 2015 consultation, Eir made four main comments with respect to repair time;

- The fact that travel time is longer outside market-driven fixed network competition areas,
- The fact that weather events can generate a relatively high volume of faults in a short period of time outside market-driven fixed network competition areas,
- The number of active lines per staff is lower in rural areas relative to urban,
- The changes in performances over time are consistent for the 3 areas.

While these points are all correct, the key point remains that if Eir wished to achieve similar level of QoS in each of the identified areas or more locally, it could allocate even more staff outside market-driven fixed network competition areas. Contrary to the fault occurrence rate, for which Eir cannot easily change the share of overhead versus underground infrastructure as well as cannot easily change line length and cannot influence weather events, Eir can allocate staff differently across areas with a view to improving repair times in greater affected areas.

To conclude, acting as a profit maximising company and absent any AFL QoS USO, Eir would have financial incentives not to invest significantly in the short to medium term to

improve the QoS at least in particular areas. Analysing QoS performances in each area demonstrates that:

- time to repair faults is longer in NBP and Eir only areas;
- the amount of staff per fault is lower in NBP and Eir only areas;
- the amount of investment per fault is lower in NBP and Eir only areas.

5.2 Options for USOs and impact assessment

In our Phase 1 report, we recommended that there is a continued need for AFL USOs as regards QoS.

Several approaches can be envisaged to design AFL QoS USOs and several questions need to be addressed

- Possibility to set geographically de-averaged targets:
  - How to define geographical areas? (see section 5.2.1)
  - What is the fair and reasonable level of target LFI considering MDF specificities? (see section 5.2.2)
  - Should national targets be maintained (see section 5.2.3)
- Dynamic evolution of QoS obligations (5.2.4): Possibility to remove or lighten USOs if alternative infrastructures are able to provide AFL (in accordance with the analysis conducted in section 1.2).
- Possibility to aggregate (or not) obligations related to faults occurrence and obligations related to faults repair time in a service availability % target (see section 5.2.5).
- The obligations regarding connection times (not discussed in phase 1 report) also need to be addressed (see section 5.2.6).

These issues identified are addressed successively below.

5.2.1 Possibility to introduce geographically de-averaged targets

As shown above, there is a risk for the USP to concentrate its QoS efforts in competitive areas. To avoid this risk, in addition to nationally averaged QoS objective, it may be relevant to set specific targets for some specific areas.

Even though the advantage of the current approach (national targets) is its simplicity, there is a risk that the USP would not target sufficiently some areas and especially the areas where competition intensity is lower. One may consider that this type of approach is useless because the different level of QoS over the country is fully explained by technical differences. However, considering the disparities in terms of competition intensity over the territory (as reflected by ComReg in past decisions which for example have led to the definition of “Large Exchange Areas”), considering that these disparities could widen in the future and considering the very poor level of QoS currently experienced in some specific areas, national QoS obligations alone may be insufficient

to ensure an appropriate quality of service in all areas. Hence, a more dis-aggregated approach to setting targets could be considered. There is areas where the level of competition could in principle allow for some relaxation of AFL QoS USOs. In contrast, there are other areas where a more targeted approach would either be unnecessary because the USP already targets appropriately the different areas or very relevant because the USP does not target sufficiently some areas.

Therefore, a form of de-averaging (introduction of sub-national targets) could be envisaged, especially in a country like Ireland with significant disparities between large towns (and especially Dublin) and very remote areas. At this stage it may be more appropriate to introduce objectives for specific areas i.e. sub-national targets. In a scenario of sub-national targets, it is necessary to define at which level of dis-aggregation or 'unit' QoS obligations and targets should be defined. In this respect, as discussed in further detail below, there are a number of dis-aggregation levels, notably, per line, per MDF or per MDF group.

The lowest possible disaggregation level is at the line level (i.e. differentiated targets for each line) but this approach seems impossible to manage. Alternatively, the obligation could be set at the MDF level (assuming reasonable QoS obligations can be defined for each MDF and that these can reflect local specificities in terms of weather, line length, etc.). However, there are more than 1,200 MDF in Ireland and therefore managing separate targets for each MDF seems to be difficult first for the USP but second for ComReg. Also, some MDFs are small and therefore single incidents for a given MDF can make the target very difficult to achieve while larger areas enable the USP to average the levels of fault occurrence and make targets easier to achieve. As a consequence, if groups of MDF with similar features (weather conditions, line length, etc.) are combined and QoS obligations are imposed at a group MDF level, the obligation becomes easier to manage and monitor and the level of QoS less dependent on localised incidents.

It is therefore recommended to set QoS targets more locally and at the disaggregation level of group MDFs (in addition to the existing national objectives).

The table below summarizes the pros and cons of the different proposed options.

Figure 6 – Pros and cons for several options with geographically differentiated QoS objectives

Option	Pros	Cons
No geographically differentiated QoS USO	• Easy implementation • In line with the current approach • Targets are set for all lines: results are less sensitive to single incidents than with per MDF USOs. • Flexibility for the USP • Lower cost solution	• LFIs are very high for some MDFs. (e.g. for the MDF "CMN", the average LFI over the last 5 years is ✂% whereas according to the formula –see next section-, this should be ✂%) • less incentives to address quality issues where insufficient competition

Define MDF groups (of several MDFs with similar profiles in terms of % overhead, local loop length, and weather metrics) and set targets for each MDF group <u>in addition to national targets</u>.	• Enables to better monitor the situation for customers with very high level of QoS (as a profit maximising operator could decide to focus its efforts on areas where competition is strong) • Each group aggregates a significant number of lines: so that results are less sensitive to single incidents than with per MDF USOs. • Easier to manage and monitor than QoS obligations set at a lower level • National targets can be maintained even if local targets are less ambitious than national ones.	• Implementation can be complex: how many groups, how to define the groups, should the group composition evolve over time… • Cost of enhancing QoS to the expected standards can be high depending on how groups and obligations are designed • Less targeted than the "per MDFs targets": within the targeted group of MDFs, several MDFs can remain with a high LFI as long as in average the LFI meets the target. This provides more flexibility (less than national obligations however).
Set target for each individual MDF <u>in addition to national targets</u>.	• Ensures that customers in a given MDF experience a fair and reasonable fault rate • National targets can be maintained even if local targets are less ambitious than national ones.	• Cost of enhancing the QoS to expected standards can be high • Difficult to monitor • No flexibility at all for the USP on where investment should be targeted • Results are highly sensitive due to low number of lines in some MDF (just one incident involving a cable cut in a given MDF area can lead to fail meeting the target)
Set a target for each active line. Penalties are given if the customer reports more than a fault every X years (X to be defined) <u>in addition to national targets</u>	• Ensures that each customer experiences a fair and reasonable fault rate • National targets can be maintained even if local targets are less ambitious than national ones.	• No flexibility at all for the USP on where investment should be targeted • Impossible to monitor • Results are highly sensitive (just one works incident involving a cable cut in a street area can lead to fail meeting the target) • Cost of enhancing the QoS to expected standards can be high

Recommended option highlighted in grey

If a decision to impose AFL QoS USO at a group MDFs level is made, it is necessary to define the appropriate groups of MDF. In this respect it should be noted that each group

must include a significant number of lines in order to avoid the drawbacks presented in the Figure 6 above in respect of the alternative to define at a more granular level of line or MDF.

Figure 7 sets out the potential criteria that could be considered to define the relevant groups of MDFs including: average length of lines, average % of overhead infrastructure, weather, and competitive environment. Both line length, % of overhead infrastructure, and weather are direct drivers of faults. These are external factors that are unlikely to impact investment incentives. However, as has been shown earlier, as investment incentives vary depending on the level of competition intensity, incentives to invest to improve QoS should be different in market-driven infrastructure-based competition areas, NBP areas and Eir only areas.

Figure 7 – Options for defining the groups of MDFs and pros and cons of these options

Option	Pros	Cons
Average length of lines	• Driver of faults • Criteria which is stable over time	• Unlikely to impact investment incentives
Average % of overhead	• Driver of faults • Criteria which is stable over time	• Unlikely to impact investment incentives
Weather	• Driver of faults (as raised by Eir in their comments on the August 2015 consultation) • Criteria which is relatively stable over time (albeit less than the 2 above)	• Unlikely to impact investment incentives
Competitive environment (Market competition, NBP, Eir only)	• Competitive pressure not homogenous across the 3 areas: factor likely to impact investment incentives • Future infrastructure deployments	• Not a driver of faults (as shown in Phase 1 report)

Recommended option highlighted in grey

Source: TERA Consultants

The most relevant approach to define groups of MDF is therefore to define groups of MDF based primarily on the competitive environment (3 groups as defined in the Phase 1 TERA report[50]).

In order to enable the achievement of targets for the USP (especially as today targets are set at the national level), it is preferable to keep a significant number of lines in each category. It is proposed to achieve this by not further splitting each area defined by the type of competition (market-driven infrastructure-based competition areas, NBP areas and Eir only areas). Essentially, we recommend having 3 groups of MDF based on the type of competition.

Table 11 below illustrates the characteristics of each of the 3 proposed MDF groups: average LFI, number of faults, number of lines. Information about fault drivers is also given: average length of lines[51] and % of overhead infrastructure[52]. As observed earlier and in the Phase 1 TERA report, the average 5 year LFI is significantly lower in the MDF group related to market-driven infrastructure-based competition areas, which can be explained by the characteristics of shorter lines and a lower % of overhead infrastructure. Table 11 also demonstrates that there are significant differences in terms of LFI within each of the three MDF groups as defined by the type of competition.

Table 11 – groups of MDF based on the type of competition

✂

Source: TERA Consultants

The definition of the 3 MDF groups detailed above sets out the level of QoS that customers are currently experiencing, especially those with high faults and to ensure that customers living in areas with less competition will not be negatively affected in the future.

It is to be noted that for 2,344 lines, it is not possible to identify the relevant group (2,300 lines for which no data is available the number of faults, the average length or the % of overhead infrastructure + 44 lines for which the competition area is unknown). Considering the low number of lines, it is proposed not to include these lines in the grouping.

In accordance with the conclusions of section 1.1, the definition of the 3 MDF groups is typically a point which could be reviewed before the end of the period (e.g. by the end of 2018).

[50] As in the phase 1 report, a MDF area is considered as a NBP area if at least 50% of the end-users are passed by the NBP network. A MDF area is considered as an infrastructure based market competition areas if at least 50% of the end-users are passed by the UPC network or if an alternative fibre network has been identified.

[51] Source: ComReg Access network bottom-up model

[52] Source: Eir (Q9 % of OH UG Cable.xlsx)

5.2.2 Assessing a fair and reasonable LFI target for the three groups of MDF

If it is decided to disaggregate targets and on that basis the level of disaggregation identified, i.e. the 3 MDF groups are defined, it is necessary to define what would be a fair and reasonable percentage line fault target for the three groups of MDF. One approach could be to monitor the evolution of the level of faults over the last years in order to assess what is achievable and what is not. Another approach is to determine a formula which enables the LFI to be predicted. The formula is based on the length of the local loop and the % of overhead deployment, the two main faults drivers. Weather conditions need also to be taken into account, as highlighted by Eir in its response to the August 2015 consultation. The parameters incorporated in the formula could be used to define a fair and reasonable LFI.

However, it could be disproportionate to impose a same level of QoS in each MDF group (or in each MDF if that was the level of disaggregation decided) based on national average figures. This is because the USP can only monitor some aspects of QoS (the intensity of investment, the allocation of staff) but cannot obviously change the line length, the share of overhead infrastructure or weather conditions. As a consequence, a more appropriate option could be to impose a same level of QoS in each MDF group where the target is set based on the LFI within the MDF group with the lower QoS level.

In the following paragraphs, TERA assesses at a high level the relationships which can be used to derive targets. In this respect, TERA proposes to predict an LFI per MDF group taking into account weather conditions, the line length and the percentage of overhead infrastructure.

A linear relationship can be identified between the number of faults per km and per year and the % of overhead infrastructure in the MDF (versus underground). To avoid managing a high number of MDF (each MDF representing a small number of lines), MDFs have been grouped together per deciles of similar percentage of overhead infrastructure (10 groups with the same number of lines and within each group, homogeneous share of overhead infrastructure).

The figure below shows the positive correlation between % of overhead and faults per 100 lines per km. The level of correlation is not high but it is reminded that the goal is not to conduct a detailed statistical analysis but rather to try to estimate a high level relationship which can be used to derive targets.

Figure 8 – Relationship between the level of LFI per km and the percentage of overhead infrastructure in each decile of MDF

Source: TERA Consultants

Another dimension to consider is the weather. Indeed weather can be seen as an additional fault driver and setting different formulas for different weather areas seems

relevant (i.e. could lead to different formulas in areas with different weather conditions). To consider this dimension, further data needs to be used.

In response to a data request sent by ComReg, Eir stated that it does not have at its disposal any weather impact data that could be provided at the MDF level. TERA Consultants therefore relied on publicly available information: Met.ie provides measures for 23 sites/stations within Ireland. The figures from the closest measure(s) station(s) are allocated to each county. Assumptions had to be made in absence of county by county data in order to build a pragmatic and as robust as possible approach. For each of the measure station, the following metrics on rainfalls and wind speed for the 2012-2015 period are available:

- Number of days with rainfall greater than 10mm (humidity affect copper cables);
- Number of days with a maximum 10-min. mean wind speed more or equal to 15 meters/second (wind affects overhead infrastructures).

The analysis is performed from FY0910 to FY1314 that is to say from July 2009 to June 2014 in order to consider full years (weather events are obviously very different from a season to another and therefore a full year needs to be considered).

As the county of each MDF is known, it is then possible to attribute a relevant weather metrics for each MDF.

It is then possible to introduce “areas with similar weather conditions” defined based on wind and rainfalls metrics and, for each of these areas, it is possible to derive a different relationship between LFI, line length and the percentage of overhead infrastructure (compared to the one derived above in Figure 8) and assess whether the relationship has improved.

The Irish territory can be divided into 3 areas depending on the wind and rain conditions, as shown in the figure below. Blue areas on the West coast are facing a lot of rain and wind. In Orange areas, the rain is less heavy but the wind is very strong. Finally, green areas have the most favourable conditions.

Figure 9 – Irish territory by weather conditions: 3 areas

Source: TERA Consultants analysis

It is now possible to recalculate the linear relationship between the share of overhead infrastructure within an exchange and the number of faults per 100 lines per km but for each of the newly defined areas. The resulting formulas are significantly different in the 3 weather areas: weather appears indeed to be a relevant fault driver. Also, the level of correlation has improved (except for the 3rd area, these areas correspond to areas – including Dublin - where competition intensity is the greatest and therefore where QoS targets are less of an issue). Therefore, it is relevant to define different formulas for target LFI in different areas.

Figure 10 – Relationship between LFI, line length, share of overhead infrastructure in each area of similar weather condition

✂

Source: TERA Consultants analysis

In the 3 identified MDF groups, the relationships determined above can be applied to each MDF based on its average local loop length, its percentage of overhead infrastructure, and its weather area. Table 12 below presents the results for the average values of the last 5 available years. For each of the 3 MDF groups, the table provides the average LFI of the area, the total number of lines, the total number of faults, and the predicted LFI of the area, based on the relationships estimated above. Even though the actual national LFI of ✂ (5 years average) is almost equal to the national predicted LFI of 13.78, the results are different when each area is considered in isolation. In "Market-driven infrastructure-based competition" areas and in "Eir only" areas, the current LFI is below the predicted LFI. However, the current LFI is above the predicted LFI for the NBP areas (✂ vs. ✂). Achieving the predicted LFI would therefore require additional investment in the NBP areas from the USP: ✂ thousands faults and M€✂ investment in high LFI areas of the NBP area[53], M€✂ if an automatic refund to the end-user mechanism is implemented in case of faults[54].

Table 12 – Comparison of the current LFI and the predicted LFI in each area and costs of removing the faults to achieve the predicted LFI – 5 years average

✂

Source: TERA Consultants analysis

It is to be noted that the results are very sensitive to the evolution of the LFI (this is why averages over a number of years has been considered). Table 13 below presents the same results for the same calculations but for the last available year (financial year 2013/14). Even though the LFI numbers are different, the qualitative results still hold: the actual LFI level in the "Eir Only" and "Market-driven infrastructure-based competition" areas is lower than the predicted LFI.

[53] The net cost of removing a fault is assessed as the cost of removing a fault (€2,935 per fault) minus the discounted cost of fixing the faults (€117.31) that have been removed over the next 3 years.

[54] The net cost of removing a fault is assessed as the cost of removing a fault (€2,935 per fault) minus the discounted cost of fixing the faults (€117.31) that have been removed over the next 3 years and minus the discounted cost the automatic refund to the end-user (€18.02 VAT excl.) per fault (for the sake of the example, it is assumed that each fault leads to a one-month refund).

Table 13 – comparing real LFI with LFI calculated from the formula – FY2013/14

✂

Source: TERA Consultants analysis

Imposing area-specific obligations is less relevant in "Eir Only" and "Market-driven infrastructure-based competition" areas because the actual LFI is already lower than the predicted LFI. Table 15 below considers the possibility of introducing areas-specific targets and shows that:

- In market-driven infrastructure-based competition areas it is not necessary to impose targets since the LFI level is already sufficiently low, significantly below the national average and the predicted LFI. In addition, those customers who would potentially be dissatisfied with the level of QoS have the options move to another service provider.
- In NBP areas, LFIs are very high and no alternative infrastructure is available for now. An area-specific obligation would then be relevant to make sure efforts on QoS are more targeted to these areas. Nevertheless, the NBP network will become available in these areas, and in that context it could be considered unreasonable to require a M€✂ investment from the USP in this specific area. However, this estimated cost could be lowered through introducing a glide path between old (national only target) and new (national + sub-national targets) situations, and/or through cancelling the obligation where NBP-based services are already available at affordable prices. This is discussed in the next section.
- In Eir only areas, even though the LFI is lower than in NBP areas, there is no alternative infrastructure available to customers. It can therefore be helpful to introduce area-specific obligations in this area. However, the current LFI is below the predicted LFI so the obligation would not necessarily lead to additional investment.
- NB: the levels of investments quoted above are on the high side since Eir can also retarget some investments to these areas and therefore the incremental level of investment can be close to zero in theory (for example, if Eir invest M€✂ in some areas, it can invest less in areas where there are less ambitious geographically targeted obligations so that the overall investment remains the same as before).

These levels of investment are to be added to those already planned as part of the PIP3 agreement:

Table 14 – Annual Indicative Investment Levels (PIP3 agreement)

01 July 2014 - 30 June 2015	01 July 2015 - 30 June 2016
CAPEX (Access Network Remediation) €32 million	CAPEX (Access Network Remediation) €26 million

Source: ComReg 14/129 (http://www.comreg.ie/_fileupload/publications/ComReg14129.pdf)

Table 15 sets out our broad recommendations in respect of the approaches to setting QoS in respect of each of the three MDF groups/areas defined:

Table 15 – Proposed AFL QoS obligations for the 3 competition areas

Area	Average LFI last 5Y	Predicted LFI	Cost of setting an area target	Features of the area	Recommendations
Market-driven infrastructure-based competition areas	✂	✂	/	• LFIs are reasonably low • Competitive infrastructures are available for unsatisfied customers • Current LFI is below the predicted LFI	• Areas specific obligations are not needed • The cost of any local obligation would be zero as current LFI is below predicted LFI
NBP areas	✂	✂	M€✂	• LFIs are very high (a fault every 4 years on average) • No alternative infrastructures are available for now • NBP will be available in the years to come so it may not be relevant to require the USP to target investments in these areas (see dynamic obligations)	• Area-specific obligations are needed • Cost can be lowered thanks to a glide path (see next section) • Cost can be lowered by excluding areas where the NBP network is already deployed if affordable (see next section)
Eir only areas	✂	✂	/	• LFIs are below the national PIP3 target (14.5) • No competitive infrastructures are available for now • Availability of alternative infrastructure in the future is uncertain • Relevant to focus investment in this area	• Area-specific obligations may be useful • The cost of any local obligation would be zero as current LFI is below predicted LFI

Source: TERA Consultants analysis

Setting differentiated targets in the different competition areas, although relevant from a technical perspective (different % of overhead, different local loop length…), may send wrong signals to the end-users within areas with the less

restrictive QoS sub-national targets and would inappropriately differentiate customers in different geographic areas. As a consequence, we recommend setting the same local targets to be fulfilled in each of the 3 competition areas. In order to be achievable in the areas with the highest fault rate (the NBP area), this local target has to be calibrated based on the NBP areas figure.

Even though the NBP area is the more specifically targeted area and to avoid discrimination between the 3 areas, we recommend setting the same target (✂) in each of the 3 areas (based on NBP areas figures).

Implementation of these local targets is further detailed in section 5.2.5.

For the avoidance of doubt, these predicted local targets (per MDF group) are far above the current LFI in "Market-driven infrastructure-based competition" areas and in "Eir only" areas. As a consequence, these may not require additional effort in terms of investment on the USP in these areas to meet the targets.

Specifying local targets being a new mechanism, there is also a need to specify whether this should be implemented immediately or through a glide path approach, and whether the future infrastructure developments will impact these obligations.

Figure 11 – Pros and cons of QoS or glide path

	Pros	Cons
Glide path	• Smooth implementation even when obligations are significantly different • Decreases regulatory uncertainty	• Delays the benefits from the new obligations
No glide path	• The benefits from new obligations are observed from the start	• Gives limited time to the USP to adapt to new USOS

Recommended option highlighted in grey

Source: TERA Consultants

This opportunity will be discussed in the conclusions as the need for a glide path highly depends whether the target USOs are significantly different from existing USOs or not.

5.2.3 Should Local targets replace or be complementary to National targets?

These local objectives set through sub-national geographical targets can be set either in addition or in replacement of national objectives.

Pros and cons of the two options are summarized in the Table 16 hereafter:

Table 16 – Pros and cons for the combination of national and local obligations as regards QoS

Option	Pros	Cons
National QoS USOs are removed and only local QoS targets (following the approach of one of the three precedent options) are imposed	• Ensures that customers in a given area experience a fair and reasonable fault rate	• Significantly different from the current approach • Obligation to set different targets for the different areas (in order to maintain the national level of QoS in aggregate)
National QoS USOs (14.5% LFI) are continued and local QoS targets (following the approach presented in the precedent sections) are imposed in addition	• Possible to set the same local target for the different areas (ad the additional national target can ensure to maintain the national level of QoS in aggregate) • Ensures that customers in an area experience a fair and reasonable fault rate • Closer to current approach as national targets are maintained.	• More constraints on the USP

Recommended option highlighted in grey

Setting a unique target for all areas which would need to be met in each area is the approach we recommend for local obligations (see 5.2.2). As this is based on the figures in areas with poorest LFI, it appears more suitable to also keep in addition to the overall national objectives in order to maintain overall the current level of QoS.

5.2.4 Role of alternative infrastructures

Is there still a need for specific QoS obligations in areas where there are competing alternative infrastructure providing AFL services at affordable prices? This question has already been addressed above for market-driven infrastructure-based competition areas (see Table 15). However, the question holds for NBP areas.

It could be relevant to cancel QoS obligations where the NBP network is already available. Indeed, it could be expensive to achieve the targets specified above and could be useless if the NBP network is available since customers could quickly migrate. The coverage and QoS will be more strictly controlled compared to a network fully deployed and owned by private operators. The table below considers this possibility. Option 1 corresponds to the status quo, option 2 proposes to cancel the obligation in every area where the NBP is present and option 3 proposes to cancel the obligation only under condition it has been proved that the prices are affordable. The main drawback of option 2 is that even in an area covered by the NBP and even with a control of wholesale and retail prices, the retail price may be above affordable prices (because the NBP aims at

primarily providing services which have enhanced capabilities compared to the basic universal services). Therefore option 3 is more appropriate as it considers the criteria of affordability. This is consistent with the findings of section 1.2.4. Even though option 3 is more difficult to implement than the current obligation, option 3 reduces market distortion and enables to avoid unnecessary investments.

Where the NBP network is available and offers basic universal services at affordable prices in a given area, no AFL QoS USO obligations should be imposed. The corresponding MDFs should be excluded from the QoS obligations.

Figure 12 – Options for AFL QoS obligations in NBP areas and pros and cons

#	Option	Pros	Cons
1	If the NBP is present in an area, the AFL QoS obligations remain	• Guaranteed quality for consumer • Easy to implement	• Market distortion • Risk of inefficient infrastructure duplication or costly maintenance of two parallel infrastructures
2	If the NBP is present in an area, it is considered that the services will automatically be provided at an affordable price and with sufficient QoS => no need for QoS obligations	• No market distortion • No risk of inefficient infrastructure duplication • No unnecessary maintenance of parallel infrastructures	• Basic service prices may be above affordable • Non-USP operators may offer only costly packages and no minimal packages • Prices may rise as a result of cancelling USO • More difficult to implement and monitor than status quo
3	If the NBP is present in an area, US QoS obligations can be removed only if QoS is sufficient and prices are affordable for basic services	• No market distortion where USO is cancelled • No unnecessary maintenance of parallel infrastructures where USO is cancelled	• Prices can rise in the future • Operators can stop offering minimal subscriptions in the future • More difficult to implement and monitor than *statu quo*

Recommended option highlighted in grey

Source: TERA Consultants

NB: it could be possible to remove QoS obligations some months before the NBP is available. However, it is not clear whether there will be sufficient visibility about when the NBP will be made available in a given area. Therefore, this possibility is not further considered.

5.2.5 Possibility to aggregate obligations related to faults occurrence and obligations related to faults repair time in a single service availability % target

Instead of the current LFI and repair time targets which are set separately on a national basis, it may be appropriate to introduce a single service availability target, that is, a combination of both LFI and repair time targets, though excluding the separate connection times target (section 5.2.5).

Indeed when a fault occurs, the customer is affected by the fact that services remain unavailable. The duration of the outage (unavailability) is the main issue for the customer. The product of the LFI and the fault repair time is a measure which is equivalent to the duration of unavailability. If there are more faults but less time is required to repair a fault, the duration of unavailability may be equivalent and therefore the inconvenience for the customer may be equivalent.

It would likely give more flexibility to the USP and enable it to make efficient decisions either by investing in reducing the number of faults or by making sure the time of repair is short with overall similar levels of service availability for the end user.

Figure 13 – Form of the QoS targets

Options	Pros	Cons
Have separate targets for faults occurrence and repair time	• Ensure that no excessive faults occurrence or repair times are experienced	• Gives limited flexibility to the USP
Have a single % of service availability target	• Consistent with mobile QoS measures • Consistent with QoS perception • Gives more flexibility to the USP that can choose between investing to reduce faults occurrence or improve repair time	• Can potentially lead to extreme situation with very regular faults but short repair time or the opposite → customer experience may be poorer

Recommended option highlighted in grey

Source: TERA Consultants

As regards the implementation of such an approach, the targets set separately for LFI and repair times and at national level as follows (according to PIP3[55]):

- The LFI target is 14.5%.
- Target to repair faults are: 82% within 2 days, 95% within 4 days, 96% within 5 days and 99% within 10 days (1.6 days on average[56]).

[55] See ComReg 1546 for example

[56] Assessed using the average of each range: 82% within 2 days (1 day in average), 13% between 2 and 4 days (3 days in average), 1% between 4 and 5 days (4.5 days in average), 3% between 5 and 10 days (7.5

In terms of the proposed future approach and setting a service availability target level, this formula would lead to the following estimated target at national level:

$$\textbf{\textit{Service Availability}} = 1 - \frac{14.5\% \times 1.6}{365} = 99.94\%$$

For the avoidance of doubt, our recommendation on a move to "service availability" targets applies both for the national target and for the local targets within the 3 MDF groups/competition areas. Based on the predicted LFI and the repair times observed in the "NBP area", the service availability is ✂%.

It is to be noted that service availability figures vary significantly from a year to another. However, the only case for which the real figure is below the local target is FY1314 for NBP areas (availability: ✂% for a ✂% target). The sensitivity of the service availability calculations over the years are summarized in the table hereafter.

Figure 14 – % of availability calculations

✂

Source: TERA Consultants

In conclusion, our recommendations for QoS with respect to faults and repair is as follows:

- **LFI (14.5% nationally) and repair times (% of faults repaired within 2 days, 4 days…) existing targets are removed.**
- **These are replaced by service availability targets:**
  - **Service should be available 99.94% of the time at national level. This obligation is not subject to a glide path as it is the direct translation of the current "LFI" and "Time repair" obligations into a unique "service availability" obligation to provide more flexibility to the USP (without changing the QoS standards).**
  - **Service should be available ✂% of the time in each of the 3 competition areas (Market driven infrastructure based competition, NBP, Eir only). This obligation is not subject to a glide path as the target as not been met only once (✂% in FY1314, see Figure 14) within the last 5 years.**
- **If the NBP is present in an area, US QoS obligations can be removed only if QoS is sufficient and prices are affordable for basic services.**

days in average), 1% above 10 days (10 days considered): 82%x1 + 13%x3 + 1%x4.5% + 3%x7.5 + 1%x10 = 1.6 days.

5.2.6 Obligations regarding connections times

The AFL QoS USO obligations set in the PIP3 document with respect to connection times were not discussed in the Phase 1 TERA report. Today, corresponding targets are set at a national level but as with our recommendation for the LFI and repair time, it may be appropriate to set sub-national targets in order to target specific areas.

Table 17 – Pros and cons of options related to connection time targets

#	Option	Pros	Cons
1	Keep national targets only	• More flexible for the USP	• The USP may wish to target some areas (those where competition is the greatest)
2	Set and monitor the "national target" at the level of each of the 3 areas (market-driven infrastructure-based competition areas, NBP areas, Eir only areas)	• Ensures the USP does not target some areas more than others	• May imply staffing adjustments and reallocation of staff to some areas

Source: TERA Consultants

Three groups of metrics are monitored by ComReg on a quarterly basis:

- Connections 'By Date of Request' for in-situ connections (see Figure 15);
- Connections 'By Date of Request' for non in-situ connections (see Figure 16);
- Connections 'By Agreed date' for all connections (see Figure 17).

Figure 15 – Q4 2014 Connections 'By Date of Request' (in-situ connections)

USO	PIP3 target	Q4'14 score	Market-driven infrastructure-based competition areas	NBP areas	Eir only areas
≤ 1 day	**80.0%**	**70.3%**	✂	✂	✂
≤ 14 days	**99.5%**	**98.8%**	✂	✂	✂
≤ 62 days	**99.8%**	**100.0%**	✂	✂	✂

Source: Eir, ComReg 1546, TERA Consultants analysis

Figure 16 – Q4 2014 Connections 'By Date of Request' (non in-situ connections)

USO	PIP3 target	Q4'14 score
≤ 2 weeks of request	80%	76.7%
≤ 4 weeks of request	85%	91.7%
≤ 8 weeks of request	90%	96.8%
≤ 13 weeks of request	95%	98.9%
≤ 26 weeks of request	99.8%	100.0%

Source: ComReg 1546

Figure 17 – Q4 2014 Connections 'By Agreed date' (all connections)

USO	PIP3 target	Q4'14 score	Market-driven infrastructure-based competition areas	NBP areas	Eir only areas
Within agreed date	94.2%	92.5%	✂	✂	✂

Source: Eir, ComReg 1546, TERA Consultants analysis

When possible; the national figures for these have been disaggregated at the level of the different competition areas (Market-driven infrastructure-based competition areas, NBP areas and Eir only areas) for the most recent quarter for which detailed data was available to TERA Consultants (Q4 2014).

As regards Connections 'By Date of Request' (in-situ connections) metrics, it has not been identified that Eir provides better QoS to customers located in areas where competition is greater. It is even in this area that the percentage of in-situ connections completed within a day is the lowest.

The collected data does not enable to conduct area-specific analysis as regards the Connections 'By Date of Request' (non in-situ connections) metric.

For the third metric (Connections 'By Agreed date' for all connections), it can be observed that QoS figures are significantly better in market-driven infrastructure-based competition areas as compared to NBP or Eir only areas.

As a consequence, the risk that the USP tries to favour areas where competition is more intense cannot be ruled out. **We therefore recommend keeping the national target but to impose it at the level of each competition area (market-driven infrastructure-based competition areas, NBP areas, Eir only areas).**

It is understood that such a change only implies limited adjustments on technicians staffing in the different areas. As a consequence, no glide path would be required on that matter.

5.3 Conclusion

In addition to the national average existing targets, setting geographically targeted QoS obligations would better protect customers in areas where QoS is currently poor and where there is a low level of competition.

Geographically targeted areas are relevant for service availability and the connection time.

Service availability targets should be set at the level of the 3 competition areas to avoid discrimination. However, these will be mainly challenging in NBP areas.

Cost of setting de-averaged QoS USOs can be significant but can be mitigated significantly by:

- **Lightening obligations when the NBP network becomes available in a given area (to the extent NBP prices and QoS are sufficient). To better tackle market developments, QoS USOs could be reviewed at an interim stage of the 5-year designation period;**
- **Allowing the service availability to decrease in non-targeted areas provided that the national target (99.94%) is met;**
- **Giving OPEX/ CAPEX flexibility with a unique % of availability obligation;**
- **Mobile networks providing AFL may be used instead of fixed networks in some cases (exemption described in section 3) therefore this may remove lines which have high levels of QoS.**

As regards the financial penalties[57], TERA considers that their current level seems to be appropriate to ensure incentives in respect of investment and meeting QoS targets (see section 5.1).

However, it could be envisaged to have these penalties given back to the customers having experienced bad network quality.

[57] As set in ComReg 14/129 (http://www.comreg.ie/_fileupload/publications/ComReg14129.pdf)

6 Terms and conditions must be established in such a way that the subscriber is not obliged to pay for unnecessary facilities or services. Expenditure control shall be ensured and unwarranted disconnection of service avoided

As provided for by Regulation 9 of the Regulations, the USP have several obligations with respect to control of expenditures, connection fees and disconnection:

> *"- Provide selective **call barring** facilities for outgoing calls to national, mobile, international and premium rate numbers. The call barring facility in respect of premium rate numbers shall be provided free of charge to users.*
>
> *- Maintain and publish its scheme to allow for the **phased payment** of connection fees.*
>
> *- Maintain and publish its **disconnection policy** in connection with non-payment of bills."* (Emphasis added).

6.1 What if expenditure control AFL USOs are ceased? (Phase 1 TERA report)

Call barring service is an efficient tool to help the most vulnerable consumers to control their expenditures. This option is used by several thousand Eir end-users (see Table 18).

Table 18 – Eir lines with customer requested barring services

December 2013	
Service	**Number of Consumers**
Premium Rate Service Barred	✂
Incoming Service Barred	✂
Outgoing Service Barred	✂
Local Calls Only	✂
Premium Rate & International Calls Barred	✂
Mobile And Premium Rates Services Call Barring	✂

Source: Eir, USO 13D request annual response - 2013

With respect to call barring, a number of consultations were issued by ComReg in 2015r[58] on whether call barring should be mandatory for all operators in Ireland and not only for USP. Call barring is therefore not under consideration in this report.

Phased payments for connection fee have not been used over the five years as connection charges are set at €0 under the Residential PSTN Connection Promotion[59]. However, it is not clear whether Eir will maintain the promotion in future; if not, phased payment service will be useful for customers. It is particularly important for most vulnerable categories of customers. Note Eir's published standard connection charge is €121.93 including VAT or €25.40 for an in-situ connection.

Avoiding unwarranted disconnection is an important feature to prevent social exclusion considering the importance of AFL. Between January and December 2014, ✂ customers have been disconnected; the corresponding debt was €✂ per customer on the average (see Table 19). In the absence of USOs, the number of disconnections and temporary cessations can raise: customers can be disconnected earlier and for a lower amount of debt.

Table 19 – Number of customers who have been temporarily out of service or disconnected under Eir's disconnection policy

January to December 2014	
TIS Collections Activity Summary	**Consumer**
Disconnections (TOS)	✂
Average Debt Value	€✂

January to December 2014	
TIS Collections Activity Summary	**Consumer**
Cessations	✂
Average Debt Value	€✂

Source: Eir, Collections activity Q1k

For the disconnection policy but also for call barring (if call barring is not imposed by ComReg as a result of the separate consultation process), it cannot be ruled out that they would not be maintained by Eir in the absence of AFL USO. These services generate some cost for Eir and thus can prevent Eir from earning additional revenues from high rate calls. In addition, the absence of these services is unlikely to represent a

[58] http://www.comreg.ie/_fileupload/publications/ComReg1531.pdf and http://www.comreg.ie/_fileupload/publications/ComReg15125.pdf

[59] ComReg S13D USO Submission 09Jun15

significant reason for end-users to switch to another supplier,[60] notwithstanding the importance of these services to those that need them.

6.2 Options for USOs and impact assessment

6.2.1 Continued existing obligations

Each of the two existing USP obligations –phased payments, and disconnection policy – can be maintained, amended or withdrawn. The table below summarizes the comparison between these two options. On the one hand, these services are very important to customers, and in particular to the vulnerable categories. On the other hand, because of these services, there is a risk of market distortion in respect of the USP's profits which are lower than it would have been in the absence of obligations. However, this risk is mitigated as any net cost of implementing these obligations is unlikely to be significant:

- **Phased payment**: not used for now.
- **Disconnection policy**: No specific cost.

Table 20 – Maintaining existing obligations: selective call baring services, phased payments, and disconnection policy

#	Option	Pros	Cons
1	Maintain existing obligations	No social exclusion	Risk of market distortion
2	Not maintain existing obligation	No market distortion	Risk to exclude the most vulnerable categories of customers from using basic phone services

Recommended option highlighted in grey

Source: TERA Consultants

Therefore, the existing obligations should be maintained given their importance for customers and low implementation costs for the USP.

6.2.2 Additional obligations

Several European countries have implemented mechanisms for subscribers' alert in case of abnormal consumption recommended by the EC (article (10) of USD 2002/22 Directive and subsequent amendment 2009/136/EC, annex I) by requiring the USP to provide the subscriber with free mechanisms for expenses checking. These mechanisms consist of user's account control and free alert in case of excessive or abnormal spending

[60] See ComReg 12/117a

(the threshold is set by the user when contracting the service). Countries implementing free alert/account control mechanisms include Czech Republic, Slovenia, Spain, Sweden and Portugal (introduced in 2011).

It is relevant to consider whether this rule should also be introduced in Ireland or not. The table below compares two options: not introducing the alert obligation and introducing it. In the absence of such an obligation, operators have no incentives to alert customers since abnormal consumption generate more revenues for operators; however, it happens at the expense of customers. If this obligation is introduced only on the USP, there is a risk of market distortion; in addition, the USP will have to install a special system to determine the limits of abnormal consumption and to carry out the control. However, related costs would probably remain limited. Once installed, the maintenance of the system is not costly since all the operations should be done electronically.

We recommend implementing this obligation. However, in order to avoid any potential market distortion and to help all the customers avoid abnormal consumption; ComReg could also consider introducing the obligation of abnormal consumption alert on all the operators by way of a change to the General Authorisation[61] as it has been recently done as regards billing mediums[62], and not as a part of the AFL USO.

Table 21 – Introducing subscribers' alert in case of abnormal consumption

#	Option	Pros	Cons
1	Not introduce subscribers' alert in case of abnormal consumption	No implementation and control costs	Customers have difficulties controlling for abnormal consumption
2	Introduce subscribers' alert in case of abnormal consumption	Advantage for USP's consumers who can more easily control for abnormal consumption	Risk of market distortion

Recommended option highlighted in grey

Source: TERA Consultants

6.3 Conclusion

We recommend maintaining the existing obligations on selective call baring services, phased payments, and disconnection policy since they protect the most

[61] http://www.comreg.ie/_fileupload/publications/ComReg0381R4.pdf

[62] http://www.comreg.ie/_fileupload/publications/ComReg1352.pdf (see section 18.7 of the GA)

vulnerable categories of customers and prevent social exclusion thanks to a better control of expenditures, the possibilities for customers to pay connection fees and pay back their debt later.

We also recommend introducing the subscribers' alert system in case of abnormal consumption, which can be applied not only to the USP but also to other operators.

7 Conclusions

The previous sections have analysed each element associated with the continued need for AFL USO, possible approaches to modify the current nature of specific obligations (sometimes by lightening the obligations, sometimes by increasing the requirements), have assessed the impact of different options on the stakeholders, and have concluded with recommendations for each of the AFL USO elements.

This section summarizes the main conclusions on each specific component of the AFL USO obligation.

In reviewing the different components of the AFL USOs (excluding FIA (re) definition), TERA Consultants has taken into consideration the existence of alternative infrastructures and technologies including mobile networks and VoIP, the future deployment of the NBP but also the costs of the components and the poor level of QoS in some areas.

With respect to the obligation to meet all reasonable requests for connection, the obligation should be kept in all areas. ComReg may relax the obligation but only on a case-by-case basis:

- If the USP can show that the connection can be provided by an alternative infrastructure network at affordable prices and with the sufficient QoS, the USP does not have to provide it (Figure 3);
- If the customer does not require Internet access, the USP can provide an FCS connection.

The RAT, which is today €7,000, should remain unchanged. It is considered that the benefit of a €7,000 RAT for the end-user outweighs the net cost for the USP, especially when the exemption mechanism presented above reduces the cost for the USP to provide connections. Where the RAT of €7000 applies it would have been established that there are no alternative supply sources for the connection at a fixed location.

The GAP obligation should be kept: it relates only to the voice service and not to bundles including broadband. Thus, it is not very burdensome for the USP which can compete with bundle offers in all areas, whatever the level of competition. Moreover, if SB-WLR becomes cost-oriented as a result of the current access pricing consultation, The GAP obligation will not create additional constraints on the USP if Eir is designated.

Existing obligations related to the control of expenditure should be kept in the current form, including phased payments, and no unwarranted disconnections. They are needed by the special categories of customers with low income. Their implementation is also not very expensive to the USP. A new service enabling to control abnormal consumptions could be envisaged.

Finally, in addition to the existing national AFL QoS targets, setting geographically targeted QoS obligations should better protect customers in areas where QoS is currently poor and where there is a low level of competition.

Geographically targeted areas are relevant for the faults and for the connection time targets.

The area where further sub-national target should be set is essentially the NBP areas. However, these will be applied to the 3 competition areas to avoid any discrimination.

The USP would be given the flexibility to achieve the fault related targets (national or local) in aggregate as LFI and faults repair time targets are merged into “service availability” targets (LFI x fault repair time).

Table 22 – Summary of our recommendations

Component of the AFL USO	Detail	Need to keep the obligation	Change in the form of obligation
All reasonable requests for connection at a fixed location to a public communications network must be met	Need to establish a RAT level	Yes but not everywhere: No obligation if the USP demonstrates an alternative infrastructure is available which can provide a comparable US type service	An FCS connection is sufficient if the customer does not require Internet Exemption mechanism in case alternative infrastructure is available (Figure 3)
AFL prices must be affordable / Member states can impose geographically averaged prices	GAP	Yes	No change
Terms and conditions must be established in such a way that the subscriber is not obliged to pay for unnecessary facilities or services. Expenditure control shall be ensured and unwarranted disconnection of service avoided	Call barring	Yes	No change
	Phased payments	Yes	No change
	Avoid unwarranted disconnection	Yes	No change
	Abnormal consumption control	New	New but not necessarily in the context of USO
AFL has to be provided with the QoS levels defined by the Member State	Minimum performance targets	Yes but not everywhere: No obligation where NBP-based services are available and affordable	Add area-specific objectives for market-driven infrastructure-based competition areas, NBP areas and Eir only areas, calculated from MDFs' characteristics: line length, %overhead and weather in NBP areas. LFI and repair times target merged in a "service availability" target (both for national and local objectives)

Source: TERA Consultants

8 Annex A: List of acronyms

Acronym	Definition
3G	Third generation wireless telephone technology
4G	Fourth generation wireless telephone technology
ADSL	Asymmetric Digital Subscriber Line
AFL	Access at fixed location
BEREC	Body of European Regulators of Electronic Communications
BS	Base Station
CAPEX	Capital Expenditure
CPI	Consumer Price Index
EC	European Commission
ESB	Electricity Supply Board
EU	European Union
FCS	Fixed Cellular Service
FIA	Functional Internet Access
FTTB	Fibre to the Building
FTTC	Fibre to the Cabinet
FTTDP	Fibre to the Distribution Point
FTTH	Fibre to the Home
FY	Fiscal Year
GAP	Geographically Averaged Prices
GSM	Global System for Mobile Communications
ISDN	Integrated Services Digital Network
Kbps	kilobit per second
LFI	Line Fault Index
LTE	Long Term Evolution
Mbps	megabit per second
MDF	Main Distribution Frame
NBP	National Broadband Plan

NGA	Next Generation Access
NRA	National Regulatory Authority
OPEX	Operating Expenditure
PIP	Performance Improvement Programme
PSTN	Public switched telephone network
QoS	Quality of Service
RAT	Reasonable Access Threshold
SB-WLR	Single Billing Wholesale Line Rental
SLA	Service Level Agreement
SMP	Significant Market Power
TA	Telephone Allowance
UMTS	Universal Mobile Telecommunications System
USD	Universal Service Directive
USF	Universal Service Fund
USO	Universal Service Obligation
USP	Universal Service Provider
VAT	Value Added Tax
VDSL	Very High Bitrate Digital Subscriber Line
VOIP	Voice Over Internet Protocol

9 Annex B: What if QoS AFL USOs are ceased – assumptions

In its comments on Phase 1 report, Eir has underlined that TERA Consultants' assumptions are based on outdated information (provided to ComReg in July 2014 but they are not consistent with PIP3 as agreed between Eir and ComReg on 31st October 2014). Eir has also provided forecasts as regards the evolution of the number of working lines (a flat number of lines was used in Phase 1 report).

This annex summarizes the updated inputs that have been used in the analysis performed in section 5.1.

In order to assess the likely behaviour of Eir in the absence of AFL QoS USO, it has been studied whether Eir has financial incentives in investing in its network to reduce the number of faults. As a consequence, two scenarios have been studied:

- **'Keep investing' scenario**: Eir keeps investing in the network in order to maintain the level of faults and has a lower number of faults to repair.
- **'Stop investing' scenario**: Eir stops investing in the network and the network keeps deteriorating. The number of faults to be repaired increases.

To quantify these scenarios from a financial point of view, the assumptions used to design PIP3[63] program have been used:

- The number of working lines is ✂ in 2015 and decreasing over the whole period (assumption given by Eir in their response to the August 2015 consultation);

Figure 18 - Evolution of the working lines provided by Eir (2015-2022 forecast)

✂

Source: Eir Ltd Response to Consultation 15/89

- The Line Fault Index increases by ✂% every year due to the natural degradation of the network;
- The cost to remove a fault (preventive maintenance, asset replacement) is €✂ (in practice, TERA Consultants has observed in other projects that costs of removing faults in rural areas is ✂% higher than in urban areas);
- The cost to repair a fault is €✂[64] (it is also likely that the cost of repairing faults is not homogenous within Ireland);
- Eir will invest €32,000,000 in 2015 and €26,000,000 in 2016;
- From 2017, Eir will invest each year the amount that enables to maintain the 14.5% LFI in the "keep investing" scenario;

[63] PIP 3, 31st October 2014.

[64] LFI Financial Analysis_v2 for LLU

Eir will not invest at all from 2017 in the “stop investing” scenario.

10 Tables and figures