An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

Response to Consultation, Further Consultation and Draft Decision

Access to Non-Geographic Numbers: Imposition of price control and transparency obligations

Consultation and Draft Decision

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Responses to Consultation

All responses to this Response to Consultation, Further Consultation and Draft Decision should be clearly marked –

"Reference: Submission to ComReg Document No 19/46, and sent by post, e-mail or fax to arrive on or before 5.p.m, Tuesday 2 July 2019, to:

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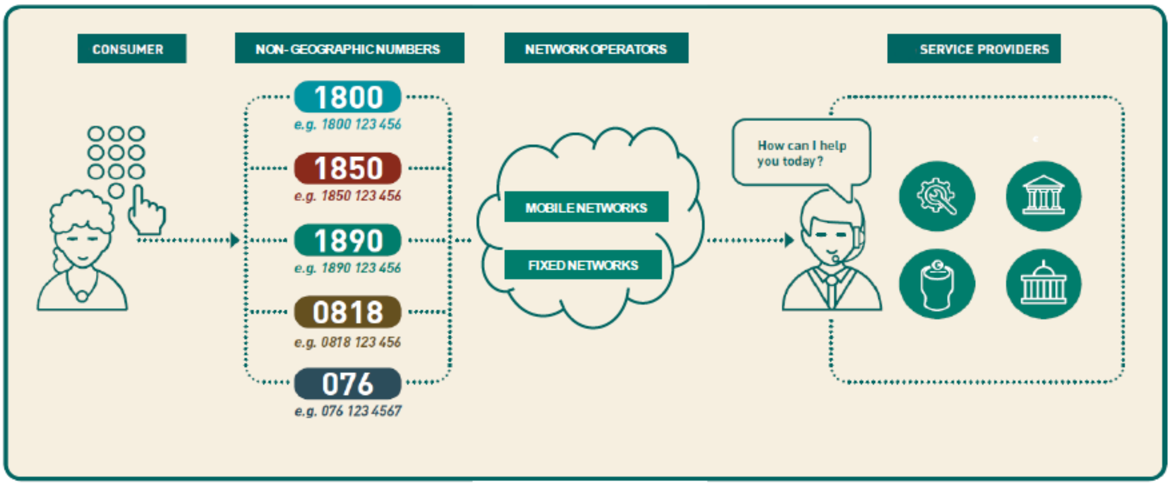
1 Executive Summary

1.1 The Commission for Communications Regulation (**'ComReg'**) is responsible for regulating the electronic communications sector in the State, in accordance with European Union (**'EU'**) and Irish law. As part of ComReg's functions to promote efficiency, ensure sustainable competition, and give the maximum benefit to end-users, ComReg is conducting a review of certain telephone numbers known as the Non-Geographic Numbers (**'NGNs'**).

1.2 The five classes of NGNs considered in this review were those that begin with the prefixes 1800 (Freephone); 1850 (Shared cost - fixed charge); 1890 (Shared cost - per minute charge); 0818 (Universal Access); and 076 (Nomadic).

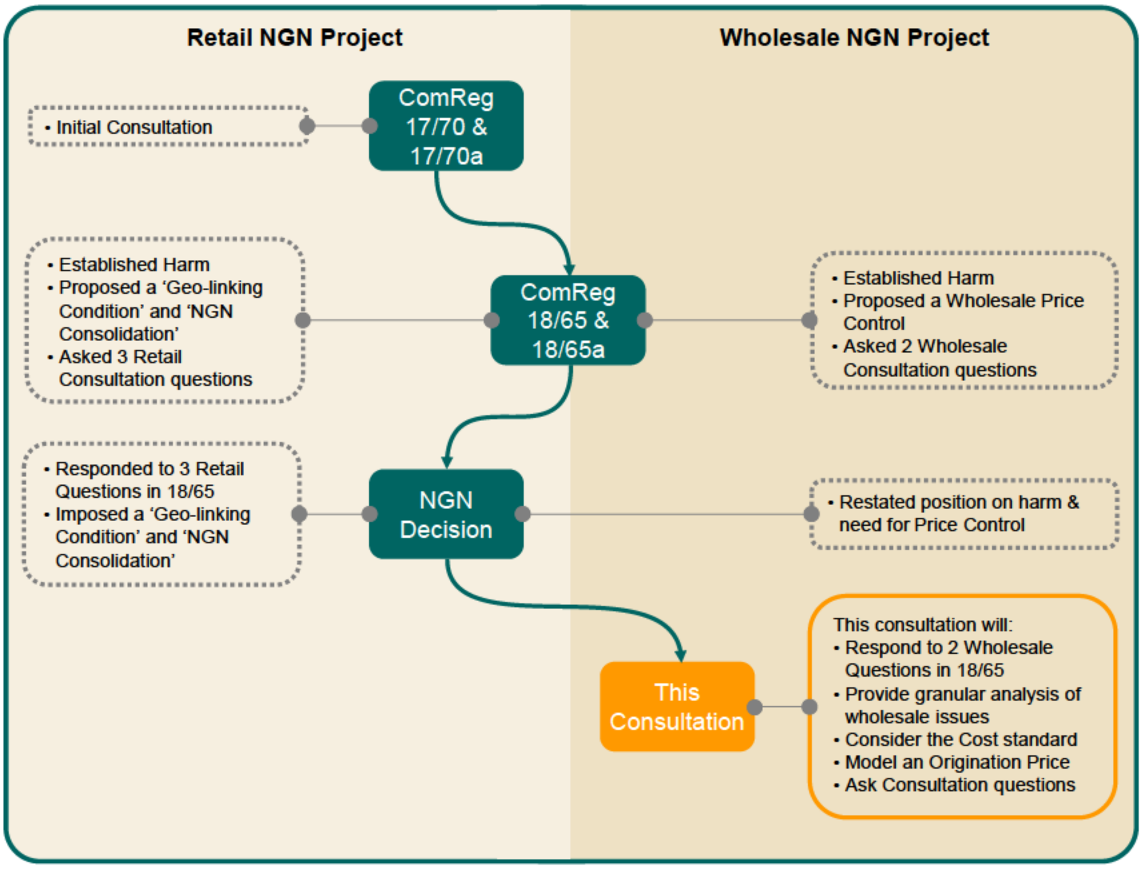
1.3 NGNs are telephone numbers that are not linked to a specific geographic location. Consumers use these numbers to call Service Providers (**'SP'**) such as businesses, Government agencies or charities to, for example, get information, make a payment or avail of socially important services, such as access to welfare services. SPs also deliver voice services over NGNs to their customers. Despite the development of other forms of communication services, voice services remain an essential aspect for the connection between individuals across society. Figure 1 below shows a simplified diagram of a call to the different types of NGN.

Figure 1: Calls to Non-geographic Numbers



1.4 As part of the review, ComReg commissioned economic research and conducted consumer and organisational surveys. Based on this research, ComReg concluded that a failure to understand NGN pricing by consumers and the high cost of using NGNs for SPs was evidence that the current NGN platform was not working efficiently or in the best interests of end-users. ComReg then continued its review of NGNs through two separate, but interlinked projects. Figure 2 provides a summary of the previous ComReg documents published as part of the two NGN projects.

Figure 2: Previous documents published as part of ComReg's NGN Review



1.5 The first project related to the 'end-user'-to-operator (or 'retail') aspects of how calls to NGNs should be sold[1]. This project found that consumers had difficulty understanding the different charges that applied to the different classes of NGN. To address this ComReg imposed the retail measures set out in the **NGN Decision**[2]. Specifically, that decision imposed 'NGN Consolidation'[3] where NGNs are limited to two number ranges – 1800 for Freephone and 0818 for all others.[4] and; a 'Geo-

[1] Calls to 1800 NGNs are free for the caller, the SP pays any call charges. For calls to 1850, 1890, 0818 and 076 the caller pays some or all of the call charges.

[2] ComReg Document No 18/106 (D15/18) - "Review of Non-Geographic Numbers - Response to Consultation 18/65 and Decision".

[3] From January 1 2022, the five NGN ranges will be reduced to two. The 1850, 1890, 076 ranges will be withdrawn and the 1800 (Freephone) and 0818 range will remain.

[4] For further details on these on the Geo-linking Condition or NGN Consolidation, please refer to the NGN Decision or Section 3.6 of this Consultation.

linking Condition'[5] where the charge for 0818 callers is capped at the price of a geographical number.

1.6 The NGN Decision (and preceding consultation documents including **'ComReg Document No. 18/65'**) also examined the corresponding operator-to-operator (or 'wholesale') aspects of NGNs. ComReg identified the harm arising from high retail and wholesale charges for calls to NGNs set by originating operators ('**OOs**') holding bottleneck control over access to their customers. It was noted that while, in most cases, both fixed and mobile wholesale origination rates (**'WORs'**) for NGNs were above costs, mobile WORs were an order of magnitude higher than that charged by fixed operators.

1.7 It was further identified that excessive WORs set by OOs for calls to 1800, 1890 and 1850 NGNs, lead to high costs incurred by the SPs that offer services on these NGNs. This has resulted in some SPs shifting away from the use of these NGNs to other numbers where the caller must cover (some or all of) the cost of the call or, even ceasing to offer services altogether. ComReg observed that even where SPs continue to provide service over NGNs, the high cost may diminish resources available for improving services and reduce incentives to develop such services. This is a particular issue where the services being provided are valuable to vulnerable members of society. The overall impact of high WORs is therefore to reduce the effectiveness of the NGN platform in allowing SPs to connect to callers; constituting an obstacle to access to NGNs.

1.8 ComReg Document No. 18/65, considered a number of options to impose specific controls on the wholesale charges set by OOs that would directly address this problem. It was preliminarily concluded that ComReg should impose a price control on wholesale charges set by originating operators under Regulations 8(3) and 13 of the Access Regulation. This would be done in conjunction with Regulation 6(2) of the Access Regulations (which allows ComReg to impose obligations on undertakings that control access to End Users[6]) and/or Regulation 23(1) of the Universal Service Regulations (which allows ComReg to specify requirements for the purpose of ensuring access and services). This current consultation (the **'Consultation'**) builds upon those preliminary wholesale conclusions and responds to the consultation questions poised in ComReg Document No. 18/65.

[5] From 1 December 2019, a call to an 1850, 1890, 0818 or 076 NGN will cost no more than the cost of calling a landline number. This means that if landline calls are included in a "bundle of call minutes" then NGN calls will also be "in bundle". No separate charge will apply for any NGN call (unless the caller has used up all bundled call minutes).

[6] End User has been defined to have the same meaning as under Regulation 2 of the Framework Regulations, as may be amended from time to time. For the avoidance of doubt, End User(s) shall be deemed to include any natural or legal person who facilitates or intends to facilitate the provision of public communications networks or publicly available electronic communications services to other End Users and who is not acting as an Undertaking.

1.9 In this Consultation, ComReg has considered, at a more granular level, the characteristics of each of the five NGNs number ranges and proposes the following measures[7]:

(a) **076, 1850 and 1890 NGNs**. It is ComReg's preliminary conclusion that no wholesale regulatory intervention is warranted. As of 1 January 2022, these three NGNs will be withdrawn as part of the NGN Consolidation.

(b) **0818 NGNs**. It is ComReg's preliminary conclusion that OOs have bottleneck control on the origination of calls to 0818 NGNs and could result in excessive WORs in the event of a Geo-linking measure[8] coming into effect and/or, if subject to high termination rates for calls to 0818 NGNs.

ComReg proposes a price control on WORs for calls to 0818 NGNs such that, unless otherwise provided for, the OO will be prohibited from imposing a WOR for calls to 0818 NGNs. An exception to this condition will apply where the OO is subject to a 0818 termination rate that is in excess of the regulated termination rate. In such a case, the relevant OO will be permitted to respond to that particular 0818 terminating operator by charging a 0818 WOR that is no greater than the difference between that 0818 termination rate and the regulated fixed termination rate (the '**Regulated FTR**')[9].

This measure will have the outcome that the net wholesale revenue flow between operators will be an out payment form the OO to the terminating operator ('**TO**') at a rate that is the same as a geographic call[10]. The aim of this measure is to mitigate the risk of excessive bargaining power being exercised at the wholesale level.

Under the proposed price control for 0818 NGNs:

(i) The OO <u>may not charge</u> a WOR if it is subject to a 0818 termination rate no greater than the Regulated FTR (currently 0.06 c/min).

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[7] As all fixed or mobile operators have the ability to originate calls to 1800 and 0818, the draft Decision Instrument at Annex: 4 lists all such operators. ComReg will carry out a periodic review of undertakings originating calls to 1800 and 0818 and will update the operators in scope as appropriate.

[8] The Geo-linking Condition will be effective from 1 December 2019. Please refer to the NGN Decision or Section 3.6 of this Consultation for further information.

[9] It should be noted that in accordance with the Notified Termination Markets Draft Decisions (as defined at Section 2.2of this Consultation) ComReg is proposing to exclude fixed voice call termination services from the relevant market but to set a regulated termination rate in respect of the services that do fall within the relevant markets.

[10] ComReg notes that, for calls to 0818 NGNS, SPs may make use of enhanced termination services (e.g. intelligent routing). If these services are used, the TO will charge the SP.

(ii) The OO <u>may charge</u> a WOR if the 0818 termination rate is greater than the Regulated FTR. For example, a 0818 termination rate of 4.06 c/min is charged and the Regulated FTR is 0.06 c/min. In such a case, the OO may charge a WOR no greater than 4 c/min (4 c/min is the difference between that 0818 termination rate (4.06 c/min) and the Regulated FTR (0.06 c/min)).

(c) **1800 NGNs.** It is ComReg's preliminary conclusion that to address the OO's bottleneck control, a wholesale price control obligation, in the form of a cost orientated WOR, should be imposed for call origination of 1800 calls.

To achieve this outcome, ComReg proposes to apply a BU LRAIC+ cost standard to derive the modelled WORs. Separate fixed and mobile WORs will apply as set out in tables 1 and 2 below.

Table 1: Maximum WORs for calls to 1800 numbers originating from mobile networks from 2020 to 2024

Year	Maximum WORs for calls to 1800 numbers originating from a mobile network (c/min)
2020	1.62
2021	1.61
2022	1.60
2023	1.60
2024	1.59

Table 2: Maximum WORs for calls to 1800 numbers originating from a fixed network from 2020 to 2024

Year	Maximum WORs for calls to 1800 numbers originating from a fixed network (c/min)
2020	0.829
2021	0.868
2022	0.906
2023	0.939
2024	0.976

1.10 As an example of the intended outcome of the proposed measure for 1800 NGNs, under the current arrangements, a 10 minute peak time call from a mobile to a 1800 NGN could cost the SP approximately €3.15. If the proposed 1800 price control is implemented and, the lower wholesale charges are passed through to the SP, this would change to approximately €0.25, a reduction of 92%.

1.11 It is proposed, subject to consultation and notification to the European Commission, that the wholesale measures for calls to 1800 and 0818 numbers (described at 1.9 (b) and (c) above) will come into effect on **1 January 2020**. ComReg will keep the imposed WORs under review. Unless otherwise required, in advance of 1 January 2025 ComReg will reassess the imposed WORs set out above. For the avoidance of doubt, the WOR for calls to 1800 NGNs that applies at 31 December 2024 will continue until such time as ComReg completes a further review.

1.12 ComReg considers that these wholesale measures, in combination with the measures imposed in the NGN Decision will achieve the objectives that:

(a) organisations are encouraged to use NGNs;

(b) callers can access more organisations via NGNs;

(c) all operators provide all callers with access to all NGNs and

(d) ultimately give the maximum benefit to end-users.

1.13 In this Consultation, ComReg will ask a number of questions regarding ComReg's proposed action, and ask that interested parties to respond by 2 July 2019.

Chapter 2

2 Overview

2.1 ComReg is responsible for regulating the electronic communications in the State in accordance with European Union and Irish law. On 14 June 2017, ComReg published an Information Notice[11] setting out the commencement of a project to consider WORs for calls to five classes of NGNs. Since then, ComReg has published the NGN Decision (and the preceding consultation documents). This Response to Consultation and Further Consultation Document ('the **Consultation**') is the next step in the project.

2.2 NGNs are numbers that are not linked with any particular geographic location. This contrasts with geographic numbers on the fixed network where the number's prefix indicates a particular location.

2.3 The five NGNs under review (the **'relevant NGNs**') are:

(a) A Freephone NGN range (i.e. 1800) which allows a called party to be reached at no charge to the caller. The total cost of the call is borne by the called party.

(b) Four Non-Freephone NGN ranges, namely the 1850 and 1890 Shared Cost NGN ranges, the Nomadic 076 NGN range and the Universal 0818 NGN range. The 1850 and 1890 Shared Cost NGNs allow the cost of the call to be shared between the caller and the called party. The caller is charged for the call at a fixed rate regardless of the call duration (1850) or at a fixed per minute rate (1890). The cost of the call for the 076 and 0818 NGNs is paid by the caller and there should be no contribution from the called party.

2.4 The individual characteristics of each of the relevant NGNs are described at Sections 4.6 to 4.9 of this Consultation.

2.5 This project is part of a wider review of NGNs which, in part, concluded with the ComReg Decision D15/18 (the '**NGN Decision**')[12]. In the NGN Decision, ComReg

[11] ComReg Document No 17/53r: "*Information Notice - Wholesale Charges for Non Geographic Numbers*"; published on 14 June 2017. Please see: https://www.comreg.ie/publication/information-notice-wholesale-charges-non-geographic-numbers/

[12] ComReg Document No 18/106 (D15/18) - "*Review of Non-Geographic Numbers - Response to Consultation 18/65 and Decision*" ('**the NGN Decision**'). Please see: https://www.comreg.ie/publication/review-of-non-geographic-numbers-response-to-consultation-18-65-and-decision/

introduced a Geo-linking Condition[13] and NGN Consolidation[14] measures with a view to having two NGN ranges in the future with retail charging principles that are clear and easily understood by callers and SPs:

(a) **0818 –** caller pays. A call is treated as an in-bundle[15] call (if bundles minutes are available) or charged as national call rate if out-of-bundle.

(b) **1800 –** SP pays for the call, the caller pays nothing.

2.6 Furthermore, in the NGN Decision and consultation document that preceded the NGN Decision ('**ComReg Document Number 18/65**'), ComReg noted that it intended to implement a wholesale price control mechanism on NGN call origination charges, under Regulation 8(3) of the Access Regulation in conjunction with Regulation 6(2) of the Access Regulations and/or Regulation 23(1) of the Universal Service Regulations. The identification and assessment of harm was addressed in these earlier documents (and supporting expert reports and surveys). It was further noted that the wholesale price control mechanism would be the subject of a separate future decision by ComReg. The legal basis is considered at Section 3.78 of this Consultation.

2.7 This Consultation will set out the legal basis and regulatory framework for wholesale intervention in the relevant NGNs as well as the information sources relied upon. ComReg will then explore the most appropriate form of price control, if any, for each of the relevant NGNs and present its preliminary conclusions.

2.8 The purpose of ComReg's review of the relevant NGN ranges is to ensure that end-users are able to access and use services using these NGNs. ComReg has an obligation to encourage and, where appropriate, ensure adequate access. In this

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[13] **Geo-linking Condition** – The simplification of retail pricing by requiring that, from a retail pricing perspective OOs must treat calls to NGN ranges where the caller pays (1890,1850,0818, 076) in the same way as they would treat calls geographic numbers. Specifically, calls to NGNs must be included in bundles of national rate call minutes and treated as in-bundle calls when dialled. If the call is out-of-bundle (i.e. the caller has no bundle of national rate call minutes or has exceeded their allocation of minutes) a national geographic call rate applies.

[14] **NGN Consolidation** - From January 1 2022, the five NGN ranges will be reduced to two. The 1850, 1890, 076 ranges will be withdrawn and the 1800 (Freephone) and 0818 range will remain.

[15] For the purpose of this Consultation:

"bundle" means a fixed amount of free call minutes in a fixed period for calls to certain classes of numbers that are included as part of a consumer's telephone subscription for a headline fee. The fixed period can be time-based (for example, monthly for consumers receiving a monthly bill) or payment based for consumers using pre-paid services.

"in-bundle" means that a call is free on the basis that it is to a class of number included in a bundle and that the available inclusive minutes have not been exceeded. The total duration of an in-bundle call is deducted from the available inclusive minutes.

"out-of-bundle" means that a consumer either does not have any bundle or; has a bundle but has exceed the available inclusive minutes or; has a bundle but makes a call to a class of number that is excluded from the bundle.

regard, ComReg may to the extent that it is necessary and proportionate to ensure end-to-end connectivity and to remove any potential obstacles to calling non-geographic numbers impose obligations on undertakings.

2.9 ComReg's proposed intervention is to ensure that:

(a) callers can continue to access Service Providers ('**SPs**') via an NGN platform with a charging structure that is easy to understand; and

(b) that SPs will continue to offer services to callers using NGNs.

2.10 ComReg has decided to exercise its powers[16], on its own initiative, to secure its policy objectives and regulatory principles[17] and, in particular, to safeguard the rights of end users. To address the excessive WORs, which ComReg considers to constitute an obstacle to calling the relevant NGNs, it proposes to impose a price control obligation (and associated transparency obligations) in respect of some of the relevant NGNs[18].

2.11 ComReg carried out a number of consultations, external reviews, operator information / data requests and identified in ComReg Document Number 18/65 that the key problem to be remedied for the relevant NGN ranges is the originator's control, and misuse, of end-user access. As a result of the originator control, there are excessive WORs which reduce the effectiveness of the NGN platform in allowing SPs to connect to callers. This is especially problematic for the Freephone NGN range where SPs have few alternatives and where the services being provided are particularly valuable to vulnerable members of society.

2.12 If ComReg does not intervene to address this problem, Originating Operators ('**OOs**') could continue to exploit their bottleneck control and set excessive WORs for Terminating Operators ('**TOs**') which may be passed onto SPs and ultimately affect consumers. This would lead to price distortions that might affect a SP's choice between the relevant NGNs and even between the relevant NGNs and geographic numbers. Ultimately, the only option available to SPs is to move away from the Relevant NGNs due to the excessive WORs. This means that the OO's bottleneck control ultimately impacts end-to-end connectivity and access to numbers for end-users.

2.13 The connectivity failure is particularly evident for Freephone NGNs. Freephone NGNs allow SPs to reach out to callers by covering the costs of the call and enabling callers to access services that are delivered over NGNs. If excessive or high WORs force SPs to switch and deliver these services in an entirely different way (for example over geographic numbers or possibly a web-based option) this additional

[16] In accordance with, inter alia, Regulations 6 and 8 of the Access Regulations and 23 of the Universal Service Regulations.

[17] Section 12 of the Communications Regulation Act and Regulation 16 of the Framework Regulations.

[18] In accordance with, inter alia, Regulations 8, 9 and 13 of the Access Regulations.

connectivity via the Freephone NGN is compromised and ultimately end users will lose out.

2.14 In order to address the key problem identified for the relevant NGNs (i.e. excessive WORs set by the OOs), ComReg was, and remains to be, of the preliminary view that a wholesale price control[19] on the WORs for the relevant NGNs should be imposed.

2.1 The current situation

2.15 Where imposed, fixed and mobile operators currently set (by means of commercial negotiation) WORs for the relevant NGNs. These WORs vary significantly between the different fixed and mobile operators and are unregulated with the exception of Eircom Limited ('**Eircom**').

2.16 Currently WORs are only observed on number ranges where there is a full Receiving Party Pays ('**RPP**') principle (Freephone 1800) or partial RPP principle (Shared Cost NGNs 1850 and 1890). Any applicable WORs (for 1800, 1890 and 1850) are published in Eircom's Switched Transit Routing Price List ('**STRPL**')[20].

2.17 WORs on Calling Party Pays ('**CPP**') principle numbers are generally not observed because, under the CPP principle (applicable to 0818 and 076), the SP is not charged for the call.

2.18 While the imposition of a WOR on CPP principle numbers are not expressly prohibited by regulation, it is common industry practice not to charge a WOR for the call origination of such calls. However, following the NGN Decision there is increased potential for the imposition of a WOR for call origination of 076 and 0818 numbers. This is because of the constraint on retail revenues resulting from the Geo-linking Condition and NGN Consolidation aspects of the NGN Decision.

2.2 Notified Termination Markets Draft Decisions

2.19 On 11 March 2019, ComReg notified the European Commission, in accordance with Article 7 of the Framework Directive[21], of its draft measure relating to FVCT and mobile voice call termination ('**MVCT**') markets ('the '**Notified Termination Markets SMP Draft Decision'**'). While the measure is in draft form and no decision

[19] The different forms of price control were considered as part of the NGN Decision and the documents that preceded the NGN Decision.

[20] Please see STRPL at: https://www.openeir.ie/Reference_Offers/ .

[21] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive) (OJ 2002 L 108, p. 33), as amended by Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009 (OJ 2009 L 337, p. 37), ('the Framework Directive').

has been reached, at this point, in respect of these FVCT and MVCT markets it is proposed in the Notified Termination Markets SMP Draft Decision to impose remedies on certain undertakings on foot of a finding of significant market power (‘**SMP**’). A separate, but associated, draft decision that has also been notified to the European Commission aims to further specify the cost orientation obligation in the FVCT and MVCT markets (the ‘**Notified Termination Markets Pricing Draft Decision**’). ComReg has now received comments from the European Commission, which it will take the utmost account of. The Notified Termination Markets SMP Draft Decision and the Notified Termination Markets Pricing Draft Decision are jointly referred to as the ‘**Notified Termination Markets Draft Decisions**’.

2.20 A number of potential outcomes of these Notified Termination Markets Draft Decisions are relevant to this Consultation.

(a) The first being the proposed *inclusion* of wholesale termination of calls associated with the 076 NGN range in FVCT Markets and the imposition of a price control obligation in the form of a regulated fixed termination rate (a ‘**Regulated FTR**’). This is discussed in detail at Sections 2.3.1 and 4.6 of this Consultation.

(b) The second being the proposed *exclusion* of wholesale termination of calls associated with the 0818 NGN range in FVCT Markets; and the consequent lack of regulation. This is discussed in detail at Sections 2.3.3 and 4.8 of this Consultation.

2.21 This Consultation, proceeds on the basis that the Notified Termination Markets Draft Decisions will be implemented without delay. Where there is any change to the preliminary position set out in the Notified Termination Markets Draft Decisions, ComReg will consider whether such changes impact the analysis contained in this Consultation. The Notified Termination Markets Draft Decisions are discussed in detail at Section 3.7 of this Consultation.

2.3 The proposed changes

2.22 In this Consultation, ComReg has considered, at a more granular level, the characteristics of each of the five NGNs number ranges and proposes the following measures.

2.3.1 076 - No Regulatory intervention

2.23 As described in Section 4.6 of this Consultation, ComReg’s preliminary view is that there is no further wholesale measure required in relation to the 076 NGN range. ComReg has reached this view on the basis that, firstly, as required by the NGN Consolidation measure set out in the NGN Decision, and detailed at Section 3.6 of this Consultation, 076 NGNs will be withdrawn at the end of 2021.

2.24 Secondly, ComReg would also note that proposed Regulated FTR detailed in the Notified Termination Markets Draft Decisions will, if imposed, address any concerns regarding 076 NGNs.

2.25 Thirdly, the measures proposed by ComReg in this Consultation in relation to the 1800 and 0818 NGN ranges, in conjunction with the Geo-linking Condition on 0818 NGNs will encourage SPs to move from 076 to either 1800 or 0818 NGNs.

2.26 It is ComReg's view that these measures will be sufficient to address any concerns regarding the 076 NGN range.

2.3.2 1850 and 1890 - No Regulatory intervention

2.27 As described at Section 4.7 of this Consultation, ComReg's preliminary view is that there is no further wholesale measure required in relation to the Shared Cost NGN ranges.

2.28 ComReg has reached this view firstly on the basis that, as required by the NGN Consolidation measure set out in the NGN Decision, and detailed at Section 3.6 of this Consultation, Shared Cost NGNs will be withdrawn at the end of 2021.

2.29 Secondly, if the measures proposed in this Consultation for the 1800 and 0818 NGN ranges are implemented, these two ranges will potentially offer SPs a lower Retail Termination Rate ('**RTR**') than that of Shared Cost NGNs. These 1800 and 0818 NGN ranges will therefore be more attractive to SPs and, given that these two ranges will remain after 2021 these potentially lower RTRs will further encourage SPs to move from Shared Cost NGNs to either 1800 or 0818 NGNs.

2.30 ComReg acknowledges that the wholesale approach needs to balance: (i) potential short term harm that may be caused to SPs who may find that their costs increase; and (ii) the fact that the NGN Consolidation measure has been flagged three years in advance of its implementation. ComReg is therefore of the preliminary view that there is no wholesale measure required for the Shared Cost 1850 and 1890 NGN ranges.

2.3.3 0818 - Price control for WORs

2.31 In relation to 0818 NGNs ComReg notes that, in accordance with the NGN Consolidation measure set out in the NGN Decision, and detailed at Section 3.6 of this Consultation, 0818 NGNs will continue to be used after other NGNs (076, and Shared Cost) are withdrawn at the end of 2021.).

2.32 ComReg recognises however that the NGN Decision will change how callers are charged by OOs for calls to 0818. With the introduction of the Geo-linking Condition, OO's bottleneck control for calls to 0818 could result in excessive bargaining power being exercised at the wholesale level through the introduction of a WOR for calls to 0818 NGNs. It is ComReg's preliminary view that the costs associated with origination[22] of 0818 calls should be covered by an OO through retail revenues and, that the a WOR for calls to 0818 NGNs should not be charged[23]. More simply, the net payment flow at the wholesale level for a 0818 call should be from the OO to the TO with the TO receiving no more than the Regulated FTR.

2.33 ComReg proposes a price control on WORs for calls to 0818 NGNs such that, unless otherwise provided for, the OO will be prohibited from imposing a WOR for calls to 0818 NGNs. An exception to this condition will apply where the OO is subject to a 0818 termination rate that is in excess of the regulated termination rate. In such a case, the relevant OO will be permitted to respond to that particular 0818 terminating operator by charging a 0818 WOR that is no greater than the difference between that 0818 termination rate and the Regulated FTR.

2.34 This measure will have the outcome that the net wholesale revenue flow between operators will be an out payment form the OO to the TO at a rate that is the same as a geographic call. The aim of this measure is to mitigate the risk of excessive bargaining power being exercised at the wholesale level.

2.35 ComReg is of the preliminary view that this is an appropriate measure on the basis that, there is little evidence to suggest that the costs incurred by a TO in terminating a 0818 call are significantly different to the costs incurred to terminate a national geographic call. On that basis, if a TO receives a net payment from the OO that equals the Regulated FTR, any termination costs should be recovered by the TO [24] [25].

2.36 ComReg would note that the Notified Termination Markets SMP Draft Decision ComReg preliminarily concluded that FVCT to 0818 numbers is subject to sufficiently different competitive characteristics to FVCT to Geographic Numbers more generally, and are therefore excluded from the Relevant FVCT Market(s). ComReg recognises however that the NGN Decision will change how callers are charged by OOs for calls to 0818. Consequently a possible outcome of the Geo-linking Condition is that the competitive characteristics of 0818 may more closely resemble those of Geographic Numbers and 076 numbers. ComReg intends to consult on whether FVCT of calls to 0818 numbers fall within the definition of the

[22] The origination of a voice call on a fixed network may be referred to as 'Fixed Voice Call Origination' ('**FVCO**'). Mobile Voice Call Origination ('**MVCO**') is used for the origination of a voice call on a mobile network

[23] It should be noted that in accordance with the Notified Termination Markets Draft Decisions (as defined Section 2.2 of this Consultation) ComReg is proposing to exclude fixed voice call termination services from the relevant market but to set a regulated termination rate in respect of the services that do fall within the relevant markets.

[24] Please note that ComReg has included worked examples of current and proposed charges and payment flows for 0818 NGNs at Annex: 3 paragraphs A3.9 to A3.12 of this Consultation.

[25] ComReg notes that, for calls to 0818 NGNS, SPs may make use of enhanced termination services (e.g. intelligent routing). If these services are used, the TO will charge the SP.

Relevant FVCT Markets within 6 months of the effective date of the Notified Termination Markets SMP Draft Decision.

2.3.4 1800 - Price control for WORs

2.37 In relation to 1800 NGN's ComReg notes that, in accordance with the NGN Consolidation measure set out in the NGN Decision, and detailed at Section 3.6 of this Consultation, 1800 NGNs will continue to be used after other NGNs (076, and Shared Cost) are withdrawn at the end of 2021.

2.38 It is ComReg's preliminary conclusion that to address the OO's bottleneck control, a wholesale price control obligation, in the form of a cost orientated WOR, should be imposed for call origination of 1800 calls. To achieve this outcome, ComReg proposes to apply a BU LRAIC+ cost standard to derive the modelled WORs.

2.39 As described at Section 4.9 of this Consultation, ComReg considers the costing approach that should be adopted to determine the costs relevant to a price control for call origination on fixed and mobile networks to Freephone NGNs. The key principles to determine the basis for modelled costs used for FVCO and MVCO for the Freephone NGN range should ensure that there are no significant differences between WORs that could cause distortions in the provision of NGNs relative to geographic numbers.

2.40 ComReg engaged external consultants[26] to build cost models for both FVCO and MVCO for the Freephone NGN range. ComReg set out the key modelling parameters in Section 4.10 of this Consultation and described the models in Chapter 5 (for MVCO for calls to the Freephone NGN range) and Chapter 6 (for the FVCO for calls to the Freephone NGN range). The key cost parameters and core principles for both the fixed and mobile cost models are set out below:

(a) Bottom- Up ('**BU**') model based on a hypothetically efficient operator.

(b) The scale of the cost model is based on the average market share of the actual number of large national operators (i.e. one fixed operator and three mobile operators).

(c) The models are based on cost oriented pricing using a Long Run Average Incremental Cost + ('**LRAIC+**') approach and including a contribution to the recovery of common costs not recovered in the Pure Long Run Incremental Cost (**'LRIC'**) of Mobile Termination Rates ('**MTRs**').

[26] ComReg engaged DotEcon as external consultants to establish the principles for wholesale pricing for the five classes of NGN under consultation as well to review the case for intervention at a wholesale level. ComReg then engaged TERA Consultants to build a fixed cost model and Analysys Mason to build a mobile cost model for the NGNs under review.

(d) Use of economic depreciation or an equivalent approach that provides an approximation of the economic cost recovery over the lifetime of the network assets.

(e) An allowance for the recovery of relevant retail costs.

2.41 The two BU LRAIC + models calculate a maximum WOR for calls to 1800 numbers from fixed and mobile networks respectively for the five years of the proposed price control period i.e. 2020 to 2024 inclusive. The modelled maximum WORs will come into effect on the implementation date as set out in the relevant table contained in decision instruments at Annexes 9 and 10 to this Consultation.

2.42 The FTR and Notified Termination Markets Draft Decisions cost models included in the Notified Termination Markets Draft Pricing Draft Decision have been updated based on these modelling parameters to calculate the cost of originating calls to the Freephone NGN range for both fixed and mobile operators.

2.43 For origination of calls to 1800 numbers, the mobile model generated the following WORs for mobile operators using Network Costs and Retail Costs. Further details on the mobile model is at Chapter 5 of this Consultation.

Table 3: Network Costs, Retail Costs and Maximum WORs for calls to 1800 numbers from mobile networks from 2020 to 2024

Year	Network	Retail	Total
2020	1.09	0.53	1.62
2021	1.08	0.53	1.61
2022	1.07	0.53	1.60
2023	1.07	0.53	1.60
2024	1.06	0.53	1.59

2.44 For origination of calls to 1800 numbers, the fixed model generated the following WORs for fixed operators using Network Costs and Retail Costs. Further details on the fixed model is at Chapter 6 of this Consultation.

Table 4: Network Costs, Retail Costs and Maximum WORs for calls to 1800 numbers from fixed networks from 2020 to 2024

Year	Network	Retail	Total
2020	0.556	0.273	0.829
2021	0.577	0.291	0.868
2022	0.597	0.309	0.906
2023	0.610	0.329	0.939
2024	0.628	0.348	0.976

2.4 Information Sources Relied Upon

2.45 As part of the preparation of this Consultation, ComReg has obtained qualitative and quantitative information from SPs through a series of formal and informal information requests, as well as through industry meetings before arriving at its preliminary position, as set out in this Consultation.

2.46 In conducting its analysis, ComReg has drawn on data from a number of sources, including:

(a) ComReg Document No 14/08[27] - an Information Notice.

(b) ComReg Document No 14/23[28] – a call for input which summarised the outcome of the industry workshop proposed in the Information Notice and sought submissions from interested parties on six questions around the current regime for calls to NGNs. It also proposed a second industry workshop.

(c) ComReg Document No 14/25[29] - an information notice that granted an extension for submissions in response to ComReg Document No 14/23.

(d) ComReg Document No 14/130[30]

(e) Responses to ComReg Document No 15/40[31] (the '**Call for input**')

(f) ComReg 15/136R1 "*Numbering Conditions of Use and Application Process"* ('**Numbering Conditions**').[32] The current conditions attaching to the five classes of NGNs listed in Table 1 are set out in section 4 of the Numbering Conditions of Use and Application Process.

(g) ComReg Document No 16/11 "Strategic Review of Non-Geographic Numbers - Project Update" ('**ComReg Document No 16/11**').[33]

[27] Please see https://www.comreg.ie/publication/industry-meeting-wholesale-charges-for-non-geographic-numbers-for-fixed-line-operators/

[28] Please see https://www.comreg.ie/publication/wholesale-charges-for-non-geographic-numbers/

[29] Please see https://www.comreg.ie/publication/wholesale-charges-for-non-geographic-numbers-extension-to-submission-date-for-comreg-1423/

[30] Please see https://www.comreg.ie/publication/update-on-treatment-of-non-geographic-numbers/

[31] Please see https://www.comreg.ie/publication/call-for-input-wholesale-charges-for-non-geographic-numbers-development-of-a-mobile-cost-model/

[32] ComReg Document 15/136R1 – *Numbering Conditions of Use and Application Process* – published 22 December 2015 and revised on 1 June 2018. Please see https://www.comreg.ie/publication/numbering-conditions-of-use-and-application-process/

[33] ComReg Document No 16/11 "*Strategic Review of Non-Geographic Numbers - Project Update"* – published on 11 February 2016. Please see https://www.comreg.ie/publication/strategic-review-of-non-geographic-numbers-project-update/

(h) ComReg **Document No 17/70**[34] along with four appendices.

(i) ComReg Document No 17/70a [35] ('the **2017 DotEcon Report'**)

(j) ComReg Document No 17/70b[36], ('the **B&A Consumer Survey')**

(k) ComReg Document No 17/70c[37] ('the **B&A Organisation Survey**') and;

(l) ComReg Document No 17/70d[38]) ('the **Materials Cost Survey')**

(m) ComReg Document Number 18/65[39] ('**ComReg Document Number 18/65**') and its accompanying DotEcon Report "*Review of Non – Geographic Numbers – DotEcon Response to Consultation 17/70*"[40] ('the **2018 DotEcon Report'**).

(n) Submissions to ComReg Document Number 18/65.[41]

(o) ComReg Document No 18/106 (D15/18)[42]**-** "Review of Non-Geographic Numbers - Response to Consultation 18/65 and Decision" ('**the NGN Decision**').

(p) Submissions received in response to ComReg's Information Requirement under Section 13D(1) of the Communications Regulation 2002 (as amended) (the '**Act**').

(q) the Notified Termination Markets SMP Draft Decision.

(r) the Notified Termination Markets Pricing Draft Decision.

(s) ComReg Document Number 19/46b: "*Report for ComReg - Additional cost modelling for mobile voice origination*" ('the **AM Report**').

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[34] Please see https://www.comreg.ie/publication/review-non-geographic-numbers/

[35] ComReg Document 17/70a – *Non-Geographic Numbering – Report from DotEcon on non-geographic numbers in Ireland* – published 16 August 2017. Please see https://www.comreg.ie/publication/report-dotecon-non-geographic-numbers-ireland/

[36] ComReg Document 17/70b – *Non-Geographic Numbers: Consumer Survey* – published 16 August 2017. Please see https://www.comreg.ie/publication/ba-consumer-study-non-geographic-numbering/

[37] ComReg Document 17/70c – *Non-Geographic Numbers: Organisation Survey* – published 16 August 2017. Please see https://www.comreg.ie/publication/ba-organisation-study-non-geographic-numbering/

[38] ComReg Document 17/70d – *Non-Geographic Numbers: Materials Cost Survey* – published 16 August 2017. Please see https://www.comreg.ie/publication/ba-materials-cost-study-non-geographic-numbering/

[39] Please see:

https://www.comreg.ie/publication/response-to-consultation-review-of-non-geographic-numbers/

[40] Please see:

https://www.comreg.ie/publication/dotecon-response-to-consultation-review-of-non-geographic-numbers/

[41] Please see: https://www.comreg.ie/publication/submissions-to-consultation-18-65/

[42] Please see: https://www.comreg.ie/publication/review-of-non-geographic-numbers-response-to-consultation-18-65-and-decision/

(t) ComReg Document Number 19/46c: "*Assessment of Fixed Voice Call Origination to Non-Geographic numbers in Ireland – Specifications and results*" ('the **TERA Report**').

(u) ComReg Document Number 19/46a "*A price control for regulation of wholesale charges for non-geographic numbers – A DotEcon Report for ComReg*" ('the **DotEcon Report**').

2.47 Taking account of the analysis in the Consultation, the information sources indicated above, the views expressed by Respondents and ComReg's assessment of these views, ComReg presents its preliminary views on the issues in this Consultation.

2.5 Structure of this Consultation

2.48 In the Chapters that follow ComReg presents its preliminary position and supporting analysis.

2.49 The remainder of this Consultation is structured as follows:

Chapter 3: This Chapter provides a background to the relevant NGNs, summarises the harm identified in the current NGN regime, provides the legal basis and refers to previous ComReg Consultations and Decisions.

Chapter 4: This Chapter provides an assessment of retail and wholesale concerns in relation to NGNs and the preliminary remedies proposed by ComReg.

Chapter 5: This Chapter sets out preliminary regulatory remedies to address problems with calls to 1800 from Mobile networks.

Chapter 6: This Chapter sets out preliminary regulatory remedies to address problems with calls to 1800 from Fixed networks.

Chapter 7: This Chapter sets out the Regulatory Impact Assessment ('**RIA**') of the proposed approaches to regulate the wholesale NGNs under consultation.

Chapter 8: This Chapter sets out the next steps that will follow the publication of this Consultation.

Annex 1: Consultation Questions.

Annex 2: Glossary

Annex 3: Worked Examples

Annex 4: Non-confidential Submissions to ComReg Document Number 18/65

Annex 5:	DotEcon Annex(s)
Annex 6:	Analysis Mason Annex(s)
Annex 7:	TERA Annex(s)
Annex 8:	Review of submissions in response to ComReg Document Number 18/65
Annex 9:	Draft Decision Instrument which specifies, in legal form, the decisions made arising from this Decision in respect of Mobile networks
Annex 10:	Draft Decision Instrument which specifies, in legal form, the decisions made arising from this Decision in respect of Fixed networks.

2.50 This is a non-confidential version. Certain information within has been redacted for reasons of confidentiality, with such redactions indicated by the symbol✂. Should an individual operator wish to review its own redacted information, it should make a request for such in writing to ComReg and indicate, where possible, the specific paragraph numbers within which the redacted information being requested is contained. ComReg will consider requests for redacted information and will, subject to the protection of confidential information, respond accordingly.

Chapter 3

3 Background

3.1 In the following sections, ComReg will discuss the following:

(a) What are NGNs?

(b) Description of NGNs and associated terms

(c) Summary of the harm identified

(d) ComReg Document Number 18/65 and submissions on options for wholesale intervention

(e) Legal basis and regulatory framework

(f) The NGN Decision

(g) ComReg's FVCT and MVCT market review

3.1 What Are NGNs?

3.2 As previously noted in Chapter 1, the focus of this Consultation is NGNs. NGNs are telephone numbers that are not linked with any particular geographic location. This contrasts with geographic numbers on the fixed network where the prefix indicates a particular location (for example '01' for Dublin).

3.3 NGNs are defined in the Universal Service and Users' Rights Regulation (2011) as:

> *"…a number from the national numbering scheme that is not a geographic number and includes, among other things, a mobile, freephone and premium rate number."*

3.4 Premium rate numbers are not considered in the context of this Consultation.

3.5 NGNs provide an important platform for the delivery of a wide variety of services. They are mainly used by various SPs such as businesses, charities and public bodies to offer services to End Users. For example, private companies, public sector bodies and charities use these numbers to deliver teleconference services, help lines, customer support numbers and response numbers to support marketing campaigns, product help desks, information services and international calling services.

3.6 NGNs generally allow calls to be placed at the same cost to the End User regardless of the End User's location within Ireland. Any reference to a NGN or NGNs in this Consultation is a reference to one or more of the five classes of NGNs listed in Table 1 below (i.e. the relevant NGNs).

Table 5: The five classes of NGNs under review

NGN class	Description
'1800'	Freephone
'1850'	Shared Cost (fixed charge)
'1890'	Shared Cost (per minute charge)
'0818'	Universal Access
'076'	Nomadic

3.7 The 1800 access code allows a called party to be reached at no charge to the caller, as the total cost of the call is borne by the called party (i.e. the Receiving Party Pays principle)[43]. These are often referred to as 'Freephone ' numbers.

3.8 NGNs with the access codes of 1850 and 1890 allow the cost of the call to be shared between the caller and the called party. The caller is charged for the call at a fixed rate regardless of the call duration (1850) or at a fixed per minute rate (1890). These are often referred to as 'Shared Cost' numbers.

3.9 The cost of the call for NGNs with the access codes 0818 and 076 is paid by the caller and there should be no contribution from the called party (i.e. the Calling Party Pays principle)[44].

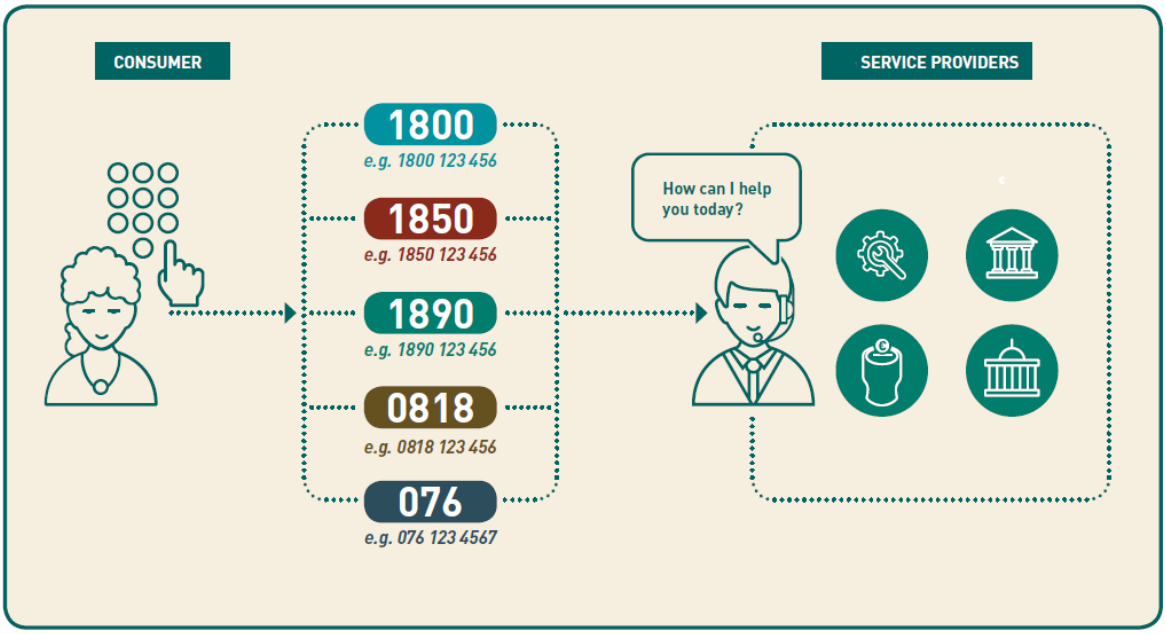
3.10 A simple example of the NGN supply chain between a End User and a SP is shown in Figure 3[45] below.

[43] Please see Section 3.2.3 of this Consultation.

[44] Please see Section 3.2.3 of this Consultation.

[45] Pease see ComReg 17/70, page 15, figure 1 at: https://www.comreg.ie/publication/review-non-geographic-numbers/

Figure 3: Simplified NGN call supply chain[46]



3.11 These categories of NGNs are mainly used by businesses to direct their customers' calls to a customer service area such as a helpdesk. Usually businesses requiring such unique NGNs will engage a telecommunications operator to handle the telecommunications aspects of the service and terminate the call. These telecommunication operators may be fixed network operators ('**FNOs'**) or mobile network operators ('**MNOs**'). In some cases a call may transit more than one network before arriving at the SP and the question arises as to how these additional operators are to be compensated for the use of their networks. This will be explained in Section 3.2, specifically sub-section 3.2.1.

3.2 Description of NGNs and associated terms

3.12 In the following sub-sections, ComReg will describe the parties in the NGN value chain, a number of terms commonly used in the context of NGNs and the relevance of these terms for this Consultation:

(a) The NGN Value chain

(b) The Numbering Conditions

(c) Calling Party Pays and Receiving Party Pays

(d) Revenue Sharing

(e) Shared Cost

(f) Retention Rate

[46] Figure 1 in Chapter 3 of ComReg Document No 17/70.

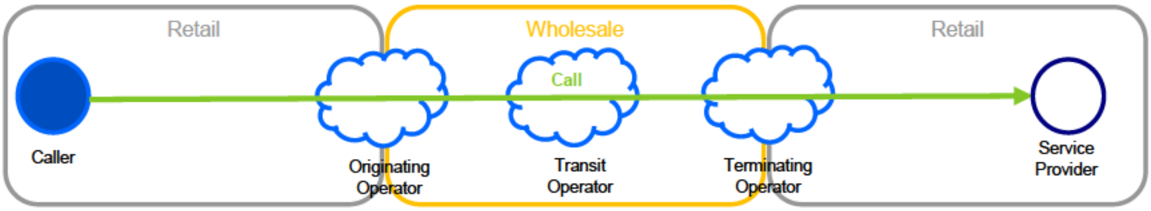
(g) Settlement Rate

3.2.1 The NGN Value Chain

3.13 There are a number of parties involved in making a call to a NGN. This section will briefly describe each party and their role in the NGN Value Chain.

3.14 Figure 1 above describes a simple NGN Value chain. This must be expanded to consider the wholesale and retail interactions that facilitate a NGN call between a caller and a SP.

Figure 4: Expanded NGN call supply chain



3.15 The parties in the expanded NGN Value chain are as follows:

(a) '**caller'** means the End User that initiates the call to the NGN.

(b) **'Service Provider'** or **'SP'** (e.g. a business or charity) which uses the NGN to receive calls and deliver services to the caller. The SP is the party being called.

(c) **'Originating Operator' or 'OO'** means the operator of the fixed or mobile network to which the caller is connected. The OO is responsible for call origination.

(d) **'Terminating Operator' or 'TO'** means the operator of the fixed or mobile network to which the SP is connected. The TO is responsible for call termination.

(e) **'Transit Operator' or 'TrO'** means an intermediary operator that may be used if the OO and TO are not directly connected. The TrO is responsible for call transit.

3.16 There is a retail relationship between the caller and the OO, this is also the case for the TO and the SP. This is often referred to as the 'retail level'. There is a wholesale relationship between the OO, the TO and TrO often referred to as the 'wholesale level'. For the remainder of this Consultation, except where necessary, Transit will not be referenced. This will simplify the value chain. Also, this Consultation considers circumstances where the call leaves the OO network, to another network to reach the SP (an '**off-net call**'). Where a call originates and terminates on the same network (an '**on-net call'**) there are no wholesale level interactions between operators.

3.17 To provide a call from the caller to the SP, the infrastructure of the operators in the NGN value chain is used, generating incremental cost for each operator:

(a) OOs, being responsible for call origination, incur an Origination Cost

(b) TOs incur a Termination Cost.

3.18 Operators must recover these costs and have options to do so at either the wholesale or the retail level. By way of a very simple example operators can recover at the retail level via a retail rate, the wholesale level through a wholesale rate or a combination of both. This Consultation will focus on any wholesale rates but ComReg must also consider any activity at the retail level to ensure that operators can fully recover all their costs.

3.2.2 The Numbering Conditions

3.19 One of ComReg's functions, as regulator of the electronic communications sector in the State, is to manage the national numbering resource. ComReg's number management function, and its objectives, duties and powers in relation to that function, are set out in the Numbering Conditions.

3.20 Section 2 of the Numbering Conditions sets out that numbering conditions fall into two categories of use. A numbering condition is attached either to:

(a) a right of use ('**RoU**') for a number held by an individual undertaking (a '**RoU Condition**')[47] or

(b) the General Authorisation (a '**GA Condition**')[48].

3.21 The conditions which attach to all classes of numbers are set out in Section 3 of the Numbering Conditions. Sections 4 details the conditions which attach to specific classes of numbers (including geographic numbers and the five classes of NGNs under consultation).

[47] Appendix 10 of the Numbering Conditions, paragraph A10.18 states that "Some of the numbering conditions are attached to "rights of use for numbers" which ComReg has granted to individual undertakings. These conditions are created and imposed pursuant to Regulations 13 and 14 and Part C of the Schedule to the Authorisation Regulations. This category of condition does not have universal effect in that it applies only to the individual authorised undertaking which applied for and was granted the right of use to which the condition is attached. Only the individual authorised undertaking which applied for and was granted the right of use for a number is required to comply with the conditions attached to that right of use."

[48] Appendix 10 of the Number Conditions, in relation to GA Conditions, paragraph A10.17 states that "Most of the numbering conditions are attached to the General Authorisation. These conditions are created and imposed pursuant to Regulation 8 and Part A of the Schedule to the Authorisation Regulations. This category of condition has universal effect in that applies equally to all authorised undertakings or to such categories of authorised undertaking as may be specified. An authorised undertaking which uses a number, to which one more conditions under the General Authorisation have been attached, is required to comply with those conditions".

3.22 Section 6 of the Numbering Conditions sets out how numbers are allocated and used. ComReg grants RoU for numbers to authorised undertakings in an "*open, objective, transparent, non-discriminatory and proportionate manner and generally on a "first come, first served" basis*". ComReg may hold open competitions before granting RoU for newly-opened number ranges.

3.23 Numbers are a national resource which must be managed and used efficiently. The quantity of available numbers in each class of number is finite.

3.24 Applicants for RoU for Geographic Numbers and NGNs must provide evidence of a valid interconnect agreement with another undertaking. As stated in Section 6.4 of the Numbering Conditions, ComReg will make a decision in respect of any complete and valid application for RoU of a number within 3 weeks of the date of receipt of the completed application.

3.2.3 Calling Party Pays and Receiving Party Pays

3.25 As noted in ComReg Document No 17/90r[49], paragraph 1.3, footnote 7 and paragraph 5.43:

> *"Under the Calling Party Pays principle, the subscriber initiating the call ('the calling party') incurs the cost of the call (charged either as a monetary amount, or as a deduction from the subscriber's allocation of bundled minutes). The subscriber answering the call ('the called party') incurs no cost in doing so"*
>
> *"Freephone (1800) numbers allow the called party to be reached at no charge to the calling party. The costs of a call to a freephone number are borne entirely by the called party - the Receiving Party Pays ('RPP'), rather than the CPP, principle applies;"*

3.26 For geographic calls and for 0818 and 076, it is the caller that is responsible for the cost of the call (the SP is not charged). For 1800, the SP is responsible for the cost of the call, (the caller is not charged). This follows two well established retail principles that determine the party responsible for paying for the cost of the call. The CPP principle is applicable to 0818 and 076, and the RPP principle applies to 1800.

3.27 As discussed in Section 3.2.4 of this Consultation, 1890 and 1850 are a hybrid of CPP and RPP principles in that both the caller and the SP pay for some part of the call. All numbers in the Irish numbering range follow either the CPP, RPP or Shared Cost principle.

[49] ComReg Document No 17/90r "*Market Review - Fixed Voice Call Termination and Mobile Voice Call Termination*", published on 2 November 2017 ('**ComReg Document No 17/90r**')

3.28 The CPP and RPP principles determine whether it is the caller or the SP that is charged for the call. The charging of either the caller or the SP occurs at the retail level consequently CPP and RPP are considered to be retail principles:

(a) Under the CPP principle the caller pays to make the call. The operative retail relationship is that of charges and payments between the caller and the OO. The retail relationship between the SP and the TO is only relevant, insofar as the TO must not charge the SP to receive the call.

(b) Under the RPP principle, the SP pays to receive the call. The operative retail relationship is that of the charges and payments between the SP and the TO. The retail relationship between the caller and the OO is only relevant, insofar as the OO must not charge the caller to make the call.

3.29 The CPP and RPP principles therefore determine which end of the NGN Value chain that all retail charges are levied for the call and consequently where any retail revenue is collected.

3.30 As discussed further below, while the CPP and RPP principles operate at the retail level, they have an impact at the wholesale level. The CPP and RPP principles limit how operators in the NGN value chain (OOs and TOs) charge for services, for example :

(a) Under the CPP principle, it is the Calling party that pays the retail charge for the call, not the receiving party. Consequently, a TO may not levy a retail charge on the SP. Under the CPP principle, a TO can only charge at the wholesale level.

(b) Under the RPP principle, it is the Receiving party that pays the retail charge for the call, not the Calling party. Consequently an OO may not levy a retail charge on the caller. Under the RPP principle an OO can only charge at the wholesale level.

3.2.4 Shared Cost

3.31 Shared Cost numbers are defined in the Numbering Conditions as those NGNs with a prefix of 1890 or 1850.

3.32 The 1850 and 1890 NGN ranges allow a caller to pay a retail rate to the OO for local geographic call for what would otherwise have been a national geographic call. Any difference between the retail local geographic call charge and the retail national geographic call charge is charged to the SP instead. This arrangement “shared the cost” of a national rate call between the caller and the SP.

3.33 In this case, Shared Cost numbers are a combined application of the CPP and RPP principles for a national rate call. The Calling Party Pays the OO local rate for the call the Receiving Party Pays the remainder.

3.34 The caller and the OO have a retail relationship, meaning that the caller can easily be charged by the OO for the local part of the call. While it is possible that the SP may be on the same network as the caller (i.e. both the caller and the SP having a retail relationship the OO, or an on-net call) it not always the case.

3.35 For the OO to charge the SP for the remainder of an off-net Shared Cost call, a charge at the wholesale level is required from the OO, ultimately to the TO. The TO will then pass this wholesale level charge through to the SP as a retail charge to receive the call.

3.36 Shared cost is applicable at the retail level in that it dictates the arrangements for caller and SP charges. However the RPP element of a Shared Cost call results in a charge at the wholesale level. The sum of the OO wholesale and retail charges for a Shared cost call should not exceed that of the OOs retail national rate. The maximum wholesale charge that an OO may levy for a Shared Cost call is determined by the difference between two retail rates, the retail national rate and a retail local rate. Therefore, much like the retail level CPP and RPP principles, Shared Cost is a retail level measure that has a wholesale level impact and should be considered in this Consultation.

3.2.5 Retention Rate

3.37 Retention rate is a term used in relation to the amount of revenue that the operator collecting the retail revenue keeps for itself. In the case of a call under the CPP principle, the OO charges the caller a retail rate and collects the revenue from the caller. Other operators in the NGN value chain (TO and TrO) will have incurred incremental costs for the call which they must recover. As set out as Section 3.2.3 under the CPP principle, the TO cannot charge at the retail level through a charge to the SP and can only charge at the wholesale level through a charge to the OO.

3.38 The OO will therefore be subject to wholesale level charges that must be paid. The Retention Rate is the amount of per call revenue that remains for the OO after all wholesale level charges have been deducted. The OO also incurs an incremental cost for origination. When origination costs are deducted from Retention Rate the remainder is the profit that the OO makes on a call.

3.39 The same is true for a RPP principle call albeit at the SP-TO side of the NGN value chain. The TO will have a Retention Rate for any retail revenue received from the SP net of any wholesale level charges.

3.40 When retail rates are high relative to wholesale level charges, operators will have high Retention Rates. Where retail charges are lower or close to wholesale level charges, operators will have lower Retention Rates.

3.2.6 Settlement Rate

3.41 Settlement rate is a term used in relation to the net flow of charges or payments at the wholesale level in the NGN value chain. The Settlement Rate is calculated as a combination of wholesale level charges and can result in a net flow of payments or charges from OO to TO or vice versa.

3.42 For the purpose of this Consultation, ComReg will use specific terms relating to the wholesale charges of the individual participants in the NGN value chain rather than using a term which is a combination of these charges. On that basis, ComReg will refer to a WOR or WTR separately and not the Settlement Rate that would result from the total of these two charges.

3.2.7 Possible retail and wholesale charging options for NGN calls

3.43 In the following section ComReg will consider the possible charging options for calls to NGNs. It is relevant to consider these at this point in the Consultation as some of the terms outlined in Section 3.2 of this Consultation influence the manner in which Operators can charge.

3.44 To carry a call (either NGN or Geographic) from the caller to the SP, the operators in the NGN Value Chain will incur an incremental, per call cost. Operators are entitled to recover these costs and can do so at either the retail or the wholesale level typically through a 'per minute' charge. Below are a number of examples as to how the operators in the NGN Value chain could levy charges to recover such costs:

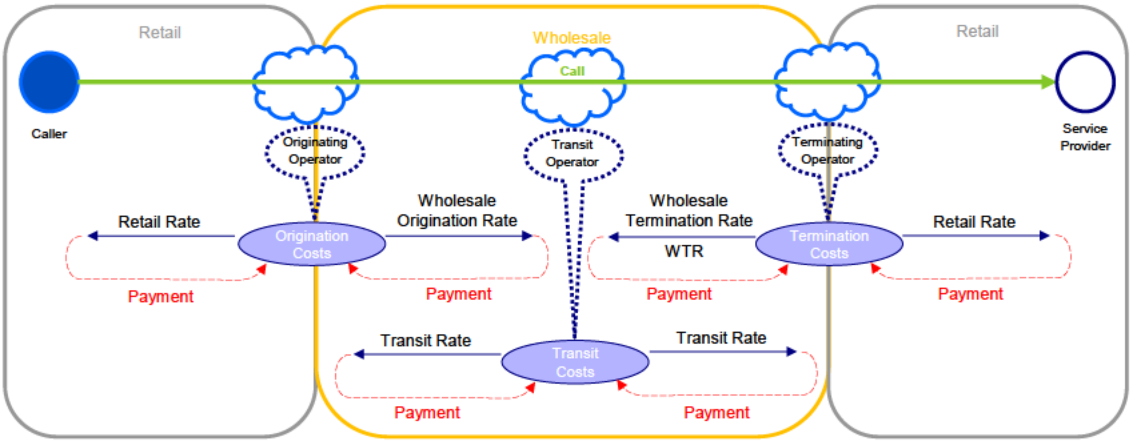
(a) An OO could impose a charge at the retail level on the caller and/or at the wholesale level on the TrO or TO.

(b) A TrO could impose a charge at the wholesale level on the OO and/or the TO.

(c) A TO could impose a charge at the retail level on the SP and/or at the wholesale level on the TrO or OO.

3.45 Figure 4 below shows the different theoretical charging options available to the OO, TrO and TO in the NGN value chain:

Figure 5: Theoretical charging options



3.46 In theory, each operator in the NGN Value chain has the option to charge up to two parties for a call however, Operators may be limited in some cases meaning that some of these options are not available. In particular, the retail tariff principles described in the Numbering Conditions Rights of Use and also industry custom and practice developed over a number of years mean that, for the numbers in scope, certain charging choices are not available or are not used. For example, for a call to a number in a range where the CPP principle applies:

(a) The TO may not charge the SP. Therefore the impact of the CPP principle is that a TO has only one charging option i.e. a WTR.

(b) The OO charges the caller and no WOR is charged. There is no rule prohibiting a WOR, but it is generally observed that a WOR is not charged on CPP principle numbers.

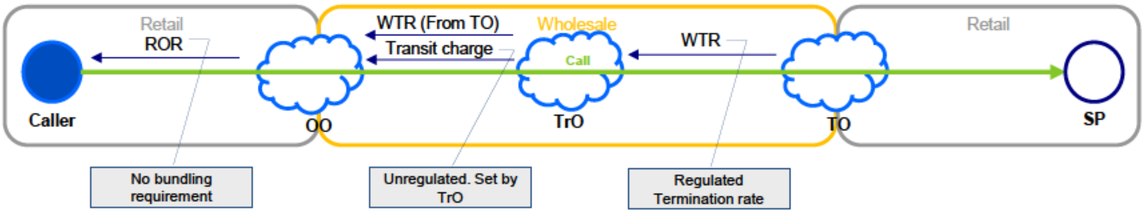
3.47 At Section 4.5 of this Consultation, ComReg will describe the charging options for Operators for the NGNs in scope considering the effect of general industry practice and the Numbering Conditions and other ComReg Decisions.

3.2.8 Charges for calls to Geographic Numbers

3.48 In the previous section, ComReg noted that a combination of a number of factors influence or constrain the charging choices of Operators. In Section 4.5 of this Consultation, ComReg will also discuss how the charging regimes for some NGNs will change to follow that of calls to Geographic numbers. Calls to Geographic numbers are worthy of note in that the Wholesale and Retail level charging regime for calls to Geographic numbers is both well established and well understood by operators and SPs.

3.49 Figure 4 below shows the flow of wholesale and retail level charges for an off-net geographic call.

Figure 6: Charges for Geographic Numbers



3.50 Calls to Geographic numbers follow the CPP principle. In terms of retail charges, the OO charges the caller, the SP is not charged. The OO charges the caller a retail origination rate (‘**ROR**’) at an appropriate geographic rate (if out-of-bundle) or deducts the duration of the call from any available bundle minutes. There is no requirement for the call to be included in a bundle.

3.51 At the wholesale level, the OO is subject to two charges; a WTR from the TO and, where relevant, a Transit charge from the Transit Operator (‘TrO’).

3.52 In 2015, ComReg concluded that regulation of the Transit Market was not warranted (See 2015 Wholesale Fixed Voice Call Origination and Transit Markets Response to Consultation and Decision (Decision D05/15), (the ‘**2015 FACO and Transit Decision**’))[50]. In paragraph 1.14 of the 2015 FACO and Transit Decision, ComReg concluded in 2015 that:

> *“With respect to the Transit market, ComReg has decided to maintain its preliminary position as set out in the Consultation. ComReg has concluded that regulation of that market is no longer warranted given that barriers to entry have been overcome, and that the market is tending towards effective competition. In particular, there is evidence of existing competition within the Transit market, and that a number of service providers have increased the degree to which they interconnect directly with each other (thereby avoiding or reducing the need to purchase Transit from a third-party).”“”*

3.53 This means that the transit element of calls is competitive and has not had *ex ante* regulation or other forms of regulation applied since the expiry of the sunset period as set out in the 2015 FACO and Transit Decision[51]. The transit charge is not subject to any price control regulation.

3.54 The WTR for calls to Geographic numbers are subject to a price control which sets a cost based maximum rate that the TO may charge to other operators in the NGN Value chain. Typically the OO pays this WTR.

3.55 ComReg has included at Annex 3 of this Consultation worked examples of how current and proposed charges under consultation are applied and the payment flows between operators for Geographic numbers.

[50] Please see ComReg Document No 15/82 (D05/15) at https://www.comreg.ie/publication/market-review-wholesale-fixed-voice-call-origination-and-transit-markets/

[51] The sunset period expired in January 2016.

3.2.9 The "Deemed-to-be Regime"

3.56 For many years a voluntary arrangement of symmetric rates was in place for calls to NGNs. Under this arrangement (the "Deemed-to-be Regime") the WORs for calls to 1800, 1890 and 1850 numbers levied by Operators of fixed networks were "Deemed-to-be" the same as the rates levied by Eircom.

3.57 Pursuant to Eircom's designation of SMP in the market for wholesale interconnection services[52] Eircom's rates were set via a cost-based model and were published in the STRPL. Operators of fixed networks taking part in the Deemed-to-be Regime charged the same cost based rate as Eircom. As a result the WORs charged by all participants in the Deemed-to-be Regime were to an extent, cost based albeit using Eircom's costs.

3.58 Operators of mobile networks did not join this voluntary deemed to be regime and charged their own WORs. These WORs were not cost based.

3.59 The WORs charged by Operators of mobile networks were significantly higher than the WORs charged by Operators of fixed networks under the Deemed-to-be regime. For example on 1 October 2014 the WOR levied by an Operators of a fixed network (under the Deemed-to-be regime) a for a peak-time call to a 1800 number was 0.8 c per minute. The WOR levied by an Operator of a mobile network for the same call to a 1800 number was 34 c per minute, 42.5 times greater than the 'cost-based' Deemed-to-be WOR.

3.60 In November 2014, BT Communications Ireland Limited ('**BT**') left the Deemed-to-be Regime and began setting its own higher WOR for calls to 1800, 1890 and 1850[53]. During 2015, four other fixed operators also left the regime. Operators leaving the regime cited frustration that excessive WORs, significantly above cost, continued to be levied by Operators of mobile networks for calls to NGNs while Operators of fixed networks under the Deemed-to-be regime charged a cost-based rate. These fixed operators are still separate from the Deemed-to-be Regime at the time of writing.

3.3 Summary of the harm identified

3.61 As provided for by Regulation 23(1) of the Universal Service Regulations end-users must have access to all numbering resources. Despite the development of other forms of communication services, voice services remain an essential aspect for the connection between individuals across society. This is particularly important for NGNs which provide an important platform for the delivery of a wide variety of

[52] ComReg Decision No. D04/07.

[53] BT's peak 1800 WOR increased from 0.8c per minute under the Deemed-to-be regime to 2.73c per minute, 3.4 times greater.

services. As noted above, NGNs are used by various SPs such as businesses, charities and public bodies to offer services to End Users.

3.62 Pursuant to recital 46 of the Universal Service Directive, '[c]ross-border access to numbering resources and associated services should not be prevented, except in objectively justified cases, for example to combat fraud or abuse …, when the number is defined as having a national scope only … or when it is technically or economically unfeasible'.

3.63 The regulatory framework allows ComReg to safeguard the rights and interests of End Users in all events where justified to secure policy objectives and regulatory principles and where the required procedures are adhered to. It is on this basis that ComReg considers it necessary to intervene to adopt a price control obligation (and supporting obligations), as set out in this Consultation, to remove excessive prices which ComReg considers to constitute a non-technical obstacle to calling non-geographic numbers.

3.64 ComReg Documents No. 17/70 and 18/65 and the NGN Decision stated how ComReg intended to implement a wholesale price control mechanism on NGN call origination charges[54]. The basis for this preliminary conclusion was the misuse of control, at the wholesale level, that resulted from relatively high charges for wholesale services associated with non-geographic numbers; which ultimately created end-user harm. A detailed assessment of the relevant harm is contained in Chapter 3 of ComReg Document Number 18/65 (supported by the DotEcon Reports) and is summarised below.

3.65 Furthermore, DotEcon has prepared a report for ComReg entitled "*A price control for regulation of wholesale charges for non-geographic numbers*" ('**the DotEcon Report**'). A non-confidential version of this report has been published as ComReg Document 19/46a[55]. It recognises that although, Eircom's WORs (which includes those for NGNs) are regulated, other fixed and mobile operators are not subject to any regulation for NGNs. In its reports to ComReg, DotEcon presented evidence of the significant differences between regulated, cost-oriented WORs charged by Eircom and the WOR imposed by other fixed and mobile operators.

3.66 In ComReg Document Number 18/65 ComReg considered the proposed intervention under the following headings:

(a) "Rationale for harm arising from existing wholesale interconnect regime"**.** See Sections 3.8 - 3.21 of ComReg Document Number 18/65.

(b) "Evidence of harm arising from the existing wholesale interconnect regime" See sections 3.22 - 3. 46 of ComReg Document Number 18/65.

[54] Under Regulation 8(3) of the Access Regulation in conjunction with Regulation 6(2) of the Access Regulations and/or Regulation 23(1) of the Universal Service Regulations

[55] ComReg Document No 19/46a.

(c) *"Wholesale intervention and potential approaches*". See sections 3.47 - 3. 79 of ComReg Document Number 18/65.

3.67 ComReg will summarise these sections of ComReg Document Number 18/65 in Sections 3.3.1 to 3.3.3 of this Consultation.

3.3.1 Rationale for harm arising from existing wholesale interconnect regime.

3.68 At sections 3.8 - 3.21 of ComReg Document Number 18/65, it was noted that each OO exerts a significant degree of bottleneck control over access to its customers for the purposes of making NGN calls in that each OO can set retail (for all numbers other than 1800) and wholesale origination charges that are relatively high and there is little within the NGN sphere that SPs or Terminating Operators can do in terms of taking any countervailing action. In effect, OOs can exploit their position, to a significant degree and to the detriment of end-users, because SPs are unable to take countervailing action by which to deter or prevent such behaviour (other than deciding not to use an NGN at all, a quite extreme action which may be more detrimental to some SPs than using an NGN under a less than optimal pricing structure).

3.69 The supporting DotEcon report[56] identified and described three main reasons[57] why OOs have been able to set wholesale origination charges in this manner:

(a) SPs require end-to-end connectivity in order to be accessible by all callers – i.e. each OO's subscribers must be able to access all NGNs. This is reflected in the regulatory principle that regulatory authorities shall encourage end-to-end connectivity.[58]

(b) The procedure for charging SPs is not transparent making incentives for Terminating Operators and SPs to force down OOs charges weak.[59]; and

(c) Terminating Operators have reduced incentives to change the existing wholesale regime as some of the excess returns are passed through as a more generous termination rate.[60]

[56] ComReg Document 18/65a – DotEcon: Response to Consultation 17/70 – Published 11 July 2018.

[57] Section 6.3 – ComReg Document 18/65a – DotEcon: Response to Consultation 17/70 – Published 11 July 2018.

[58] Page 35 – ComReg Document 18/65a – DotEcon: Response to Consultation 17/70 – Published 11 July 2018

[59] Page 35 – ComReg Document 18/65a – DotEcon: Response to Consultation 17/70 – Published 11 July 2018

[60] Page 35 – ComReg Document 18/65a – DotEcon: Response to Consultation 17/70 – Published 11 July 2018

3.3.2 Evidence of harm arising from the existing wholesale interconnect regime

3.70 At sections 3.22 - 3.46 of ComReg Document Number 18/65, it was noted that Access to services, provided by SPs using NGNs, and the provision of end-to end connectivity can be restricted through retail and wholesale origination charges:

(a) if an OO increases its retail charges to such extent as to effectively foreclose its customers from accessing an SP's services, the SP will not receive calls which the OO's customers would otherwise have made.

(b) if an OO charges high wholesale NGN call origination charges, it may discourage SPs from providing services on NGNs that cost less or are free of charge for callers. This could also effectively foreclose certain SPs' services to consumers.

3.71 In relation to bullet (a) above, ComReg Document Number 18/65 identified and described the consumer harm identified as resulting from high NGN retail charges and the manner in which access to services provided. In In relation to bullet (b) above, ComReg's assessment of how high wholesale origination charges reduces access to services provided over NGNs was divided into two sources of harm: i. Existing wholesale harm; and ii. Potential wholesale harm arising from retail remedies absent concurrent wholesale remedies.

3.3.3 Wholesale intervention and potential approaches.

3.72 At sections 3.47 - 3.79 of ComReg Document Number 18/65, ComReg noted that in light of the identified consumer harm described in ComReg Document Number 18/65, ComReg was of the preliminary view that wholesale intervention in relation to NGNs to protect consumers would be a justified and proportionate measure, specifically as it should improve consumers' ability to access voice-based services provided over NGNs, including by increasing the range of NGN services and/or by reducing or removing any retail charges for accessing such services.

3.73 ComReg was of the preliminary view that intervention is justified, proportionate and necessary to ensure end-to-end connectivity, interconnection and interoperability in relation to NGNs and services and to ensure end-users access to numbers and services.

3.74 Amongst other things, ComReg remains of the preliminary view that:

(a) existing WORs[61] are excessive, especially for mobile originated calls, and have likely reduced consumers' access to services provided over NGNs;

[61] Currently WORs are only observed on 1850, 1890 and 1800 NGN ranges.

(b) wholesale intervention is required to complement the proposed retail remedies (a Geo-linking Condition and NGN Consolidation);

(c) in the absence of any corresponding wholesale interventions, OOs may seek to recover lost retail margins (resulting from a Geo-linking Condition) through introducing[62] or increasing WORs, thereby increasing charges faced by SPs further discouraging SPs from offering services provided over NGNs;

(d) wholesale intervention would likely increase the extent to which SPs provide access to services over NGNs and in particular increase access to Freephone services

3.75 ComReg's preliminary view, supported by DotEcon, is that wholesale intervention is justified given that each OO has a position akin to market power, and charges levied by OOs are not avoidable by a SP who needs to be accessible to all callers regardless of which network that a caller may subscribe to[63]. The potential approaches are considered in Sections 4.2 and 4.3 of this Consultation.

3.76 ComReg considers that wholesale intervention aligns with its statutory objectives to promote efficiency, ensure sustainable competition, and give the maximum benefit to end-users. Further analysis of how the proposed approach specifically meets ComReg's obligations and regulatory policies is set out throughout this Consultation when discussing the detail of the proposed obligations and the associated justification (i.e. in the regulatory impact assessment contained in Chapter 7 of this Consultation).

3.77 ComReg will assess the wholesale measures for the relevant NGNs separately in Chapter 4 of this Consultation. Section 4.9 of this Consultation will look at the Freephone NGNs and Sections 4.6, 4.7 and 4.8 will look at the Non-Freephone NGNs, in particular the 0818 NGN range.

3.4 ComReg Document Number 18/65 and submissions on options for wholesale intervention

3.78 In ComReg Document Number 18/65, ComReg set out how each OO has the potential to raise WORs above cost given the end-to-end connectivity requirements and the fact that SPs need to be accessible to all callers regardless of which network the caller subscribes to. ComReg reached a preliminary view that current, relatively high WORs (particularly from mobile networks) restrict end-users' access to services provided over NGNs. This is because the relatively high WORs, passed

[62] Currently WORs are not observed on 076 and 0818 NGN ranges.

[63] The DotEcon Report, Chapter 1, 2 and 5.

through to the SP in the rate charged to receive calls on NGNs appear to have resulted in a significant number of SPs not providing their services over NGNs or reducing their service provision over NGNs[64].

3.79 As set out in ComReg Document Number 18/65, ComReg reached a preliminary view that a price control would be justified, reasonable and proportionate for the reasons set out in paragraph 3.74 of ComReg Document Number 18/65 which included:

(a) The NGN platform is not working effectively which is to the detriment of consumers and SPs and action is required at a wholesale level to address problems along the entire NGN supply chain.

(b) OOs are exploiting their position to the detriment of consumers because SPs are unable to take countervailing action by which to deter or prevent excessive WORs.

3.80 In ComReg Document Number 18/65 ComReg set out its justification for a wholesale price control is supported by a cross-section of supporting evidence, namely:

(a) The B&A Organisation Study

(b) The B&A Consumer Study

(c) The stakeholder interviews with a number of private and public sector bodies that use NGNs

(d) The 2017 DotEcon Report

(e) The responses from consumers and SPs to ComReg Consultation Document No 17/70; and

3.81 In order to remedy the high WORs, ComReg Document Number 18/65 considered six options for wholesale intervention (which are set out in paragraphs 3.55 to 3.75 of ComReg Document Number 18/65), namely, dispute resolution, abuse of dominance, negotiated agreement, structural change, guidance and price control.

3.82 ComReg Document Number 18/65 considered each option for wholesale intervention, and concluded that a price control would be most effective and likely to achieve the objective of addressing the existing high wholesale origination charges (particularly for calls to 1800 NGNs).

3.83 In addition to three questions on Geo-linking and NGN Consolidation (Questions 1, 4, and 5), ComReg Document Number 18/65 asked two questions (Questions 2 and 3) in relation to the preliminary conclusions on options for wholesale intervention:

[64] See paragraph 3.25 – 3.39 of ComReg Document 18/65

(a) Whether respondents agreed with ComReg's assessment of the issues arising at the wholesale level, in particular ComReg's preliminary view that there is a problem with interoperability, interconnection and end-to-end connectivity and access to Non-Geographic Numbers and services.

(b) Whether respondents with ComReg's proposal that a price control would achieve the objective of addressing high wholesale origination charges and, that ComReg should consult on the form and implementation of such a price control.

3.84 There were twelve respondents to ComReg Document Number 18/65, comprised of SPs and operators. Seven submissions were made in direct response the two wholesale related questions that were posed (i.e. questions 2 and 3). These are considered in detail at Annex 8 of this Consultation but are summarised as follows:

(a) Certain Respondents agreed that the proposed price control for wholesale charges for NGNs was appropriate and would achieve the objective of addressing high wholesale origination charges.

(b) Certain Respondents were of the view that any wholesale measure should be implemented in the same time frame as the Geo-linking Condition.

(c) Certain Respondents disagreed with the legal basis under which ComReg proposed to implement the proposed price control for wholesale charges for NGNs.

3.85 This Consultation, having taken into consideration Respondents' submissions, provides details of the proposed price control for call origination to 0818 numbers at Section 4.8 of this Consultation. Details of the proposed price control for call origination to 1800 are provided at Section 4.9 and Chapters 5 and 6 of this Consultation.

3.86 With regard to Respondents' submissions concerning the time frame for implementation of any proposed price control of wholesale charges, ComReg supports the idea that the implementation date should be linked to the Geo-linking Condition and should occur in a similar timeframe.

3.87 With regard Respondents' submissions concerning the legal basis under which ComReg proposes to implement the proposed price control obligations, ComReg has considered Respondents' views and sets out its position in Section 3.5 of this Consultation.

3.5 Legal basis and regulatory framework

3.88 In accordance with Regulation 23 of the Universal Service Regulations 2011[65] ComReg may 'specify requirements' to ensure that end-users are able to access and use services using NGNs within the European Union. Access by end-users to all numbering resources in the internal market is a 'vital pre-condition for a single market' and should include Freephone and other non-geographic numbers[66].

3.89 The Access Directive (transposed by the Access Regulations) harmonises the way in which Member States regulate access to electronic communications networks and services as well as their interconnection[67]. The aim is to establish a regulatory framework, in accordance with the internal market principles, for the relationship between suppliers of networks and services that will result in sustainable competition, interoperability of electronic communications services and consumer benefits. The Access Regulations and the Communications Regulation Act 2002 (as amended) (the "**Act**") set out the objectives assigned to ComReg in relation to access and interconnection.

3.90 In particular, Regulation 6(1) of the Access Regulations 2011 refers to the powers and responsibilities of ComReg in relation to access and interconnection. That provision provides that (acting in pursuit of its objectives set out in Section 12 of the Act and Regulation 16 of the Framework Regulations[68]) ComReg is to encourage and, where appropriate, ensure, in accordance with the Access Regulations, adequate access, interconnection and the interoperability of services in such a way as to:

(a) promote efficiency,

(b) promote sustainable competition,

(c) promote efficient investment and innovation, and

(d) give the maximum benefit to end-users.

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[65] European Communities (Electronic Communications Networks and Services) (Universal Service and Users' Rights) Regulations 2011, SI No. 337/2011.

[66] Recital 38 of the Universal Service Directive.

[67] Article 1(1) of the Access Directive (Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities).

[68] European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011).

3.91 ComReg's role is to encourage and where appropriate, ensure adequate access and interconnection, and interoperability of services, while promoting efficiency, sustainable competition, and giving the maximum benefit to end-users[69].

3.92 In this context, in accordance with Regulation 6(2) of the Access Regulations, without prejudice to any measures that may be taken in accordance with Regulation 8 in respect of undertakings with significant market power (SMP) ComReg may, to the extent that it is necessary to ensure end-to-end connectivity, impose obligations on undertakings that control access to end-users.

3.93 Regulation 6(4) of the Access Regulations also relates to access and interconnection and allows ComReg to exercise its powers on its own initiative where justified to secure the policy objectives and regulatory principles. [70] Any intervention must be done in accordance with the Access Regulations and the relevant procedures of the Framework Regulations.

3.94 In light of the foregoing, ComReg is proposing to impose transparency and price control obligations pursuant to Regulations 8, 9, 18 and 13 of the Access Regulations and 23 and 30 of the Universal Service Regulations to remove an obstacle to calling non-geographic numbers which is not technical in nature but results from the tariffs applied, without a market analysis having been carried out that shows that the undertaking concerned has SMP, on the basis that such obligation constitutes a necessary step to ensure that end-users are able to access non-geographic numbers. [71] Under Section 4 of the Draft Decision Instruments annexed to this Consultation document at Annex 9 and Annex 10, ComReg is proposing to impose obligations relating to transparency and price control

3.95 In accordance with Regulation 8(6) of the Access Regulations obligations imposed must:

(a) be based on the nature of the problem identified;

(b) be proportionate and justified in the light of the objectives laid down in Section 12 of the Act, and Regulation 16 of the Framework Regulations; and

(c) only be imposed following consultation in accordance with Regulations 12 and 13 of the Framework Regulations.

3.96 Section 12(1)(a) of the Act sets out ComReg's objectives in exercising its functions in relation to the provision of electronic communications networks, electronic communications services and associated facilities, namely:

(a) to promote competition;

[69] See Case C-227/07, EU: C2008:620) Commission v Poland.

[70] Set out in Section 12 of the Act and Regulation 16 of the Framework Regulations.

[71] See Case C-85/14. EU:C 2015: 610 KPN BV v ACM and Case C-397/14, ECLI:EU:C:2016:256 Polkomtel sp. z o.o. v. Prezes Urzedu Komunikacji Elektronicznej.

(b) to contribute to the development of the internal market; and

(c) to promote the interests of users within the European Union.

3.97 Regulation 16 of the Framework Regulations also sets out ComReg's objectives. While these objectives overlap with those under the Act, there are additional more granular objectives such as the need to promote the ability of end-users to access and distribute information or use applications and services of their choice. Furthermore, under Regulation 16(2) of the Framework Regulations in pursuit of its objectives ComReg shall apply objective, transparent, non-discriminatory and proportionate regulatory principles by, among other things:

(a) promoting regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods,

(b) ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services,

(c) safeguarding competition to the benefit of consumers and promoting, where appropriate, infrastructure based competition,

(d) promoting efficient investment and innovation in new and enhanced infrastructures,

(e) taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within the State, and

(f) imposing ex-ante regulatory obligations only where there is no effective and sustainable competition and relaxing or lifting such obligations as soon as that condition is fulfilled.

3.5.1 Consultation requirements

3.98 Regulation 12(3) of the Framework Regulations provides that, except in cases falling within Regulation 13(8) (i.e. exceptional cases involving urgency), before taking a measure which has a significant impact on a relevant market, ComReg must publish the text of the proposed measure, give the reasons for it, including information as to which of ComReg's statutory powers gives rise to the measure, and specify the period within which submissions relating to the proposal may be made by interested parties.

3.99 Regulation 12(4) states that ComReg, having considered any representations received under Regulation 12(3), may take the measure with or without amendment. Regulation 12 implements Article 6 of the Framework Directive.

3.100 Regulation 13(3) of the Framework Regulations provides that, upon completion of the consultation provided for in Regulation 12, where ComReg intends to take a measure which falls within the scope of Regulation 6 or 8 of the Access Regulations, and which would affect trade between Member States, it shall make the draft measure accessible to the European Commission, BEREC and the NRAs in other Member States at the same time, together with the reasoning on which the measure is based. Regulation 13 implements Article 7 of the Framework Directive.

3.101 Apart from conducting a public consultation in accordance with Regulation 12 of the Framework Regulations, ComReg is also obliged to make its draft measures accessible to the EC, BEREC[72] and the NRAs in other Member States pursuant to Regulation 13 and 14 of the Framework Regulations.

3.102 Overall, in preparing this Consultation, ComReg has taken account of its functions and objectives under the Act, in addition to requirements under the Framework Regulations and the Access Regulations.

3.103 ComReg also recognises when exercising its powers (as set out above) it must act in accordance with Regulation 6(3) of the Access Regulations to ensure that any measure imposed is

a) objective,

b) transparent,

c) proportionate and

d) non-discriminatory,

3.104 and will be applied in accordance with Regulation 8 of the Access Regulations and Regulations 12, 13 and 14 of the Framework Regulations.

3.6 The NGN Decision

3.105 ComReg has previously consulted on and subsequently imposed a number of measures to address issues identified with NGNs at the retail level. This was done in the NGN Decision. The issues are discussed in the previous ComReg publications[73] but the core issues addressed are:

(a) Callers do not know how NGN calls are charged and/or do not know the different designation and tariffs of each of the five classes of NGNs. OOs do not announce tariffs for NGN calls by recorded message when a call is made. This retail price confusion discourages many End Users from calling NGNs;

[72] Body of European Regulators for Electronic Communications (‘**BEREC’**) as established by Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 the Body of European Regulators for Electronic Communications (BEREC) and the Office

[73] ComReg Document Nos 17/70 and 18/65, the NGN Decision and the external reports and surveys appended to these documents.

(b) Many callers have a bundle[74] which includes minutes of free calls. Calls to NGNs are currently excluded from these bundles and are charged at 'out-of-bundle' prices.

(c) high NGN out-of-bundle prices deter a significant number of End Users from calling NGNs and/or cause a significant number of End Users to call NGNs only when absolutely necessary (i.e. when they have no alternative means of contact).

3.106 ComReg decided that these factors caused a reduced level of End User utilisation of the NGN platform and reduced the use of services provided by SPs through NGNs to the detriment of End Users and SPs.

3.107 To address these observed problems, ComReg decided to implement the following:

(a) **Geo-linking Condition** – The simplification of retail pricing by requiring that, from a retail pricing perspective, OOs must treat calls to NGN ranges where the caller pays (in whole or in part) (1890,1850, 0818, 076) in the same way as they would treat calls geographic numbers. Specifically, calls to NGNs must be included in bundles of national rate call minutes and treated as in-bundle calls when dialled. If the call is out-of-bundle (i.e. the caller has no bundle of national rate call minutes or has exceeded their allocation of minutes) the charge incurred shall not exceed the national geographic call rate.

(b) **NGN Consolidation** – Moving from five NGN ranges to two, 1800 and 0818, in a 3 year period.

3.108 The outcome of A Geo-linking Condition and NGN Consolidation being that, in future, there will be just two NGN ranges with principles that are clear and easily understood by callers and SPs:

(a) **0818 –** caller pays. A call is treated as an in-bundle call (if bundles minutes are available) or charged as national call rate if out-of-bundle.

(b) **1800** – SP pays, caller pays nothing.

[74] For the purpose of this consultation:

"bundle" means a fixed amount of free call minutes in a fixed period for calls to certain classes of numbers that are included as part of a consumer's telephone subscription for a headline fee. The fixed period can be time-based (for example, monthly for consumers receiving a monthly bill) or payment based for consumers using pre-paid services.

"in-bundle" means that a call is free on the basis that it is to a class of number included in a bundle and that the available inclusive minutes have not been exceeded. The total duration of an in-bundle call is deducted from the available inclusive minutes.

"out-of-bundle" means that a consumer either does not have any bundle or; has a bundle but has exceed the available inclusive minutes or; has a bundle but makes a call to a class of number that is excluded from the bundle.

3.109 ComReg was of the view that this will result in a more efficient functioning of the NGN platform. The Geo-Linking Condition will come into effect on 1 December 2019 and NGN Consolidation will be in place from January 1 2022.

3.110 In Sections 4.6 to 4.9 of this Consultation, ComReg will consider the impact of the NGN Decision on the NGNs in scope of this Consultation (076; 0818; 1890; 1850 and 1800).

3.7 ComReg's FVCT and MVCT Market Review

3.111 ComReg has conducted a review of the FVCT and MVCT markets. The outcome of this review may impose remedies on certain undertakings on foot of a finding of Significant Market Power ('**SMP**') in FVCT and MVCT markets. These may be imposed through an upcoming ComReg Decision (the **'Notified Termination Markets SMP Draft Decision'**). A separate ComReg decision will further specify the detailed nature of the cost orientation obligation that is proposed in the FVCT and MVCT markets (the '**Notified Termination Markets Pricing Draft Decision**')[75]

3.112 It is relevant to consider the Notified Termination Markets Draft Decisions in this Consultation. As noted below, a number of possible outcomes of these proposed Notified Termination Markets Draft Decisions are relevant to this consultation

3.113 On 11 March 2019, the Draft Termination Markets Decisions were notified to the European Commission ('**EC'**), the Body of European Regulators for Electronic Communications ('**BEREC'**) and other National Regulatory Authorities ('**NRAs'**) in other Member States of draft measures under Article 7 of the Framework Directive.

(a) the Notified Termination Markets Pricing Draft Decision was notified as a draft measure as case "IE/2019/2150"[76]

(a) the Notified Termination Markets SMP Draft Decision was notified as a draft measure as case "IE/2019/2151"[77]

3.114 Any comments from the EC, BEREC and other NRAs on the Notified Termination Markets Draft Decisions are expected on or before 11 April 2019. Having taken account of any comments, the Notified Termination Markets Draft Decisions will be published shortly after.

3.115 These Notified Termination Markets Draft Decisions are relevant to this Consultation on the basis that:

[75] The Notified Termination Markets SMP Draft Decision and the Notified Termination Markets Pricing Draft Decision are jointly referred to as '**the Notified Termination Markets Draft Decisions**'.

[76] See https://circabc.europa.eu/w/browse/1f61bc32-9725-44c8-a04a-cf5c17205408

[77] See https://circabc.europa.eu/w/browse/353ddf90-0916-4ea3-8a5d-e351186aa406

(a) Under the Notified Termination Markets SMP Draft Decision, it is proposed that termination of calls to 076 numbers is to be included in FVCT markets and a regulated fixed termination rate will be set for calls to 076 in the Notified Termination Markets Pricing Draft Decision.

(b) The Notified Termination Markets SMP Draft Decision notes that potentially, a Geo-linking Condition could have an effect on calls to 0818 numbers such the termination of such calls may fall into the FVCT market. The Notified Termination Markets SMP Draft Decision notes that ComReg will consult on the possible inclusion of 0818 in FVCT markets within 6 months of the effective date of that Decision.

(c) The pricing models used in this Consultation to determine a cost based price for origination of calls to 1800 numbers are related to the models used to determine a cost based price for termination of calls in Notified Termination Markets Pricing Draft Decision.

3.116 While no final decision has been reached in respect of the Notified Termination Markets Draft Decisions, this Consultation proceeds on the basis that that these Notified Termination Markets Draft Decisions will be implemented without delay. Where there is any change to the preliminary position set out in the Notified Termination Markets Draft Decisions, ComReg will consider whether such changes impact the analysis contained in this Consultation.

Chapter 4

4 Regulation of wholesale charges for NGNs

4.1 The purpose of this chapter is to provide an assessment of retail and wholesale concerns in relation to NGNs. This chapter also sets out ComReg's preliminary conclusions on proposed obligations in respect of which number ranges.

4.2 For the purpose of this Consultation ComReg will consider Freephone and Non-Freephone NGNs separately. Firstly, as there are differences in the retail and wholesale payment arrangements for calls to Freephone and Non-Freephone NGNs; secondly because the geo-linking measure in the NGN Decision has an effect on Non-Freephone NGN, this is not the case for the Freephone NGN.

4.3 As the Geo-linking Condition in the NGN Decision is expected to commence in the same timeframe as any measure proposed in this Consultation, it is relevant to consider the NGN value chain in the context that a Geo-linking Condition is in place for Non-Freephone NGNs.

4.4 The remainder of Chapter 4 is structured as follows:

(a) The effect of the NGN Decision on Non-Freephone NGNs (Section 4.1):

(i) The 076 NGN range and the 0818 NGN range

(ii) The Shared Cost NGNs – 1850 and 1890

(b) The types of regulatory intervention (Section 4.2)

(c) The types of price control (Section 4.3)

(d) Transparency obligations (Section 4.4)

(e) Wholesale Charges for NGNs (Section 4.5)

(i) Nomadic NGNs – 076 (Section 4.6)

(ii) Shared Cost NGNs – 1850 and 1890 (Section 4.7)

(iii) Universal Access NGNs – 0818 (Section 4.8)

(iv) Freephone NGNs – 1800 (Section 4.9)

(v) Costing principles (Section 4.10)

(f) Undertakings in scope (Section 4.11)

4.1 The effect of the NGN Decision on Non-Freephone NGNs

4.5 The NGN Decision requires that from 1 December 2019, all operators originating calls to include 1890, 1850, 0818 and 076 NGN ranges in retail bundles of geographic calls (Geo-linking).

4.6 As the Geo-linking Condition in the NGN Decision is expected to commence in the same timeframe as any measure proposed in this Consultation, it is relevant to consider the NGN value chain in the context of the Geo-linking Condition being in place.

4.7 The following two sections will examine the impact of the NGN Decision on each of the four Non-Freephone NGNs under consultation under the following headings:

(a) The 076 and 0818 Non-Freephone NGN ranges which follow the CPP principle only

(a) The Shared Cost Non-Freephone NGN ranges (i.e.1850 and 1890) which follow a hybrid of the CPP and RPP principles

4.1.1 076 and 0818 NGN ranges

4.8 It is appropriate to consider the effect of the NGN Decision on 076 and 0818 number ranges together on the basis that, unlike other number ranges, calls to both of these number ranges follow the CPP principle only.

4.9 In the first instance, the Geo-linking Condition may result in changes by OOs as follows:

(a) Retail level

(i) Increase bundle price or decrease bundle minutes

(ii) Increase out-of-bundle rate for national geographic call

(b) Wholesale level

(i) Levy an origination charge at the wholesale level on the Transit and/or Terminating operators. OOs do not currently levy any origination charges for CPP principle calls (i.e. Geographic, 0818 or 076)

4.10 Any changes made by OOs at the wholesale level in response to the NGN Decision may result in issues for other parties in the NGN value chain at either the wholesale or retail level.

4.11 ComReg considers below how OOs might respond to the NGN Decision. Specifically, in Section 4.6 ComReg considers how OO's might respond in relation to the 076 number range, while Section 4.8 addresses potential change in relation to the 0818 number range.

4.1.2 Shared Cost (1890 and 1850) NGN ranges

4.12 The Geo-linking Condition will increase the maximum retail rate that an OO may charge the calling party for a call to 1890 or 1850 numbers from a retail local rate to a retail national rate. This is only applicable to out-of-bundle calls. If the caller has a bundle, calls to 1890 or 1850 must be deducted from any available minutes.

4.13 Changes by OOs at the retail level in respect of Geo-linking of 1890 and 1850 are the same as 076 and 0818 i.e. (i) increase bundle price or decrease bundle minutes; or (ii) increase out-of-bundle rate for national geographic call.

4.14 OOs currently impose an origination charge at the wholesale level to the TrO/or TOs for a calls to 1890 or 1850. This wholesale charge is intended to allow the OO recover any difference between the retail local call rate and the retail national call rate. The TO may pass this charge to the SP (this is the RPP principle element of a Shared Cost call). While this charge currently exists, OOs could increase it in response to the Geo-linking Condition.

4.15 Any changes made by OOs at the wholesale level in response to the NGN Decision may result in issues for other parties in the NGN value chain at either the wholesale or retail level.

4.16 ComReg will consider the potential changes that OOs may make in response to the NGN Decision from wholesale context for 1890 and 1850 at Section 4.7.2 of this Consultation.

4.2 Types of Regulatory intervention

4.17 In determining the appropriate proposed approach for each of the relevant NGNs, ComReg considered, in ComReg Document Number 18/65[78] and the 2018 DotEcon Report[79], each of the potential approaches listed below:

(a) No Intervention

(b) Dispute Resolution

(c) Abuse of Dominance

(d) Negotiated Settlement

(e) Structural Change

(f) Guidance

(g) Price Control

[78] See ComReg Document Number 18/65 para 3.55-3.75

[79]See Chapter 7 of the 2018 DotEcon Report

4.18 **No Intervention** - This option would mean that there would be no intervention by ComReg and OOs would continue to have the freedom to set the WORs at existing levels. ComReg is of the view that given the wholesale harm identified, in particular the high WORs, this would not constrain the ability of OOs to set excessive charges. This is therefore not an appropriate option given the harm identified and the preliminary conclusions in ComReg Document No 18/65.

4.19 **Dispute Resolution** – This option would require that a dispute is raised by an interconnected party (i.e. an OO or a TO). ComReg has no control over whether it receives a dispute that actually meets with the criteria for a dispute as set out in Regulation 31 of the Framework Regulations. ComReg could not therefore guarantee intervention in this way. Also any resolution to the dispute would only apply to the parties to the dispute not the market as a whole. ComReg remains of the view that this approach would not be effective in addressing the high WORs as it has always been available as a potential approach to intervention and, to date, has not prevented OOs from setting high WORs for which there is no competition.

4.20 **Abuse of Dominance** – This option would involve an ex post investigation under Section 5 of the Competition Act 2002 (Abuse of Dominance)[80]. The burden of proof would lie with ComReg to establish an abuse by one or more operators had occurred with the ultimate decision being made by a Court. Competition cases tend to be lengthy and would be resource heavy for all involved. ComReg remains of the view that this option is not appropriate as the process would likely be lengthy and resource heavy for all parties and the harm to consumers would continue in the interim. Further, this approach has always been available as an option to intervene and thus far has not resulted in preventing OOs setting high WORs for which there is no competition.

4.21 **Negotiated Settlement** – ComReg recognises that operators could voluntarily address the harm identified by its review of NGNs. The stability of such a settlement would rely on a voluntary commitment from operators and, absent any restraint, the incentive to deviate at a later stage could be high. Given the unravelling of the previous “deemed to be” regime and the reluctance of mobile operators to participate ComReg is of the view that this option is not an appropriate form of intervention. ComReg therefore remains of the view that a negotiated settlement is not appropriate because such an approach would not be effective in addressing high WORs or indeed timely to ensure effective implementation in line with the proposed introduction of geo-linking.

4.22 **Structural Change** – This would involve moving rate setting responsibilities away from OOs to TOs. This would remove the ability of OOs to exploit their position. As TOs compete with other TOs to provide services to SPs there would be incentives for TOs to take SP interests into account when considering appropriate WORs. Such a change in approach could be effective in addressing high WORs as the

[80] http://www.irishstatutebook.ie/eli/2002/act/14/section/5/enacted/en/html#sec5

competition between TOs would likely drive prices down. However ComReg remains of the view that this option is not appropriate as it would impose a significant burden on all operators in terms of changes to payment/billing systems and the implementation would likely be costly and time consuming. ComReg remains of the view is that this would be disproportionate given other options available as set out here and in ComReg Document Number 18/65.

4.23 **Guidance** – This approach would involve ComReg issuing guidance on its view of acceptable behaviour in terms of WORs. This might involve conditions under which ComReg would launch an investigation or specifying a reference price level beyond which any wholesale price would prima facie be considered excessive. It would be relatively easy to implement and would provide a statement of intent on how ComReg would proceed with any action. However it would not be legally binding and given that a Court would have final decision on the matter could be time consuming. ComReg remains of the view that this approach is not legally binding and therefore would facilitate the continuation of high WORs. Given that a Court ultimately has the final decision in the matter, such a process would be time consuming and allow existing high WORs to continue in the interim.

4.24 **Price Control**. – This approach would involve directly addressing excessive WORs by applying a price control to all OOs in the market. A price control would consider whether excessive WORs differences are accounted for in the cost of supply. ComReg's view is that OOs and TOs should be able to cover their costs on an incremental basis.

4.25 ComReg remains of the view set out in ComReg Document Number 18/65[81] and supported by the 2018 DotEcon Report that a price control is the most effective approach for intervention as it would achieve the objective of addressing the existing high WORs (particularly in the case of the 1800 Freephone NGN range). In the NGN Decision, ComReg was of the view that a price control for NGNs is justified, reasonable and proportionate as a means of addressing excessive wholesale origination charges.

4.3 Types of Price Control

4.26 There are a number of options available to ComReg in terms of a price control for WORs for the relevant NGNs. The relevance and appropriateness of each option is considered below under the following headings:

(a) Regulatory Forbearance

(b) Benchmarking

(c) Retail Minus

[81] See paragraphs 3.73 - 3.75.

(d) Cost orientation obligation

(e) Margin Squeeze obligation

4.27 **Regulatory Forbearance** – This would mean that no price control would be imposed and operators would continue to have freedom to set their own charges for wholesale origination. ComReg would have no influence over these charges.

4.28 **Benchmarking** – Benchmarking is an approach where the wholesale price is set with reference to the price of comparable services. Benchmarking is a price control option that can be adopted when there is an absence of sufficient cost data to allow an NRA to determine a suitably informed cost based price

4.29 **Retail minus** – Retail minus sets a wholesale price by reference to an operator's retail price, minus an appropriate margin to enable the operator to cover their retail costs. ComReg does not consider that that this approach would be appropriate given the complex nature of the NGN market and the difficulty in identifying specific NGN retail revenues.

4.30 **Cost orientation** – A cost orientation obligation should allow an operator to ensure that its wholesale access prices recover no more than its actual incurred costs adjusted for efficiencies plus a reasonable rate of return. Cost orientation ensures predictability of wholesale price levels for operators as cost oriented prices can be determined for the entire period of the price control allowing greater confidence in business decisions.

4.31 **Margin Squeeze** – a margin squeeze can occur where an operator sets wholesale prices such that given the prevailing retail rates it does not allow another operator to cover the cost of provision of services in downstream markets (e.g. sales, marketing). A margin squeeze test can be used as a price control obligation to set wholesale prices or as a complementary test in conjunction with other regulatory options. ComReg does not consider that this approach would be appropriate given the complex nature of the NGN market and the difficulty in identifying specific NGN retail revenues.

4.4 Transparency Obligations

4.32 Regulation 9 of the Access Regulations provides that ComReg may, *inter alia*, specify obligations to ensure transparency in relation to access or interconnection which require an operator to make public specified information such as accounting information, technical specifications, network characteristics, prices, and terms and conditions for supply and use, including any conditions limiting access to, or use of, services and applications where such conditions are permitted by law. Transparency obligations can be standalone, but can also support other obligations being imposed.

4.33 As part of the NGN Decision, ComReg stated it would consider possible future measures to improve price transparency for NGN calls in order to better inform consumers of the cost/charging structure of NGNs and raise consumer awareness. As previously outlined the NGN Decision concluded that wholesale measures in the form of a price control are required to compliment the retail measures put in place. From a wholesale perspective, ComReg is of the view that the price control obligation should be supported by a transparency obligation.

4.34 In addition to a general transparency obligation each operator shall be required to make publicly available and keep updated on its website a "Reference Interconnect Offer ('**RIO**') and to make FVCO and MVCO rates for 1800 and 0818 publicly available in an easily accessible manner on its website.

4.35 The RIO should set out the contractual terms and conditions and technical basis on which SPs can obtain access to NGNs and associated facilities.

4.5 Wholesale charges for NGNs

4.36 The purpose of ComReg's review of NGNs is to ensure that there is end-to-end-connectivity for NGNs thus making sure that callers can continue to access SPs via an NGN platform with a transparent charging structure and that SPs will continue to offer services to callers using NGNs.

4.37 ComReg is of the preliminary view that, a wholesale price control for WORs for calls to the relevant NGNs, should address issues effecting SPs and operators that carry these NGN Calls. In proposing these wholesale measures, in combination with the measures in the NGN Decision, it is hoped that ComReg will achieve the objectives that organisations are encouraged to use NGNs; that callers can access more SPs via NGNs; that all operators provide all callers with access to all NGNs and ultimately give the maximum benefit to end-users.

4.38 In accordance with Regulation 23 of the Universal Service Regulations 2011 ComReg may 'specify requirements' to ensure that end-users are able to access and use services using non-geographic numbers. ComReg's role is to encourage and where appropriate, ensure adequate access, and interconnection, and interoperability of services while promoting efficiency, sustainable competition, and giving the maximum benefit to end-users. ComReg may exercise its powers, under Regulation 6 of the Access Regulations where justified, to secure its policy objectives and regulatory principles as set out in the Section 12 of the Act and Regulation 16 of the Framework Regulations. ComReg considers that in the context of this Consultation, the primary objectives being addressed are to maximise the benefit to end-users and to promote competition by, among other things, ensuring all users derive benefit in terms of choice, price and quality.

4.39 In the following sections ComReg will consider the wholesale charges for calls to 076, Shared Cost (1890 and 1850), 0818 and 1800 numbers. For each number type ComReg will consider the following:

(a) Current charging arrangements – As described at Section 3.2.7 of this Consultation, each operator in the NGN Value chain can recover the incremental cost of an NGN call through charges levied at the wholesale level while some operators may also recover at the retail level. For calls to each number type in scope, ComReg will describe the wholesale and retail level charging arrangements in the context any current rules in place or industry practices.

(b) Future charging arrangements – ComReg will describe the future wholesale and retail level charging arrangements for calls to each of the relevant NGNs. This will be in the context any future rules or industry practices.

(c) Potential harm – ComReg will describe potential harm in respect the future charging arrangements for each of the relevant NGNs and detail how any proposed measures aligns with ComReg's statutory objectives.

(d) Preliminary Conclusions – ComReg will describe any preliminary conclusions in respect of the type of action (if any) in relation to each of the relevant NGNs.

4.40 In the following Sections, ComReg will refer to many of the terms described at Section 3.2 of this Consultation, (including but not limited to CPP; RPP; Shared Cost; revenue share; retention rate; the Numbering Conditions).

4.41 When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full, and provide supporting information.

Q1. Do you agree with ComReg's description of the current and future NGN charge flows detailed in Figure 7 to Figure 13 below in Sections 4.6 to 4.9 and the associated text?

Q2. ComReg requests that if respondents consider that the analysis below in Sections 4.6 to 4.9 is incorrect that a detailed description is provided and supported, where appropriate, with sample (non-confidential) interconnection agreement(s).

4.6 Nomadic numbers – 076

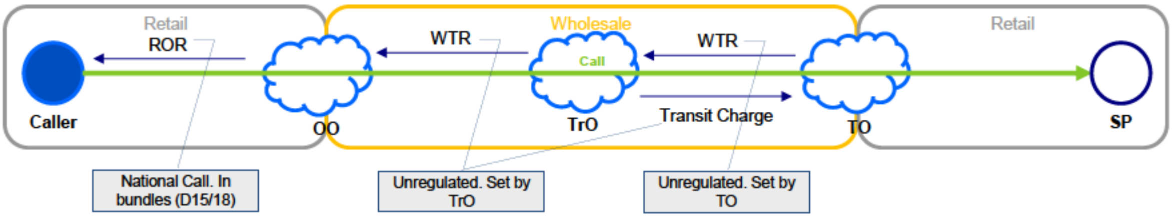
4.6.1 Current charging arrangements for calls to 076 numbers

4.42 In this section ComReg will describe the wholesale and retail charging arrangements for calls to 076 numbers.

4.43 The characteristics of calls to 076 numbers follow the application of the CPP principle. According to the Numbering Conditions of Use the cost of calling such nomadic numbers from within the State shall not exceed the originating undertaking's standard rate for a call of the same duration to a Geographic Number.

4.44 Figure 6 below shows the flow of wholesale and retail level charges for an off-net 076 NGN call. The 076 NGN range is currently operating under a wholesale payment flow that stems from the Transit Operator ('**TrO**').

Figure 7: Charges for 076 (Currently)



4.45 Calls to 076 NGNs follow the CPP principle. In terms of retail charges, the OO charges the caller and the SP pays nothing. The OO charges the caller a ROR at a rate no greater than a national call rate. Figure 5 above reflects the arrangements that will exist until the introduction of the Geo-linking Condition on the 076 NGN range which is due to come into effect on 1 December 2019.

4.46 At the wholesale level, it is relevant to note that Eircom is used by many OOs (Mobile and Fixed) as a TrO for calls to 076 NGNs. Eircom's Switched Routing and Transit Price List ('**Eircom STRPL**') provides details on the payment flow for calls to 076 NGNs where Eircom is the TrO.

4.47 In the Eircom STRPL[82] charges for calls to "VoIP" (otherwise known as calls to the 076 NGN range) are detailed at Table 208. The rates shown in Table 208 are applicable to all operators:

(b) 4.92 c/minute for calls to 076 at peak times;

(c) 1.35 c/minute for calls to 076 at off-peak times;

(d) 1.58 c/minute for calls to 076 at weekends.

4.48 The Eircom STRPL notes that:

> *"Table 208 list* [sic] *the payment to the terminating Operator for the services listed in that table. The same charges in Table 208 are levied by open eir on the originating operator for the services listed in that table. open eir then levies the transit fee in Table 002 on the terminating operator for the call. Rates are quoted in Euro cent"*

82 Version 155, 2 February 2019.

4.49 Table 002 in the Eircom STRPL notes that Transit fees are now detailed in Eircom's Commercial Interconnect Services Price List ('**Eircom CISPL**'). Eircom's National Transit fees are set out in Schedule 005, Table 1 of the Eircom CISPL as follows:

(a) 0.265 c/minute at peak times;

(b) 0.146 c/minute at off-peak times;

(c) 0.127 c/minute at weekends.

1.2 Based on the Eircom STRPL, for calls to 076 transiting Eircom at peak times:

(a) the OO is charged a Transit fee of 4.92 c/minute by Eircom;

(b) Eircom pays the TO a WOR 4.92 c/minute; and

(c) Eircom charges the TO a WTR of 0.265 c/minute.

4.50 As the same rate of 4.92 c/minute is charged by Eircom to the OO and paid by Eircom to the TO, it could be considered to be equivalent to a WTR. However, as set out in the Eircom STRPL Table 208, the same rate applies to all operators. Therefore the rate levied by Eircom on the OO and paid by Eircom to the TO would seem to be independent of any relevant WTR that the TO charges for 076 termination.

4.51 It is also relevant to note that an unregulated Transit is charged to the TO. While the Transit charge for calls to Geographic numbers and calls to 076 numbers is the same (0.265 c/minute), the transit charge for calls to a geographic number is levied by the TrO on the OO. For calls to 076 numbers the transit charge is levied by the TrO on the TO.

4.52 Therefore, in terms of Wholesale level charges for calls to 076 NGNs, where Eircom is the TrO (i.e. for most 076 calls), the OO is subject to a form of WTR set by Eircom. The charge levied on the OO is not set by the TO and is fixed, irrespective of the WTR levied by the TO. Eircom also levies a fixed unregulated Transit charge on the TO. This Transit charge applies to all operators, irrespective of the OO or TO originating or terminating the call.

4.6.2 Future charging arrangements for calls to 076 numbers

4.53 There are two ComReg decisions that may impact the charging arrangements for calls to 076 numbers in the future:

(a) The introduction of the Geo-linking Condition in D15/18.

(b) ComReg's review of FVCT Markets and MVCT Markets[83].

4.54 As previously noted in paragraph 4.45 of this Consultation, the characteristics of calls to 076 NGNs, in particular the application of the CPP principle, are broadly

[83] See paragraphs 3.111 to 3.116 of this Consultation.

similar to those of geographic numbers. Under the CPP principle, the caller pays to make the call. The operative retail relationship is that of the charges and payments between the caller and the OO. The retail relationship between the SP and the TO is only relevant, insofar as the TO must not charge the SP to receive the call.

4.55 Annex 1 of the NGN Decision (which contains the decision instrument) addresses the four classes of non-Freephone number including 076, in Part III (i), states that

> *"The retail tariff charged to any end user for a call to a Non-Geographic Number in any of the four ranges 1850, 1890, 0818 or, 076 shall not exceed the tariff that would be charged to the same end user for a national call made to a Geographic Number, at the same time."*

4.56 Part III (i) of the decision instrument contained in Annex 1 of the NGN Decision goes on to state that:

> *"Where an end-user exceeds his or her allocation of "in-bundle" call minutes, the retail tariffs charged to that end-user for any "out-of-bundle" call made to a Non-Geographic Number in any of the four ranges 1850, 1890, 0818 or 076 shall not exceed the retail tariff that would be charged to that same end-user for any "out-of-bundle" national call made to any Geographic Number at the same time."*

4.57 At the retail level, calls to the 076 NGN range are treated in exactly the same manner as calls to geographic numbers. This retail revenue needs to be distributed through the system as a whole to cover both the costs of origination and termination. Under the CPP principle, a TO cannot levy a retail charge on the SP. Any TO's costs of termination can only be recovered through a wholesale charge levied by the TO on the OO. In the case of 076 NGNs, there will be an explicit, Regulated FTR set by ComReg.

4.58 In ComReg's Notified Termination Markets SMP Draft Decision[84], it preliminarily concludes that:

> *"… it is ComReg's position that FVCT to 076 numbers is subject to sufficiently similar competitive characteristics as FVCT to Geographic Numbers and is therefore to be included in the same Relevant FVCT Market(s) as call termination to Geographic Numbers."*

4.59 As noted at paragraphs 3.111 to 3.116 of this Consultation, the Notified Termination Markets SMP Draft Decision has been notified to the EC, BEREC and other NRAs under Article 7 of the Framework Directive.

4.60 It is expected that the Notified Termination Markets SMP Draft Decision will come into effect before December 2019; this will, based on the current proposals, ensure that a call to a 076 NGN is regulated in the same way as a termination provided for a geographic call:

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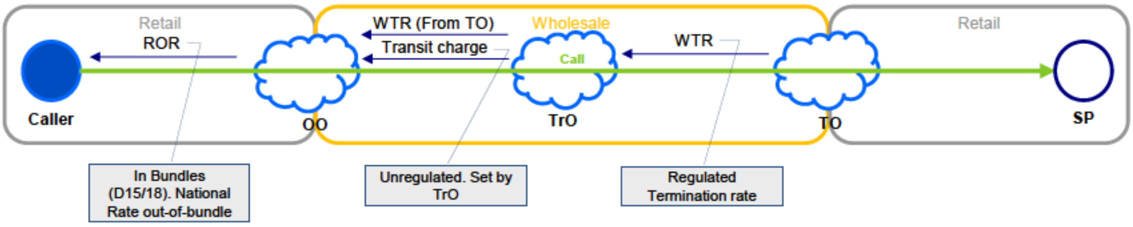
[84] See paragraph 5.69 of ComReg's Notified Termination Markets SMP Draft on the European Commission website at: https://circabc.europa.eu/w/browse/353ddf90-0916-4ea3-8a5d-e351186aa406

Figure 8: Future arrangements for charges for calls to 076 numbers (December 2019)



4.6.3 Potential harm in relation to charges for calls to 076 numbers

4.61 ComReg has considered the possible scenarios where wholesale level charges for calls to 076 NGNs could arise and potentially cause harm. In the case of calls to 076 NGNs, the concern is primarily that OOs could introduce a WOR for calls to 076 NGNs to:

(a) Limit revenue impact of Geo-linking or;

(b) Respond to excessive wholesale charges (WTRs)

4.62 It is ComReg's preliminary view that, in the event that WTRs for calls to 076 numbers are regulated with a regulated cost based termination rate, OOs will not introduce WORs for calls to 076 numbers. This preliminary view is based on current OO behaviour for calls to Geographic numbers. For calls to Geographic numbers OOs are charged a regulated termination rate and recover origination costs from retail bundle subscriptions or out-of-bundle call rates without charging a WOR.

4.63 In terms of a TO, currently an unregulated WTR is charged for calls to 076 numbers. It is ComReg's preliminary view that, on the basis that WTRs for calls to 076 numbers will be subject to a regulated cost based termination rate, there will be no potential for harm caused by excessive WTRs.

4.6.4 Preliminary Conclusion on wholesale charges for calls to 076 numbers

4.64 It is ComReg's preliminary view that the appropriate price control option in relation to the 076 NGN range is Regulatory Forbearance. There is no further wholesale measure required. The proposed wholesale termination rate regulation coupled with the retail measures introduced (which include NGN consolidation from five to two NGN ranges which means that the 076 NGN range will ultimately cease in 2021) as part of the NGN Decision are considered to be sufficient to allow OOs and TOs cover their wholesale costs. The risks associated with OOs taking advantage of their bottleneck power will be constrained by the existing NGN Decision and the proposed Regulated FTR for this NGN range.

4.65 ComReg considers that this position meets its statutory objectives, and in particular the objective to ensure end-user benefit is maximised. ComReg will revisit this preliminary view in the event that FVCT to 076 numbers is not regulated.

4.66 ComReg has included worked examples of current and proposed charges and payment flows for 076 NGNs at Annex 3 paragraphs A3.4 to A3.6 of this Consultation.

4.67 When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full, and provide supporting information.

Q3. Do you agree with ComReg's preliminary conclusion on wholesale charges for 076 numbers?

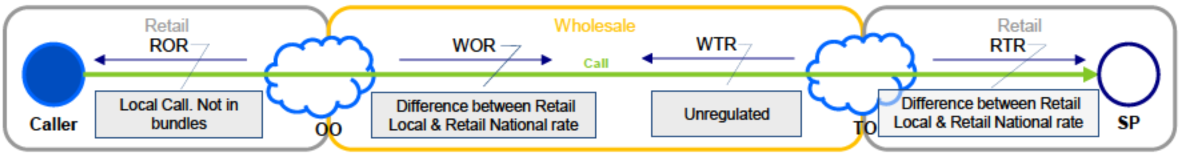
4.7 Shared Cost numbers – 1850 and 1890

4.7.1 Current charging arrangements for calls to Shared Cost numbers

4.68 Shared Cost numbers are defined in the Numbering Conditions as those NGNs with a prefix of 1890 or 1850.

4.69 As noted previously in Section 3.2.4 the 1850 and 1890 NGN ranges allow a caller to pay a retail rate to the OO for local geographic call for what would otherwise have been a national geographic call. The difference between the retail local geographic call charge and the retail national geographic call charge was instead charged to the SP. This arrangement 'shared the cost' of a national rate call between the caller and the SP.

Figure 9: Charges for Shared Cost calls (currently)



4.70 In this case, Shared Cost numbers are a combined application of the CPP and RPP principles for a national rate call. The Calling Party Pays the OO local rate for the call the Receiving Party Pays the remainder.

4.71 The caller and the OO have a retail relationship, meaning that the caller can easily be charged by the OO for the local part of the call. While it is possible that the SP may be on the same network as the caller (i.e. both the caller and the SP having a retail relationship the OO, or an on-net call) is not always the case.

4.72 For the OO to charge the SP for the remainder of the off-net Shared Cost call, a charge at the wholesale level is required from the OO, ultimately to the TO. The TO will then pass this wholesale level charge through to the SP as a retail charge to receive the call.

4.73 Shared Cost is relevant at the retail level in that it dictates the arrangements for caller and SP charges. However, the RPP element of a Shared Cost call results in a charge at the wholesale level. Therefore, much like the retail level CPP and RPP principles, Shared Cost has a wholesale level impact and should be considered in this Consultation.

4.74 Currently, the maximum retail rate that the OO can charge the caller is a local rate.

4.75 In theory, the sum of the retail and wholesale rates levied by the OO should equal the rate for a national geographic call, this is not typically the case. For example one Irish mobile operator has a published retail rate for calls to Irish numbers of 38 c/minute. Calls to 1890 for all callers are charged as out-of-bundle at a minimum of 29.48 c/minute, the operator also charges 13 c/minute to the TO in the form of a WOR[85] (the TO will pass this 13 c/minute through as part of the retail charge to the SP). In total, the operator receives a minimum of 42.48 c/minute for calls to 1890. Using the cost of origination for 1800 discussed in Chapter 5 of this Consultation as a guide, the cost incurred by the mobile operator to originate these 1890 calls is approximately 1.5 c/minute.

4.7.2 Future charging arrangements for calls to Shared Cost numbers

4.76 The introduction of the Geo-linking Condition[86] on 1 December 2019 will have two effects in relation to Shared Cost:

(a) Calls to 1890 or 1850 must be treated as in-bundle calls where available.

- Out-of-bundle maximum rate to the caller increases from retail local rate to retail national rate.

4.77 The NGN Decision increased this maximum retail rate with the effect that an OO may now recover the full costs of a national call directly from the caller. This retail level measure has an effect at the wholesale level in that an OO need not levy a WOR to recover the costs. The “Shared Cost” element of the 1850 and 1890 NGNs can potentially be removed from the NGN value chain. The maximum WOR for a

[85] The rate origination of calls to 1890 is published in the Eircom STRPL.

[86] **Geo-linking Condition** – The simplification of retail pricing by requiring that, from a retail pricing perspective OOs must treat calls to NGN ranges where the caller pays (1890,1850,0818, 076) in the same way as they would treat calls geographic numbers. Specifically, calls to NGNs must be included in bundles of national rate call minutes and treated as in-bundle calls when dialled. If the call is out-of-bundle (i.e. the caller has no bundle of national rate call minutes or has exceeded their allocation of minutes) the charge incurred shall not exceed the national geographic call rate.

Shared Cost call is the difference between the OOs retail national rate and the retail local rates

4.78 With the introduction of the Geo-linking Condition, OOs will receive less retail revenue from Shared Cost calls on the basis that fewer callers will be subject to high out-of-bundle rates. Potential actions by an OO to counter retail revenue loss on this range mean that it is more likely that an OO would chose to increase WORs for calls to Shared Cost numbers in response to the Geo-linking Condition rather than taking action at the retail level. However, unlike NGNs which follow the CPP principle (076 and 0818), Shared Cost numbers are a hybrid of CPP and RPP principles meaning that any increases in WORs would be passed through to SPs by the TO as an increased rate.

4.79 TOs subject to increased WORs would receive reduced net revenue, potentially not recovering their cost of termination. TOs have the choice to increase Shared Cost WTRs and/or; pass the WOR increase through to the SP. Increases in WTRs for Shared Cost would potentially result in the same cyclical rate increases between WTRs and WORs as outlined at 4.106 to 4.109 of this Consultation.

4.80 If the measures proposed in this Consultation for the 1800 and 0818 NGN ranges are implemented, these two ranges will potentially offer SPs a lower RTR. These ranges will therefore be more attractive to SPs and, given that these two ranges will remain after 2021 these potentially lower RTRs will further encourage SPs to move from Shared Cost NGNs to either 1800 or 0818.

4.81 ComReg acknowledges that the wholesale approach needs to balance potential short term harm that may be caused to SPs who may find that their costs increased but this is balanced by the fact that the NGN consolidation has been flagged three years in advance of its implementation. ComReg is therefore of the preliminary view that there is no wholesale measure required for the 1850 and 1890 NGN ranges.

4.82 ComReg has included worked examples of current and proposed charges and payment flows for 1890 NGNs at Annex 3 paragraphs A3.17 to A3.20 of this Consultation.

4.7.3 Potential wholesale harm in relation to charges for calls to Shared Cost numbers

4.83 ComReg has considered the possible scenarios where wholesale level charges for calls to Shared Cost numbers could arise potentially causing harm.

4.84 Excessive WORs calls have been observed on Shared Cost numbers for many years, particularly on calls originating from mobile networks. TOs pass these high WORs through to SPs.

4.7.4 Preliminary conclusion on wholesale charges for Shared Cost numbers

4.85 ComReg recognises that there are high WORs for calls to Shared Cost NGNs but is of this preliminary view that the appropriate option in relation to the Shared Cost ranges is Regulatory Forbearance. There is no further wholesale measure required. This is on the basis that the Shared Cost NGN ranges will ultimately cease in at the end of 2021. Should these excessive WORs continue (or increase), SPs could avoid these high Shared Cost WORs by moving to NGNs with lower retail charges (1800, 0818).

4.86 ComReg considers that this position meets its statutory objectives, and in particular the objective to ensure end-user benefit is maximised. Any excessive WORs for these Shared Cost NGNs will only be temporary in nature as these NGN ranges are due to be withdrawn and in the interim will encourage SPs to migrate to either 1800 or 0818.

4.87 ComReg has recently noted that one fixed network operator has indicated that it will begin charging a higher WTR for termination of Shared Cost Calls to one particular mobile network operator. These higher WTRs were not charged previously and are due to commence in May 2019. The fixed network operator in question has noted that the new WTR that will be levied on the mobile network operator has been introduced at a specific rate that counteracts the mobile network operator's recent increase in the Shared Cost WOR. ComReg will monitor this development.

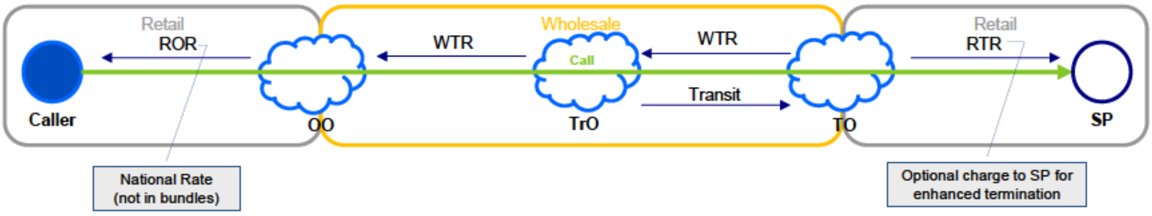
Q4. Do you agree with ComReg's preliminary conclusions on wholesale charges for Shared Cost numbers?

4.8 Universal Access numbers - 0818

4.8.1 Current charging arrangements for calls to 0818 numbers

4.88 Figure 8 below shows the flow of wholesale and retail level charges for an off-net 0818 NGN call. The 0818 NGN range is currently operating under a wholesale payment flow that stems from the TrO. The payment flow for 0818 is the same as 076 currently.

Figure 10: Charges for 0818 (Currently)



4.89 Calls to 0818 follow the CPP principle. In terms of charges at the retail level, the OO charges the caller, the TO does not charge the SP. The OO charges the caller a ROR no greater than a national call rate. Figure 8 above reflects the arrangements currently, before the Geo-linking Condition on 0818 numbers coming into effect on 1 December 2019. SPs may make use of enhanced termination services (e.g. intelligent routing). If these services are used, the TO will charge the SP.

4.90 At the Wholesale level, the OO is subject to a WTR. As with 076, Eircom is used as a TrO for many OOs (Mobile and Fixed) for calls to 0818 NGNs. The Eircom STRPL details the payment flow for calls to 0818 NGNs where Eircom is the TrO.

4.91 In the Eircom STRPL[87] Charges for calls to "Universal Access" (0818) are detailed at Table 202. The rates shown in Table 208 are applicable to all operators:

(a) 4.62 c/minute for calls to 0818 at peak times

(b) 2.58 c/minute for calls to 0818 at off-peak times

(c) 2.04 c/minute for calls to 0818 at weekends

4.92 The Eircom STRPL notes that:

> *"Table 202 list* [sic] *the payment to the terminating Operator for the services listed in that table. The same charges in Table 202 are levied by open eir on the originating operator for the services listed in that table. open eir then levies the transit fee in Table 002 on the terminating operator for the call. Rates are quoted in Euro cent"*

4.93 Table 002 in the Eircom STRPL notes that Transit fees are now detailed in the Eircom CISPL. Eircom's National Transit fees are set out in Schedule 005, Table 1 of the Eircom CISPL as follows:

(a) 0.265 c/minute at peak times

(b) 0.146 c/minute at off-peak times

(c) 0.127 c/minute at weekends

4.94 Based on the Eircom STRPL, for calls to 0818 transiting Eircom's network at peak times, the OO is charged 4.62 c/minute by Eircom. Eircom also pays the TO 4.62 c/minute. Eircom also charges the TO 0.265 c/minute. As the same rate of 4.92 c/minute is charged to the OO and paid to the TO it could be considered to be

[87] Version 155, 2 February 2019.

equivalent to a WTR. However, as set out in the Eircom STRPL Table 202, the same rate applies to all operators. Therefore the rate levied by Eircom on the OO and paid by Eircom to the TO is independent of any relevant WTR that the TO charges for 0818 termination. It is also relevant to note that an unregulated Transit is charged to the TO. While the transit charge for Geographic calls and 0818 is the same, transit of Geographic calls is charged to the OO whereas transit of 0818 calls is charged to the TO.

4.95 Therefore, in terms of Wholesale level charges for calls to 0818 NGNs where Eircom is the TrO (i.e. for most 0818 calls), the OO is subject to a form of WTR set by Eircom. The charge levied on the OO is not set by the TO and is fixed, irrespective of the WTR levied by the TO. Eircom also levies a fixed unregulated Transit charge on the TO. This Transit charge applies to all operators, irrespective of the OO or TO originating or terminating the call.

4.8.2 Future charging arrangements for calls to 0818 numbers

4.96 ComReg noted that the wholesale level charges faced by OOs for calls to 0818 numbers is higher than the current Regulated FTR for FVCT as described in ComReg Decision D12/12.[88]

4.97 Unlike FVCT for 076 numbers, FVCT for 0818 numbers will not be directly impacted by the Draft Termination Markets Decisions. In the Notified Termination Markets SMP Draft Decision, ComReg preliminarily concluded that FVCT for 0818 numbers should not be included in the relevant termination markets. Consequently, the associated termination rate will not be regulated.

4.98 The reasons for not including 0818 in relevant termination markets are that, compared to typical Geographic Number, SPs receiving calls on 0818 numbers are likely to be more incentivised to have greater awareness of the WTR charged by their TO, as 0818 numbers provide SPs with indirect revenue-generating or customer management opportunities.

4.99 In particular, SPs are more likely to choose TOs with a lower WTR or switch away from TOs seeking to impose an increase in the WTR for calls to 0818 numbers on the basis that a high WTR (or a WTR increase) may be factored into the ROR levied by the OO on the caller. Higher RORs faced by callers would impact negatively on the SPs revenue generating or customer management potential. In the Notified Termination Markets SMP Draft Decision ComReg preliminarily concluded that FVCT to 0818 numbers is subject to sufficiently different competitive characteristics to FVCT to Geographic Numbers more generally, and are therefore excluded from the Relevant FVCT Markets(s).

[88] ComReg Decision D12/12, Document 12/125, "Mobile and Fixed Voice Call Termination Rates in Ireland", 21/11/2012,(the '**2012 Pricing Decision**'),

4.100 ComReg recognises that the NGN Decision will change how callers are charged by OOs for calls to 0818. With the introduction of the Geo-linking Condition, a high WTR (or a WTR increase) by the TO for calls to 0818 is less likely to result in a higher ROR experienced by the caller, as many callers will avail of bundled minutes for calls to 0818 under the Geo-linking Condition in the NGN Decision. SP's sensitivity to high (or increasing) WTRs levied by TOs will be reduced as a result.

4.101 Consequently a possible outcome of the Geo-linking Condition is that the competitive characteristics of the 0818 number range may more closely resemble those of Geographic Numbers and 076 numbers. ComReg intends to consult on whether fixed voice call termination of calls to 0818 numbers fall within the definition of the Relevant FVCT Markets in advance of the effective date of the Geo-linking Condition of 1 December 2019.

4.102 In the event that a future consultation concludes that FVCT for calls to 0818 numbers does fall within the definition of the Relevant FVCT Market, a Regulated FTR will be imposed in respect of these types of calls, the charge flow for 0818 will then resemble that of a geographic call:

4.103 In the event that a consultation concludes that calls to 0818 numbers do not fall within the definition of the Relevant FVCT Market, no cost based WTR will be imposed.

4.104 In terms of the potential actions at the Wholesale level, OOs could exploit bottleneck control to levy an origination charge (WOR) on the TO for the origination of 0818 calls. This was previously referred to in the NGN Decision as the "waterbed effect[89]".

4.105 Currently WORs are only observed on number ranges where there is a full RPP principle (1800) or partial RPP principle (Shared Cost). They are not observed on CPP principle numbers. WORs on CPP principle numbers are generally not observed because, under the CPP principle (applicable to 0818), the SP is not charged for the call. Any WOR levied by the OO on the TO could not be passed to the SP and would result in a net reduction on the WTR that the TO received.

4.106 If a WOR was introduced by an OO (Operator A) on a CPP principle number range where no WOR existed previously, the TrO would simply pass this new WOR through to the TO (Operator B). Operator B would previously have received a payment of its WTR but must now also pay out a WOR. In this case, Operator B will now experience a net payment that is its WTR minus the WOR. Operator B would have no choice but to increase the WTR by the same amount as the OOs WOR (0818 is a CPP principle number, the TO cannot charge the SP).

4.107 This creates a feedback loop where a new WOR (or a WOR increase) by Operator A results in a corresponding increase in the WTR that Operator A must pay.

[89] See paragraphs 48 to 52 and 297 to 301 of the NGN Decision.

4.108 The net effect of any cyclical WOR/WTR increases for the both Operator A and Operator B is zero. However, both the Operator A and Operator B will incur operational costs to make the necessary system or contract changes required to effect the continually changing inter-operator wholesale rates with no net benefit to either party,

4.109 The above considers a theoretical binary system, that Operator A introduces a WOR for CPP calls terminated by Operator B. Further complexity is introduced if Operator B mimics operator A and introduces a WOR for any CPP calls it originates. Both operators must now incur operational costs to manage WOR WTR increases. In reality there are multiple operators present and, to a greater or lesser extent, all will originate and terminate CPP calls. If all operators mimic the behaviour of Operator A, the operational cost for all operators would increase. Operator A would not only have to manage WOR increases; it would have to manage multiple responsive WTR increases for any call termination in reaction to the new or increasing WORs of Operators B, C and D.

4.110 WORs on CPP principle numbers are not expressly prohibited by regulation currently but they are not charged by OOs for geographic calls.

4.111 In the case of 0818, the potential for introduction of a WOR by the OO in the presence of the Geo-linking Condition is related to an absence of a corresponding wholesale level measure requiring that the charge experienced by the OO for 0818 call be equivalent to the wholesale termination charge for a geographic call.

4.8.3 Potential wholesale harm in relation to charges for calls to 0818 numbers

4.112 While operators are not prohibited by regulation from imposing WORs on CPP principle numbers, we understand that no WORs are currently charged on 0818 numbers. The introduction of excessive WORs would be problematic in terms of the potential effect on TOs meaning that termination costs would not be recovered, specifically where, under the CPP principle the TO cannot charge the SP.

4.113 High WTRs can have a negative effect on OOs potentially leading to a failure to recover origination costs especially where there is a Geo-linking Condition in place.

4.8.4 Preliminary conclusion on wholesale charges for calls to 0818 numbers.

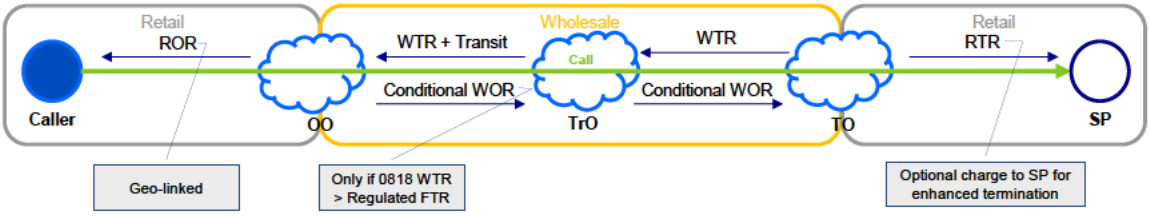
4.114 For calls to 0818 numbers, OOs can charge callers at the retail level. ComReg is of the preliminary view that imposing a price control on the 0818 NGN range requires a different approach than the standard options described in Section 4.2 of this Consultation.

4.115 From a termination perspective, there is little evidence to suggest that the costs incurred by a TO in terminating a 0818 call are significantly different to the costs incurred when terminating a national geographic call[90]. On that basis, if a TO receives a net payment from the OO that equals the Regulated FTR, any termination costs should be recovered by the TO.

4.116 It is ComReg's preliminary view that absent a Regulated FTR for 0818 NGNs, a price control which requires operators not to impose a WOR or a limited WOR for 0818 (equal to the difference between the 0818 WTR and the Regulated FTR) would be a suitable remedy. ComReg considers that this position meets its statutory objectives, and in particular the objective to ensure end-user benefit is maximised.

4.117 An OOs' exposure to high 0818 WTRs would be offset by permitting an OO to levy a WOR for a 0818 call if the WTR from a TO for 0818 termination is greater than the Regulated FTR for a geographic call. In these circumstances only, the OO may charge a WOR for calls to 0818 equal to the difference between the 0818 WTR and the Regulated FTR. In the event that a TO charges a WTR for 0818 at a rate equal to the Regulated FTR, the OO may not charge a WOR for 0818 calls.

Figure 11: Charges for 0818 (January 2019)



4.118 ComReg has included worked examples of current and proposed charges and payment flows for 0818 NGNs at Annex 3 paragraphs A3.10 to A3.13 of this Consultation. These worked examples consider the applicable wholesale and retail charges for a 10 minute peak-time mobile originated call to the relevant NGNs under the current arrangements and also under the proposed price controls. For example, a 0818 termination rate of 4.06 c/min is charged and the Regulated FTR is 0.06 c/min. In such a case, the OO may charge a WOR no greater than 4 c/min (4 c/min is the difference between that 0818 termination rate (4.06 c/min) and the Regulated FTR (0.06 c/min)).

4.119 As discussed at Section 3.7 of this Consultation the Notified Termination Markets SMP Draft Decision notes that potentially, a Geo-linking Condition could have an effect on calls to 0818 numbers such that the termination of such calls may fall into the FVCT market and that ComReg will consider this in a future consultation.

4.120 When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full, and provide supporting information.

[90] TOs may charge SPs for enhanced Termination on 0818 NGNs.

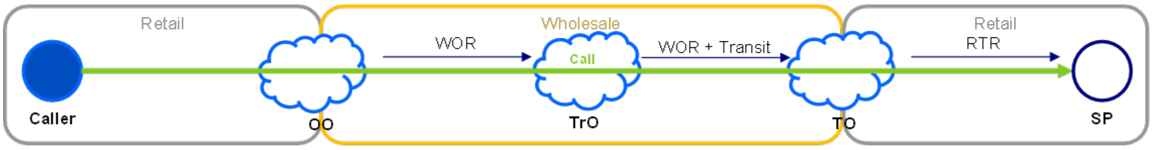
Q5.	**Do you agree with ComReg's preliminary conclusions on wholesale charges for 0818 numbers?**

4.9 Freephone numbers - 1800

4.9.1 Current charging arrangements for calls to 1800 numbers

4.121 Figure 10 below shows the flow of wholesale and retail level charges for an off-net Freephone call:

Figure 12: Charges for 1800 calls (currently)



4.122 Calls to 1800 follow the RPP principle. In terms of charges at the retail level, the OO does not charge the caller and the TO charges the SP an unregulated RTR. At the wholesale level, the OO charges an unregulated WOR. TOs can charge a WTR at the wholesale level or can recover termination costs as part of the RTR to the SP. The RTR charged to the SP for a 1800 call is a combination of the per call costs incurred by all operators in the NGN value chain in carrying the call.

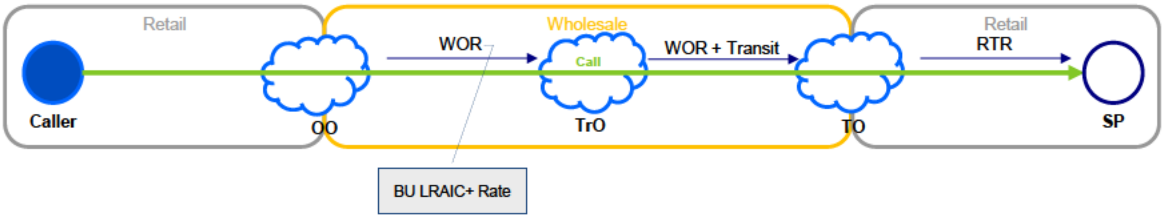
4.123 Therefore, the RTR for a RPP principle call is broadly similar to the ROR for a CPP principle call in that both are a product of the costs incurred by all operators in the NGN value chain in carrying the call. The difference being who bears the cost of the call – for RPP the SP bears the cost of the call and for CPP the aller bears the cost of the call.

4.9.2 Future charging arrangements for calls to 1800 numbers

4.124 In terms of the effect of the NGN Decision on 1800 numbers, the Geo-linking Condition is not relevant. By definition in the Numbering Conditions, 1800 numbers carry no charge to the caller and would not be include in bundles. The NGN Decision does note that the 1800 and 0818 ranges will be the only NGN ranges after the consolidation from five to two NGN ranges.

4.125 It is ComReg's preliminary view that a price control on the WOR for 1800 will be effective in ensuring end-to-end connectivity for 1800 NGNs and access to numbers. It is expected that a 1800 WOR price control would result in a charge flow for 1800 NGNs as shown in Figure 11 below.

Figure 13: Charges for 1800 calls (January 2019)



4.126 From a termination perspective, there is little evidence to suggest that the costs incurred by a TO in terminating a 1800 call are significantly different to the costs incurred when terminating a national geographic call with the applicable Regulated FTR. On that basis, TOs should be able to recover any termination costs via the SP.

4.127 ComReg has included worked examples of current and proposed charges and payment flows for 1800 NGNs at Annex 3 paragraphs A3.21 to A3.24 of this Consultation.

4.9.3 Potential wholesale harm in relation to charges for calls to 1800 numbers

4.128 As discussed at Section 3.3 of this Consultation it is ComReg's preliminary view that OOs have bottleneck control for the origination of calls to 1800 NGNs. WORs that are excessively high in respect of costs can be levied by OOs. TOs will pass these high WORs through to SPs in the form of high RTRs. SPs wishing to provide a free to call service to callers have no option but to pay the high RTRs. Moving to another TO will not reduce the 1800 RTR that the SP is subject to. OOs are able to increase 1800 WORs at will and independently of TOs, SPs, callers or other OOs.

4.129 Absent intervention, OOs will continue to charge high WORs and SPs will continue to face high RTRs as a result. Some SPs (for example those offering services to vulnerable sections of society) will have no option but to accept these costs should they wish to continue to offer a free to call service. Other SPs may have a caller profile that is less sensitive to paying for a call and must then consider the continued high cost of offering a 1800 service versus a move to the 0818 range which, in future (based either on this decision or a future inclusion in Termination markets), will have no RTR, with the caller paying for the call.

4.130 It is ComReg's preliminary view that, absent intervention in respect of WORs for 1800, many SPs will no longer provide free to call services on 1800 due to the high RTRs driven by high WORs. Intervention in respect of these high WORs is required to ensure that end-to-end connectivity for 1800 NGNs is maintained and that end-users have access to numbers.

4.9.4 Preliminary Conclusion on wholesale charges for 1800 numbers

4.131 ComReg is of the preliminary view that the appropriate form of price control for Freephone numbers is cost orientation based on detailed cost modelling.

4.132 Setting a price control of cost orientation for Freephone using modelled costs sets a cap that will allow OOs recover reasonable costs but will avoid compensating OOs with inefficiently high costs. This measure ensure that both OOs and TOs are no better or worse off for providing Freephone services.

4.133 ComReg has included worked examples of current and proposed charges and payment flows for 1800 NGNs at Annex 3 paragraphs A3.21 to A3.24 of this Consultation. These worked examples consider the applicable wholesale and retail charges for a 10 minute peak-time mobile originated call. Under the current arrangements, this example 10 minute call would cost the SP approximately €3.15. If the proposed 1800 price control is implemented and the reduced WOR is passed through to the SP by the TO, the same call would cost the SP approximately €0.25.

4.134 ComReg considers that this position meets its statutory objectives, and in particular the objectives to ensure end-user benefit is maximised and to promote competition by, among other things, ensuring all users derive benefit in terms of choice, price and quality. The measures should ultimately benefit consumers, including vulnerable consumers, and their ability to access voice based services provided over NGNs by possibly increasing the range of services available

4.135 See Chapters 5 and 6 of this Consultation for details on the cost models and Section 4.10 of this Consultation for recommended principles.

Q6. Do you agree with ComReg's preliminary conclusions on wholesale charges for calls to 1800 numbers?

4.10 Costing Principles

4.136 ComReg has also considered the costing approach that should be adopted to determine the costs relevant to a price control for call origination on fixed and mobile networks to Freephone NGNs. It is ComReg's view, supported by DotEcon that the key principle should be to determine that the basis for modelled costs used for Fixed Voice Call Origination (FVCO) should ensure that there are no significant differences in the allowed prices of origination that could otherwise cause distortions in the provision of NGNs relative to geographic numbers. An Annex[91] to the DotEcon report set out the key parameters that ComReg should consider in

[91] See Annex A of the 2019 DotEcon Report "A price control for regulation of wholesale charges for non-geographic numbers

developing the modelling required to establish operators' costs in originating calls to Freephone and non-Freephone NGNs and recommended a preferred approach for each parameter as follows:

(a) Model structure - DotEcon consider that ComReg ought to follow a bottom-up approach to cost modelling rather than a top-down approach. Where possible, the bottom-up analysis could be checked against costs derived from an assessment of top-down data;

(b) Cost base – DotEcon recommend that the costs should be based on those of a Hypothetical Efficient Operator (HEO) and that the modelling approach should be based on a hypothetical existing operator rather than considering a new entrant;

(c) Cost standard - DotEcon consider that a LRAIC+ approach is preferred to a Pure LRIC approach, as a LRAIC+ approach should better ensure that originators earn similar margins on non-geographic calls as they do originating geographic calls, thereby avoiding possible regulatory-induced distortions that might affect the choice of service providers and operators regarding the treatment of different NGN number ranges and between NGNs and geographic numbers;

(d) Scale - DotEcon note that a practical approach to addressing scale effects in the modelled networks would be to use the average of the actual number of large operators with national coverage:

    (i) For mobile, there are three such operators, so scale would be 33.3%;

    (ii) For fixed, Eircom is the only large operator with national coverage so an operator based on Eircom's scale would be appropriate;

(e) Demand forecasts - In determining future scale, DotEcon recommend that voice market forecasts should be consistent with forecasts used for other modelling exercises (in particular, for fixed and mobile call origination and fixed and mobile call termination), and ensure that the forecasts are consistent across the fixed and mobile networks;

(f) Service increment - DotEcon consider that the increment to be taken to identify the cost of the originated leg of the call should ideally be for all voice calls originated on the network;

(g) Depreciation method – DotEcon note that for a bottom-up (BU) modelling approach, either economic depreciation or tilted annuity could be an appropriate depreciation method to use and recommend that the depreciation profile used should, where feasible, be based on economic depreciation, and any difference in approach would need to be justified;

(h) Modelled period - In order to provide a degree of certainty to the market, DotEcon recommend that the model should be able to calculate charges for several years, i.e. it should be a multi-year model, and also suggest that ComReg should seek maximum consistency with its modelling of other access and call prices in terms of the periods modelled;

(i) Additional mark-up – In respect of a possible additional mark-up to LRAIC+ to allow for the recovery of relevant retail costs, DotEcon's initial assessment is that there should be no provision for costs of bad debt for Freephone NGNs (given the retail price is zero). DotEcon also consider that many retail costs (such as sales and marketing, and customer acquisition/retention incentives) may not provide direct benefit to service providers, because they are to do with the provision of VAS and not with the provision of call origination. Nonetheless, DotEcon also suggest that operators might be given the opportunity to justify the inclusion of any additional retail costs associated with call origination to NGNs.

(j) Price path – DotEcon's recommendation is that there is no glide path for changes to origination rates for 1800 Freephone and non-Freephone NGNs and that cost-oriented 1800 WORs should come into force with immediate effect, but that a year could be appropriate for changes to origination rates for non-Freephone NGNs. DotEcon also consider that allowing the prices to evolve each year to reflect the annual changes in the underlying unit costs would represent the simplest method and would ensure consistency of application within ComReg's existing pricing decisions.

4.137 Further detail of the costing principles can be found in the Annex to the DotEcon report and ComReg and its advisors have given due regard to these principles when developing the models to inform cost oriented charges for MVCO and FVCO services.

4.138 In general, ComReg is of the view that the costing principle recommendations in the DotEcon Report are consistent with the principles that ComReg has adopted in previous cost models. For example, the Notified Termination Markets Draft Pricing Decision included a draft MTR Model and a draft FTR Model (respectively, the '**Notified Draft MTR Model**' and the '**Notified Draft FTR Model**'[92]). Both are models that have been developed to calculate the costs of voice termination in the mobile and fixed networks (and are Bottom-Up models based on a hypothetical efficient existing operator as recommended in paragraphs 4.136, 4.136(a) and 4.136(b) of this Consultation. In addition, the scale effects that ComReg has adopted in Notified Draft Termination Rate Models are also consistent with the DotEcon Report recommendations (see 4.136, 4.136(d)). In this regard, the Notified Draft FTR Model considers Eircom's scale as Eircom is the only fixed network

[92] The Notified Draft MTR Model and the Notified Draft FTR Model are jointly referred to as the '**Notified Draft Termination Rate Models '**

operator with a national network in Ireland, while the number of mobile network operators with national coverage in Ireland has in recent years declined from 4 to 3 and, as a result, the Notified Draft MTR Model assumes that the market share of the hypothetical operator is 25% up to and including the year 2013, and 33.3% from 2014 onwards.

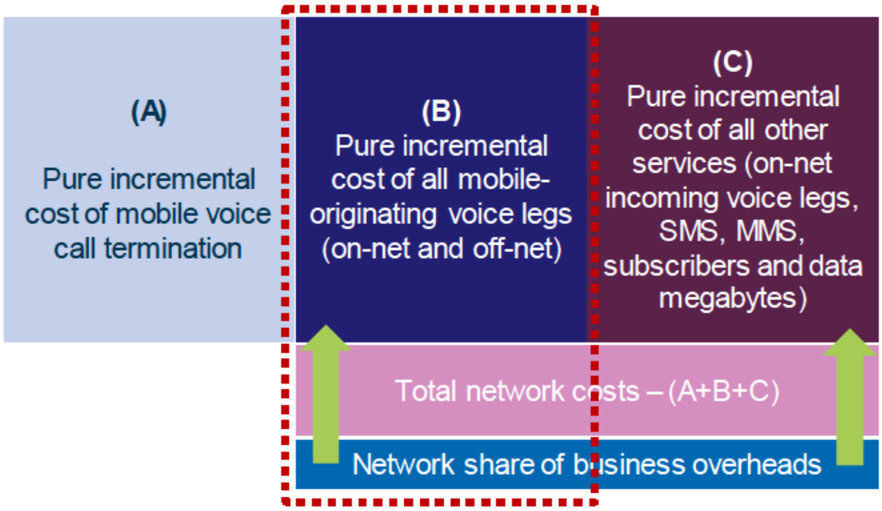
4.139 ComReg also agrees with the DotEcon recommendation that the voice market forecasts should be consistent with forecasts used for other modelling exercises and are of the preliminary view that basing the cost modelling for MVCO and FVCO on the Notified Draft MTR Model and the Notified Draft FTR Model are a practical way of achieving the required level of consistency.

4.140 ComReg is also of the preliminary view that, given the degree of substitutability that exists between calls originating to geographic and non-geographic numbers, avoiding possible regulatory-induced distortions between both types of origination call is an important consideration. It is also ComReg's preliminary view that operators would expect revenues from voice call origination services, including calls originated to non-geographic numbers, to make a contribution to the recovery of the significant common and joint network costs that are a feature of both fixed and mobile networks as well as make a contribution to the recovery of general overheads. Consequently, ComReg agrees with the DotEcon Recommendation that adopting a Pure LRIC costing approach to cost FVCO and MVCO services is not appropriate, as Pure LRIC does make any contribution to the recovery of network and business common costs. Therefore, an approach that includes an allowance for the recovery of common costs, such as either LRAIC+ or LRIC+, is preferable to Pure LRIC.

4.141 With regard to the DotEcon Report recommendation that the increment to be taken to identify the cost of the originated leg of the call should ideally be for all voice calls originated on the network it is ComReg's preliminary view that the definition of the service increment is primarily a concern when adopting a LRIC approach but is not as relevant a consideration when a LRAIC approach is adopted. The definition of the increment is critical in a LRIC approach because, as noted in section 3.1.3 of the DotEcon Report, LRIC is derived as "*the cost of* producing *a specified additional product, service or 'increment' and captures the costs directly caused by the provision of that service over and above the other services the firm produces*". Consequently, LRIC can be considered to be the costs avoided by not providing that specific increment on the network, effectively treating it as the last service in the service stack. In this respect, LRIC can be considered as a 'small increment' approach (e.g. voice origination or voice termination only) and a LRIC+ would be calculated by first determining the Pure LRIC costs for each of the defined increments (e.g. call termination, call origination and other services) and then applying one or more mark-ups to the Pure LRIC of the specific increment of interest to allow for the recovery of costs that are not incremental to any particular increment.

4.142 An illustration of the LRIC+ approach as it is applied in the Draft MVCO Model is shown in the following diagram:

Figure 14: Illustration of the LRIC+ approach

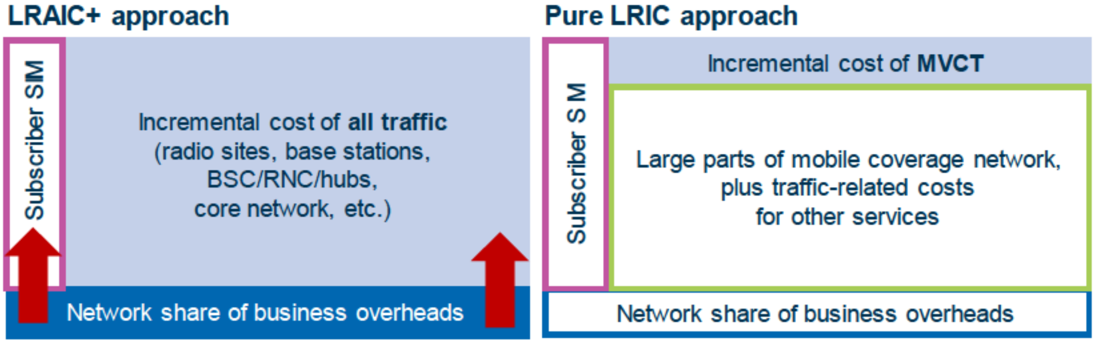


Source: Analysys Mason, 2019

4.143 If LRIC is a 'small increment' approach then LRAIC is the equivalent of a large increment approach (i.e. all traffic services provided by the network rather than, e.g. calls originating on the network) as LRAIC allocates the cost of the all traffic increment between the relative volumes of all the network traffic services, using 'average traffic routeing factors'. Hence, under a LRAIC approach each service, including voice call origination, receives a share of intra-traffic network common costs. LRAIC+ is calculated in the same way as LRAIC, except that one or more mark-ups are applied to the network costs to capture other costs (typically joint and common costs at the enterprise level, such as business overheads, that are common across all services provided).

4.144 The functionality to cost on both a Pure LRIC and a LRAIC+ approach has been implemented in the Notified MTR and the Notified Draft FTR Models as this allows a comparison to be made between the cost recovered when the service is costed using Pure LRIC and the costs recovered when a LRAIC+ approach is used. For illustrative purposes, a comparison of the LRAIC+ approach and the Pure LRIC approach as they apply in the Notified Draft MTR Model is shown in the following diagram.

Figure 15: Comparison of LRAIC+ with the Pure LRIC Approach



Source: MTR Decision Specification Document, Figure 9.3

4.145 Consequently, although LRAIC+ is closely related to LRIC+, how each individual small increment is defined will only affect the LRIC+ calculations and not the LRAIC+ calculations. Nonetheless, adopting a LRAIC+ approach should ensure that the allocation of costs to voice call origination services is consistent in principle with a LRIC+ approach that is based on an increment that includes all voice calls originated on the network. Therefore, it is ComReg's preliminary view that a LRAIC+ approach, that attributes the network costs to services based on the average usage of the various network components by those services, should be adopted to determine the costs for MVCO and FVCO.

4.146 Adopting a LRAIC+ approach ensures that the charges for calls originated to Freephone NGNs can make an appropriate contribution to all relevant network costs, include common network costs and general business overheads. This serves to maintain the investment incentives for operators and also helps to avoid introducing any regulatory-induced distortions that might affect the choice of service providers and operators regarding the treatment of different non-geographic number ranges, or between NGNs and geographic numbers, as recommended in the DotEcon Report.

4.147 The DotEcon Report also considers that either economic depreciation or tilted annuity could be an appropriate depreciation method to use and recommend that the depreciation profile used should, where feasible, be based on economic depreciation, and any difference in approach would need to be justified. The Notified Draft MTR Model uses economic depreciation to annualise costs and ComReg's opinion in the Notified Termination Markets Draft Decisions is that an economic depreciation approach is appropriate for the MVCT market, "*given that this market is capital intensive, will continue to be subject to significant changes in asset prices and is expected to experience considerable growth in service demand over the period of the proposed model*". It is ComReg's preliminary view that the Draft MVCO Model should also use Economic Depreciation as the MVCO service is delivered on the same network that delivers MVCT services.

4.148 Mobile networks are experiencing ongoing upgrades in Radio Access Network (**RAN**) technology from 2G to 3G to 4G and possibly 5G, with the result that asset prices fluctuate in line with the different technology choices that mobile operators are making in the access parts of their networks, while demand fluctuates as it transitions between those technologies. Economic depreciation is required when both the costs of the assets and the demand supported by those assets are fluctuating, as is the case with the RAN assets in the mobile networks, but a tilted annuity can be used when the rate of change in asset prices and demand is more constant. It is ComReg's view that the technology evolution is not as marked in the fixed core network as it has been in the Mobile RANs and in the Notified Termination Decision ComReg took the view "*that depreciation determined on the basis of a tilted annuity approach is appropriate for the FVCT market given that the change in demand is likely to be small and the tilt would reflect price changes in assets*[93]".For these reasons, ComReg's preliminary view is that the tilted annuity approach should continue to apply in the Draft FVCO Model.

4.149 In the Notified Termination Rate Decision, ComReg also considered the issue of the recovery of costs (i.e. common and joint costs) that are unrecovered due to setting the charges for termination services on a Pure LRIC basis and is proposing that, in the case of MNOs and FNOs other than Eircom (where MTRs and FTRs are the only regulated services) any unrecovered costs can be recovered from their other unregulated services. ComReg is also proposing that efficient costs unrecovered from Eircom's voice termination services could be recovered from other (regulated and unregulated) wholesale and/or retail voice/non-voice services as appropriate. ComReg's preliminary view is to include an allowance (for a proportion of the costs that are unrecovered by the Pure LRIC-based charges for MVCT and FVCT) in the network costs associated with the charges for MVCO and FVCO. This is in line with the general principles as set out in the Notified Termination Markets Draft Decisions.

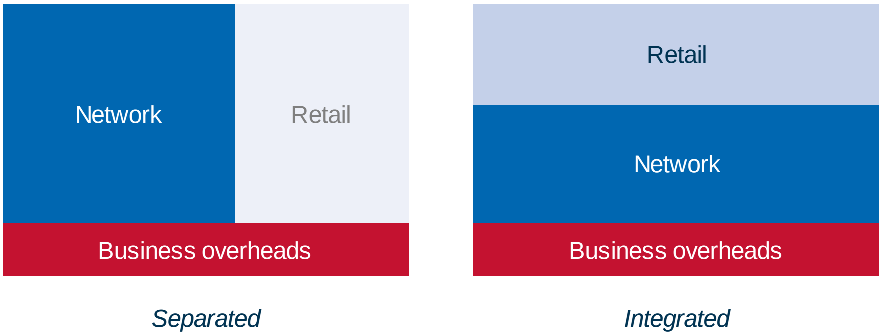
4.150 In respect of a possible additional mark-up to LRAIC+ to allow for the recovery of relevant retail costs, ComReg is also of the preliminary view that operators (including Virtual Network Operators (VNO's) that provide network service such as call origination without owning the underlying fixed or mobile networks) would expect to recover the relevant retail costs when their retail customer base originate calls to NGNs (including Freephone NGNs) hosted on other networks. Consequently, additional analysis is required to identify any relevant retail costs that might be associated with call origination to Freephone NGNs as the modelling to date only identifies the network costs to be recovered by the mobile and fixed operators that originate the call.

4.151 Bottom-up cost models previously developed by ComReg have tended to focus on the network costs of the modelled operator as they consider the costs of the operator's retail activities using a separated approach rather than an integrated approach. This means that network services (such as voice traffic) are costed

[93] Notified Termination Decision, paragraph 4.126.

separately from retail activities (such as marketing, pricing, handset subsidies and billing related activities such as data collection, credit management and revenue collection) as outlined in the following diagram.

Figure 16: Options for Consideration of Retail Costs



Source: MTR Decision Specification Document, Figure 3.13

4.152 Business overheads are then marked up between network and retail activities, so that the wholesale cost of supplying a service such as mobile call origination can consider the network costs associated with the call origination service plus a share of business overheads attributable to the network and any consideration of the retail costs associated with the call origination service is not explicitly addressed in the model. As a consequence, the LRAIC+ charge for call origination to Freephone NGNs only allows for the recovery of relevant network costs.

4.153 It is ComReg's preliminary view that a charge that only recovers network costs in the case of calls originated to Freephone NGNs could give rise to distortions between calls originating to geographic numbers and Freephone NGNs as the origination revenues for calls to Freephone would be precluded from making a contribution to the recovery of relevant retail costs, whereas the charges for calls originated to geographic numbers can be set to recover such costs. This can be particularly problematic when the call originates from a customer of a Fixed Virtual Network Operator (**FVNO**) or Mobile Virtual Network Operator (**MVNO**) as the FVNO/MVNO may receive no revenue for a call to a Freephone NGN made by one of its customers. Therefore, ComReg is proposing that the cost oriented charge for calls originated to Freephone NGNs should include an allowance for the recovery of relevant retail costs.

4.154 Under the current FVCO regulation for NGNs Eircom is allowed an additional mark-up for "*reasonable billing costs associated with the service; and an additional bad debt surcharge*". This is essentially a payment to Eircom retail to allow it recover relevant retail costs and establishes the precedent that the cost oriented charges for calls to NGNs should also allow for the recovery of relevant retail costs. As noted in paragraph 4.136 4.136(i) of this Consultation, the DotEcon Report also recommends that operators are given the opportunity to justify the inclusion of any additional retail costs associated with call origination to NGNs. Consequently, in modelling the costs of MVCO and FVCO charges, ComReg has attempted to identify the level of retail costs that might be relevant to calls originated to Freephone NGNs on mobile and fixed networks based on the limited information provided to ComReg by network operators and VNOs.

4.155 In conclusion, the models that were previously developed to inform cost-oriented charges for MVCT and FVCT services have been amended by ComReg to calculate the costs of voice call origination on mobile and fixed networks. ComReg's approach has been guided by the costing principle recommendations outlined in the DotEcon report and the model amendments have been undertaken with assistance from Analysys Mason in the case of the Draft MVCO Model and TERA in the case of the Draft FVCO Model. In the course of amending the Draft Models ComReg has also attempted to maintain an appropriate level of consistency with the cost modelling principles and parameters that have previously been adopted when determining other cost-oriented charges for services that share the mobile and fixed networks with MVCO and FVCO services.

4.156 The next chapter provides an overview of the models that ComReg is proposing to use to determine the costs relevant to a price control for call origination on fixed and mobile networks to Freephone NGNs.

4.157 When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full, and provide supporting information.

Q7. Do you agree with the costing principles proposed for modelling the costs to inform the wholesale charges for call origination to Freephone NGNs, as outlined in the DotEcon Report and summarised in Section 4.10 of this Consultation?

4.11 Undertakings in scope

4.158 This Consultation proposes a wholesale price control (and supporting transparency obligation) for origination of calls 1800 and 0818. As all fixed or mobile operators have the ability to originate calls to 1800 and 0818, the draft Decision Instruments at Annex 9 and Annex 10 lists all such operators.

4.159 ComReg will carry out a periodic review of undertakings originating calls to 1800 and 0818 and will update the operators in scope as appropriate.

Chapter 5

5 Price control for wholesale NGN calls originated by MNOs

5.1 Overview

5.1 In this chapter, ComReg discusses the model used to determine the appropriate level of costs associated with calls to NGNs originating from mobile networks.

5.2 ComReg appointed Analysys Mason (‘**AM**’) to produce a cost model and accompanying specification document to detail the relevant inputs to a cost model capable of generating a mobile origination rate for calls to NGNs,.

5.3 AM has prepared a model called the “Draft Mobile Voice Origination model” (the ‘**Draft MVCO model’**) and the related specification document entitled “*Report for ComReg: Additional cost modelling for mobile voice origination*” (‘**AM MVCO Specification**’) for ComReg. A non-confidential version of this specification document is published on ComReg's website, document number 19/46b.

5.2 Mobile voice call origination modelling

5.2.1 Background

5.4 ComReg has previously appointed AM to develop a cost model to determine the costs of MVCT. This cost model (the ‘**Notified Draft MTR Model**’)[94] is a bottom-up model of a generic hypothetical existing efficient operator based on the costs, volumes and technologies faced by MNOs active in the Irish market. As outlined in paragraph 4.136(a) of the Costing Principles in Chapter 4 of this Consultation, ComReg is proposing to use a LRAIC+ costing approach to derive the origination cost for originated voice calls (to NGNs).

5.5 ComReg is of the preliminary view that, in order to maximise consistency with the cost analysis underpinning the calculation of MVCT charges, the Notified Draft MTR Model should be updated and amended to derive the cost oriented charges to apply to mobile voice calls origination to NGNs. Consequently, ComReg is proposing to use the amended Notified Draft MTR Model to calculate costs relevant to mobile-originated voice calls (to NGNs) using a LRAIC+ approach. AM has refined the

[94] Please see the Notified Draft MTR Model and the accompanying ComReg documents on the European Commission website at: https://circabc.europa.eu/w/browse/28e2cc8b-d473-400d-a58d-c3819f8865e4

Notified Draft MTR Model to enable it to calculate the relevant LRAIC+ charges in the Draft MVCO model.

5.6 The following sections provide an overview of the main modelling principles and methodologies that applied in the Notified Draft MTR Model that is used to model the cost of MTRs, together with an outline of the refinements to the modelling approach that have been considered specifically for the purposes of modelling the cost for MVCO (to NGNs) in the Draft MVCO Model, guided by the recommended costing principles contained in the DotEcon Report. The Draft MVCO Model also includes additional analysis to identify the relevant retail-related costs associated with such calls.

5.2.2 Overview of the Draft MVCO model

5.7 To maintain consistency with the Notified MTR Decision[95], the main modelling parameters in the Draft MVCO Model have been grouped as follows:

(a) operator-related parameters – including the form of the modelled operator (hypothetical efficient existing operator), structural implementation (bottom-up model using scorched node approach reflecting actual operator data), market share assumptions and network footprint;

(b) service-related parameters – including the service set, service volumes, voice traffic, data traffic, market and operator demand;

(c) technology-related parameters – including geotypes, points of interconnect, network nodes, radio access network, network coverage, S-RAN, VoLTE and VoWifi, treatment of spectrum, mobile switching network, mobile transmission network and network expenditure;

(d) implementation-related parameters – including depreciation approach, LRIC and LRAIC calculations, WACC, modelling timeframe, modelling of relevant retail costs.

5.2.3 Operator-Related Parameters

5.8 In the MTR Decision, ComReg concluded that cost modelling for the Notified Draft MTR Model should be based on a bottom-up model of a hypothetical efficient existing operator with 33.3% market share from 2014 onwards (and 25% in and before 2013). A forward-looking market share of 33.3% better reflects reality by capturing the network technologies currently deployed by Irish MNOs to support MVCT services and considers scale similar to the actual scale achievable in the

[95] The proposed MTR Decision is currently available on the European Commission website along with other related appendices and the Proposed MTR Model at: https://circabc.europa.eu/w/browse/28e2cc8b-d473-400d-a58d-c3819f8865e4

Irish market while maximising transparency for industry. These parameters are retained in the Draft MVCO Model.

5.9 The hypothetically efficient existing operator in the model is assumed to have similar network coverage to that achieved by the three MNOs identified as having near 100% population coverage[96].The model assumes 2G/3G coverage roll-out in the earlier years of the modelling period with 4G coverage assumed to reach 2G coverage levels in the long term.

Table 6: Input Coverage by Technology in the Notified Draft MTR Model

Technology	Population coverage (Notified Draft MTR Model)	Resulting area coverage (Notified Draft MTR Model)
2G (from 2003 in all geotypes)	98.7%	84.7%
3G (2100MHz, up to 2012 in all geotypes)	84.3%	35.5%
3G (900MHz, by 2019, in the two rural geotypes only)	92.6% (of Rural 1 / Rural 2)	77.3%
4G (by 2019 in all geotypes)	98.7%	84.7%

Source: MTR Consultation Specification Document, page 9, Figure 3.4

5.10 The Notified Draft MTR Model has also been based on data provided by MNOs using a modified scorched node methodology. This allows for the modelling of efficient costs and scale, whilst at the same time enabling costs and technology assumptions to be closely aligned with those actually faced by the MNOs currently in the Irish market. Modelling a hypothetical existing operator in this way also allows for past constraints to be reasonably captured if relevant, reflected in the chosen parameters (e.g. different levels of spectrum scarcity, different numbers of network operators, use of existing network node locations).

5.11 ComReg has constructed the Notified Draft MTR Model and the related Draft MVCO Model based on information sourced from actual operators in the Irish market through SIRs. Such information includes:

(a) demand, e.g. subscriber usage, busy hour traffic profile;

(b) network design e.g. cell radii, mix of backhaul technologies, planned asset capacities;

(c) and cost e.g. unit capex, asset lives.

5.12 Certain key outputs of the Notified Draft MTR Model were subsequently calibrated with reference to the network and financial data of actual operator(s). This helped ensure that the Notified Draft MTR Model is consistent with the 2009 Termination

[96] Meteor (Eircom Mobile), Three and Vodafone.

Rates Recommendation which requires that a cost model should "*produce as robust results as possible and to avoid large discrepancies in operating cost, capital cost and cost allocation between a hypothetical and a real operator*"[97]."

5.2.4 Service-Related Parameters

5.13 Service parameters are a necessary input to the model which calculates long-run costs. The Notified Draft MTR Model includes information on subscriber numbers, service volumes and traffic patterns. In developing the cost model, it is therefore first necessary to gain an understanding of the aggregate historic and forecast traffic in the Irish mobile market over the timeframe of the model.

5.14 The provision of both voice and data services across a single infrastructure will generate economies of scale and scope (reducing the unit costs for voice and data services). As a proportion of network costs will need to be allocated to all such services and, as outlined in Figure 3.12 of the MTR Specification Document, a full list of proven services has already been included in the Notified Draft MTR Model.

5.15 The service volume in the new MTR model uses ComReg statistics on the total market in Ireland, supplemented by information provided by Irish mobile network operators (in the form of their responses to SIR's and Quarterly Key Data Reports requests) together with data extracted from the 2016 MTR model, to quantify historical demands and derive forecast trends for both mobile market subscribers and traffic. This is to ensure that the modelled network is dimensioned with reference to all the traffic that is carried on Irish mobile networks.

5.16 This market information is then rearranged to suit the categories used in the Notified Draft MTR Model, with voice, SMS and data traffic treated separately. Voice and SMS are further split into sub-categories: incoming, outgoing and on-net traffic. All three sub-categories are further split into the different radio technologies modelled.

5.17 Five classes of NGNs are under review as part of this consultation process. These are 1800 (Freephone), 1850 (Shared Cost, per call charge), 1890 (Shared Cost, per minute charge), 0818 (universal access) and 076 (nomadic). Calls to these numbers constitute a proportion of the mobile-originating voice traffic assumed in the new MTR model.

5.18 Furthermore, the Draft MVCO Model includes the capability to calculate a LRIC/LRIC+ for MVCO services, which follows the DotEcon Report recommendation that the increment for call origination should encompass all voice calls originated on the network (see paragraph 4.136 4.136(f) of this Consultation). To facilitate this calculation, the three on-net voice services (for 2G, 3G and 4G technologies respectively) have each been split into two services: an "on-net outgoing leg" and "on-net incoming leg", with the same number of minutes under

[97] 2009 Termination Rates Recommendation, Recital 11.

both services in each year. The network loading calculations have then been adjusted so that the network loading for each on-net minute service is now split between these two component services, so outgoing loading is associated with the "on-net outgoing leg" service and incoming loading is associated with the "on-net incoming leg".

5.19 Although the demand service volumes have been revised to identify a number of service categories specifically associated with mobile call origination, the approach taken does not affect the aggregate level of traffic carried on the mobile network operator's network as the new service categories are modelled as sub-sets of previously existing service categories. Consequently, the aggregate levels of annual voice, data, SMS and MMS demands are assumed to remain unchanged from the version of the Notified Draft MTR Model used to cost the Pure LRIC of MVCT, and the same assumptions about busy hour service demand also apply.

5.20 Further details of the basis for determining the service volumes that the modelled operator is expected to carry, both on an annual basis and at peak times, can be found in Section 5 of the Notified MTR Decision Specification Document appended to this document and the modifications to the modelling of voice services in the Draft MVCO Model are outlined in Section E.3 of the MVCO Modelling at Annex 6.

5.2.5 Technology-Related Parameters

5.21 Having determined the level of voice and data services pertaining to the hypothetical network operator it is then necessary to consider the technology parameters that will inform the types and quantities of network equipment and infrastructure that will be required to deliver those services to End Users. Basing the Draft MVCO model on the Notified Draft MTR Model means that the same technology parameters apply in both network cost models.

5.22 To dimension the network, service demand from all traffic services is combined with network usage/routeing factors to form aggregated cost drivers to capture the relative usage of each network element by each unit of service demand. This enables the network cost model to calculate the required deployment of appropriate network elements in order to meet the demands for capacity and coverage.

5.23 As capacity and coverage requirements are not uniform across the country the service demand has to be attributed to the different geotypes in order to capture the extent to which geographical factors can influence the costs of delivering services to End Users. The Notified Draft MTR Model AM defined 5 geotypes to allow the modelling of the different dynamics of network deployments in different geographies (for example, coverage-driven deployments in rural areas, versus capacity-driven deployments in urban areas).

5.24 The Radio Access Network ('**RAN**') comprises the base station sites and equipment required to implement a radio access technology connecting the End User to the mobile core network. The network design for the radio layer in the new MTR model considers the three radio technologies currently deployed by Irish MNOs: 2G Global System for Mobile Communications ('**GSM**'[98]), 3G Universal Mobile Telecommunications System ('**UMTS**'[99]), and 4G LTE. This network design includes not only a layer of coverage, but also capacity upgrades, and the physical site requirements (single technology sites, co-located sites, own tower sites and third-party installations). The network design first considers sites for coverage and then considers the radio interface traffic loading to calculate the additional assets required to carry this loading.

5.25 Coverage is considered a central aspect of mobile network deployment and of the radio network in particular. All mobile networks in Ireland currently provide significant coverage using their 2G/3G networks, as required by their licences. These actual levels of coverage have been reflected in the Notified Draft MTR Model.

5.26 The Notified Draft MTR Model assumes that both 3G and 4G deployments reach the same level of coverage as the modelled 2G network in the long term. The 3G and 4G coverage deployments have been calibrated to ensure that the 2016 base station counts of the modelled operator are in the range of the asset counts of actual operators, as derived using ComReg's licence data. A similar calibration using the actual 2G base station deployments is not undertaken since they comprise both coverage and capacity base stations.

5.27 The Notified Draft MTR Model is also capable of considering the potential impact of VoLTE, VoWIFI and Single-RAN ('**S-Ran**') deployments, although not all these potential deployments were active in the modelled network when determining the MTRs rates in the 2019 Decision.

5.28 In finalising the Notified Draft MTR Model ComReg took the view that it is unlikely that a 4G overlay would be used to deliver large volumes of wholesale mobile voice termination in the short to medium term. However, there are still economies of scale and scope associated with deploying a 4G overlay with the 2G/3G networks, due to asset sharing. ComReg recognised that while these economies are only likely to have a small impact on the Pure LRIC of wholesale MVCT they would have a larger impact on the LRAIC+ of all wholesale services. Consequently , although the Notified Draft MTR Model assumes that voice services are not carried on 4G technology, capturing 4G deployments in the Notified Draft MTR Model mean that it is possible to understand the impact such economies would have on the costs of all services including the LRAIC+ of Mobile Voice Call Origination (MVCO).

5.29 Given the evidence of the increasing use of S-RAN in Ireland, AM have modelled the impact of the increased economies of scope that S-RAN can deliver by

[98] The Global System for Mobile Communications (**GSM**) is a second generation (2G) standard for mobile networks.

[99] The Universal Mobile Telecommunications System (**UMTS**) is a third generation mobile cellular system for networks based on the GSM standard.

modifying the Modern Equivalent Asset ('**MEA**') unit costs of the standalone deployments to achieve the expected levels of capex and opex savings per site over time. S-RAN is assumed to be activated from 2014 onwards in the Notified Draft MTR Model. Further detail on the cost modelling approach taken is described in Section 3.2.1 of the Notified MTR Decision Specification Document (the '**Notified MTR Specification Document**')[100] .

5.30 The MTR Specification Document recognised that, in principle, a proportion of mobile-originated voice could be carried as VoWiFi in the Notified Draft MTR Model, with these services having routeing factors that only use the core network assets[101]. However, ComReg took the view in the MTR Decision that there is still significant uncertainty both in terms of modelling the costs of VoLTE (as the next generation of mobile telephony) and of VoWiFi platforms in the Irish context and in understanding the extent of their use to carry mobile voice traffic in the long-run. Consequently the Notified Draft MTR Model assumes that both platforms are not deployed and that all forecast voice, including MVCO services, continues to be carried using 2G and 3G networks.

5.31 The spectrum holding of the existing mobile network operators in Ireland is set out in Table 7 below. Prior to 2013, the spectrum holdings for the modelled operator are consistent with the spectrum holdings from the 2016 MTR model and from 2013 onwards the modelled operator's assumed spectrum holding is based on an average of all operator holdings and aligns with its assumed market share, i.e. the modelled operator is assumed to hold one-third of the available spectrum within each band, rounded to the nearest block size of 5MHz.

Table 7: Paired Spectrum Holdings by Operator and Band

Operator	800MHz	900MHz	1800MHz	2100MHz	3.6GHz
Three	2×10	2×5 + 2×10	2×20 + 2×15	2×30	100
Vodafone	2×10	2×10	2×25	2×15	85/105
Meteor	2×10	2×10	2×15	2×15	80/85
Total	2×30	2×35	2×75	2×60	265/290
Generic operator	2×10	2×10	2×25	2×20	2×45

Source: Notified MTR Decision Specification Document, Figure 3.7

5.32 Each band is assumed to be used for either capacity or coverage for one of the three radio technologies and this notional spectrum holding is not assumed to differ in the modelled scenario of full traffic and the modelled scenario of traffic without mobile termination or without MVCO. As a result the spectrum licence costs will not be part of the Pure LRIC for voice services.

[100] Please see Annex 6 of this Consultation.

[101] See MTR Specification document, page 6.

5.33 For a more detailed overview of spectrum allocations, please see Section 3.2.2 of the Notified MTR Specification Document.

5.34 The calculation of spectrum payments in the Notified Draft MTR Model include the access fees and annual usage fees that are paid by Irish operators and take into account the level of payments and the time value of money. As a result spectrum fees are calculated on a year-by-year basis with upfront fees calculated as a capex and annual spectrum usage fees calculated as an opex. For each modelled year fees are allocated between 2G, 3G and 4G technologies.

5.35 Please see Section 3.2.2, 3.2.3 and Section 6.10 of the MTR Specification Document for a more detailed discussion of how the costs associated with spectrum payments are derived for the hypothetical operator in the Notified Draft MTR Model.

5.36 The mobile switching network comprises the nodes and equipment necessary to provide the various services such as call routing, message transfer and internet access for the subscribers connected through the RAN. As all Irish operators have upgraded their networks for 4G deployments ComReg concluded that an all IP-core was a reasonable assumption for the hypothetical operator considered in the Notified Draft MTR Model to deploy.

5.37 To capture the upgrades necessary for a 4G network, AM assumed the use of an industry standard enhanced packet core ('**EPC**') architecture while the introduction of VoLTE requires the deployment of an IP Multimedia subsystem ('**IMS**'[102]).

5.38 Different types of switches are necessary to ensure the network of the operator modelled is able to function as planned to offer mobile services. Figure 6.9 in the MTR Specification Document provides an overview of the different core network elements that are assumed to be deployed in the mobile switching network together with the associated parameters such as the capacity driver and the minimum number required of each element in any network. The traffic load on the network may then require larger numbers of units to be deployed and some switches are assumed to have redundant deployments.

5.39 Please see Section 3.2.4 and Section 6.8 of the MTR Specification Document for more detailed discussion of the modelling of the mobile switching network and support systems.

5.40 Transmission infrastructure in a mobile transmission network connects the active equipment to ensure the transport of voice, message and data traffic between the different network equipment nodes. The choice of mobile network transmission varies among the actual mobile operators in Ireland and can change over time. In the Notified Draft MTR Model, AM models a modern mobile network transmission architecture. This implies a national fibre network for collecting and carrying traffic

[102] IP Multimedia Sub system (IMS) is a framework for delivering IP multimedia services.

back to the main switching sites (assumed to be located at several geographically separate locations in Dublin) and carrying traffic between these sites.

5.41 While the choice between leasing managed STM/Gbit services and self-supply of transmission equipment is likely to vary by operator, AM assumed the hypothetical operator leases dark fibre and self-supplies transmission equipment. The model also assumes that backhaul is predominantly provided using microwave links with a smaller number of leased lines (in Dublin and smaller cities).

5.42 The Last Mile Access (**LMA**) and hub to core transmission networks are common to all three radio network technologies. The model allows for capacity upgrades and the physical transmission infrastructure for both networks can be either leased lines or microwave links. Microwave links are deployed point-to-point but in the case of the hub to core transmission network the leased lines can be deployed in rings for increased network resilience.

5.43 Base Station Controllers (**BSCs**) and Radio Network Controllers (**RNCs**) aggregate 2G and 3G traffic respectively. In both cases, all urban radio traffic is routed through BSCs/RNCs in its own geotype, with the remaining traffic all routed through the dense urban geotype. There are capacity upgrades implemented in the Notified Draft MTR Model for this level as well.

5.44 Some BSCs and RNCs are co-located with core nodes, but others are remote and so require BSC or RNC to core transmission links. The core network is assumed to be a ring within Dublin, with another ring to remote BSC/RNC locations. It carries a proportion of the data traffic and a proportion of the voice traffic.

5.45 Please see Section 3.2.5 and Sections 6.3 to 6.7 of the MTR Specification Document for more a detailed discussion of the modelling of the various transmission network deployments.

5.46 The Notified Draft MTR Model also needs to reflect the network element unit capex and opex costs that a mobile operator in Ireland would incur. For this reason the values used in the Notified Draft MTR Model have been based, to the maximum extent possible, on data collected from the Irish mobile network operators. Where data is absent, unavailable, or incomplete, it has been necessary for ComReg and its advisers to exercise complex judgments and appreciation as to the relevant inputs and costs associated with them. Where appropriate, such judgment has also been exercised in the light of experience in other jurisdictions.

5.47 The network design algorithms in the Notified Draft MTR Model compute the assets (network elements) that are required to support the modelled level of demand in each year. A series of steps are then undertaken in order to arrive at the schedule of capex and opex over the modelling period. These steps include defining and quantifying the assets to be purchased in each year, deriving unit costs (capex and opex) for these assets, calculating unit cost trends over time and then applying the calculated costs to the computed network asset quantities each year to derive total capex and opex over time.

5.48 The model includes standard costs inputs for each asset category specifying an assumed lifetime, planning period, proportion of asset replaced per annum and opex as a proportion of capex for each category. The network design algorithms have to factor in a planning period to allow time for provisioning, installation, configuration and testing of the assets before they are activated.

5.49 As the cost of purchase of network assets varies over time, AM applied a MEA approach to provide the appropriate cost basis for purchase. Real-term unit asset cost trends are applied to 2017 unit asset costs to reflect the evolution of the modern technology unit asset costs over past and future time. In the Notified Draft MTR Model AM largely applied the cost trends assumed in the 2016 MTR model.

5.50 Section 7 of the MTR Specification Document sets out a more detailed discussion of the approach taken in the Notified Draft MTR Model to calculate expenditure and ComReg is proposing to maintain this approach is maintained in the Draft MVCO Model.

5.2.6 Implementation-related parameters

5.51 A key implementation related parameter is the depreciation approach that is used to annualise costs and ComReg's preliminary view is that economic depreciation should continue to be used in the Notified Draft MTR Model to determine the cost recovery of capital investments for the purposes of calculating costs relevant to mobile-originated voice calls (to NGNs), thereby maintaining consistency with the depreciation approach used to determine MTR charges.

5.52 Under the economic depreciation approach, the algorithm in the Notified Draft MTR Model assumes that the present value ('**PV**') of expenditures equates to the PV of revenues over the model time horizon. It does this by considering not just the trends in operating and capital expenditure associated with the assets, but also the levels of economic output that can be generated by those assets each year. This methodology therefore better aligns the attribution of cost over time in line with the usage of the network, particularly in the presence of large scale up-front investment in anticipation of future capacity needs. This leads to the fundamental equation of the economic depreciation calculation that is:

$$PV\ (expenditures) = PV\ (unit\ cost \times output)$$

5.53 Where "unit cost ×output" is representative of the cost-oriented revenues that can be generated by the operator.

5.54 More details on the treatment of economic cost recovery in relation to the Notified Draft MTR Model can be found in Section 3.4.2 and Section 8 of the MTR Specification Document.

5.55 The calculation of the cost recovered in the Notified Draft MTR Model also needs to reflect the time value of money. In the Notified Draft MTR Model this is accounted for by the application of a discount factor on future cash flows, and ComReg's preliminary view is that the discount factor should continue to be based on the regulated WACC (currently 8.63% as per ComReg Decision No D15/14[103]) for MNOs.

5.56 Since the Notified Draft MTR Model works in real 2017 EUR, the 8.63% figure for WACC was first transformed into a real-terms WACC over time by removing inflation (in the same way as in the 2016 MTR model). AM based inflation on the consumer price index (CPI).

5.57 The Notified Draft MTR Model discounts costs recovered in the years after a network element is purchased by an amount equal to the WACC. This ensures that the cost of capital required for the network element is also returned to the operator.

5.58 Basing the calculation of the costs of mobile call origination in the Draft MVCO Model on the same implementation parameters as used in the Notified Draft MTR Model also means that the time series, namely the period of years across which demand and asset volumes are calculated in the Notified Draft MTR Model, is consistent with the time series used to calculate the MTR charges proposed in the Notified MTR Decision, which used a modelling timeframe of 2003–2053.

5.59 The Notified Draft MTR Model is also capable of deriving service costs using both Long Run Average Incremental Cost Plus ('**LRAIC**') and Long Run Incremental Cost ('**LRIC**') principles. AM have added the capability to calculate both the LRIC+ and the LRAIC+ of MVCO in the Draft MVCO Model. This allows a comparison between the network charges for MVCO under both approaches.

5.60 ComReg derived the Pure LRIC-based MTRs in the proposed 2019 MTR Decision with reference to the increment defined for the wholesale MVCT service but, as noted in paragraph 4.136 of this Consultation, the DotEcon Report recommends that the relevant increment for the calculation of the relevant network costs for calls to non-geographic numbers is defined as all mobile-originating voice minutes, including both mobile-originating off-net voice minutes and mobile-originating legs of on-net voice minutes. This can be done using a LRIC approach by calculating the incremental costs of call origination where the increment is defined to include all calls originating on the mobile network.

5.61 However, the costs of call origination can also be calculated using a LRAIC+ approach where the call origination costs are derived with reference to all the different traffic services carried on the different parts of the network, and ComReg is of the preliminary view that a LRAIC+ approach is also consistent with the DotEcon recommendation in that the all traffic increment underpinning the LRAIC calculations includes all calls originating on the mobile network within the same

[103]ComReg Document No 14/136 (D15/14): "*Cost of Capital - Mobile Telecommunications; Fixed Line telecommunications; Broadcasting (Market A and Market B)*".Please see : https://www.comreg.ie/publication/cost-of-capital/

increment. Therefore, the Draft MVCO Model also calculates a blended LRAIC+ for MVCO services. The services included in the blend are as follows:

(a) 2G on-net voice minutes (outgoing leg)

(b) 2G domestic outgoing from mobile voice minutes

(c) 2G international/roaming outgoing from mobile voice minutes

(d) 3G on-net voice minutes (outgoing leg)

(e) 3G domestic outgoing from mobile voice minutes

(f) 3G international/roaming outgoing from mobile voice minutes

(g) 4G on-net voice minutes (outgoing leg)

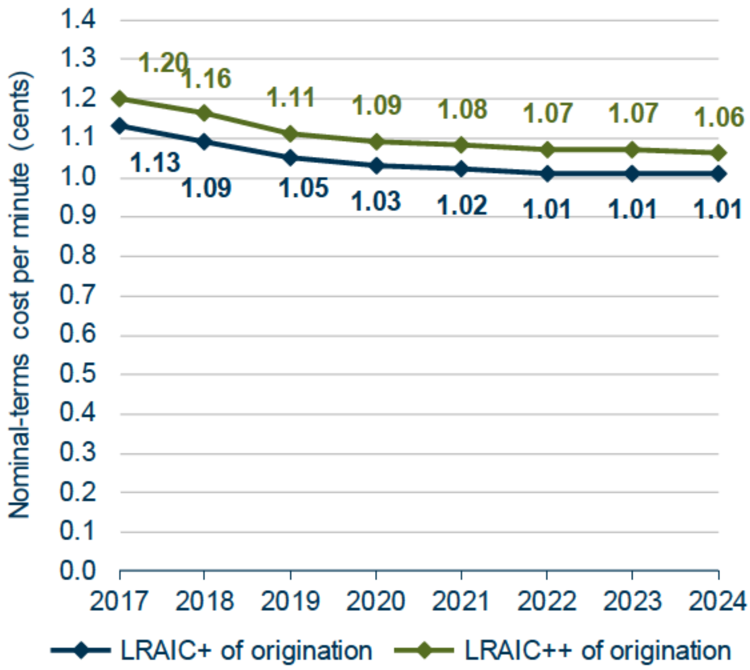
(h) 4G domestic outgoing from mobile voice minutes

(i) 4G international/roaming outgoing from mobile voice minutes

5.62 AM have also calculated a "LRAIC++" for mobile voice origination, by including a further mark-up for the costs unrecovered by MVCT. ComReg preliminary view is that these costs are recovered across all other services (i.e. excluding MVCT but including SMS and data services) based on an equi-proportionate mark-up calculated for each year.

5.63 The network LRAIC+ and LRAIC++ for mobile-voice-origination off-net is shown below in Figure 17.

Figure 17: Network LRAIC+ (black) and LRAIC++ (green) of mobile voice origination over time)



Source: Analysys Mason, 2019

5.64 As ComReg is of the preliminary view that cost-oriented charges for call origination to NGNs should be based on a LRAIC+ approach and that the rates should also include an additional mark-up to allow for recovery of a portion of common costs that are not recovered in the Pure LRIC-based charges for MTRs, the network costs that should be recovered in the MVCO charges to Freephone NGNs are the LRAIC++ rates represented by the green line in Figure 15. Adopting rates that recover all efficiently incurred relevant network costs (including a contribution to common costs) from calls originated to Freephone NGNs should ensure that the investment incentives for MNOs are maintained while the interests of End Users are protected.

5.2.7 Modelling of retail costs

5.65 The Notified Draft MTR Model was primarily concerned with deriving a wholesale cost for MVCT on a Pure LRIC basis. However, as well as being of the preliminary view that MNOs would expect to recover the network costs associated with mobile call origination to NGNs on a LRAIC+ basis, ComReg is also of the preliminary view that MNOs/MVNOs would expect to recover the relevant retail costs when their retail customer base make calls to NGNs (including Freephone numbers) hosted on other networks. The LRAIC+ derived in the Draft MVCO model only covers the network costs (plus a mark-up for relevant common costs) associated with call origination. As a result, a retail MVNO may receive no revenue for a Freephone call made by one of its customers as the LRAIC+ rate only compensates the MNO for the cost it incurs in switching and transmitting the originating leg of the call on its network. Under the current FVCO regulation for NGNs Eircom is also allowed an additional mark up for "*reasonable billing costs associated with the service; and an additional bad debt surcharge*". This is essentially a payment to Eircom retail to allow it recover relevant retail costs and suggests that the cost-oriented charges for calls to NGNs should also allow for the recovery of relevant retail costs.

5.66 Consequently, in order to derive a reasonable total cost of mobile voice origination, ComReg and its advisers requested data from MNOs, including MVNOs, with a view to identifying relevant retail costs for the various originating call categories including calls to Freephone numbers and calls to other NGNs. Based on the data received from all MNOs, AM have identified retail costs that could potentially form the basis of an additional mark-up to be added to the LRAIC+ of network costs derived in the Notified Draft MTR Model. These are:

(a) retail billing costs

(b) an allowance for bad-debt recovery

(c) other costs

(d) retail-related business overheads

5.67 Only one MNO was able to provide information on its estimated opex for its billing platform in its most recent completed financial year, and based on an analysis of these costs combined with information on traffic and subscriber volumes extracted from ComReg's quarterly key data reports, AM estimated an average retail billing opex per retail billing event to be [✂ [redacted] cents, giving a retail billing cost of [[redacted] cents per voice call (equivalent to [[redacted] cents per voice minute assuming a call duration of 3.5 minutes). AM also estimated an average bad debt cost per call of [✂ [redacted]] cents per minute in 2018. With respect to other retail costs, only one MNO [✂ [redacted]] submitted cost data. This submission included an estimated contribution per minute of [✂ [redacted] cents for sales and marketing costs, as well as [[redacted] cents for other costs (specifically, capturing product development and IT support systems). Further detail on the approach AM has taken to estimate retail related costs can be found in the Annex "*Report for ComReg: Additional cost modelling for mobile voice origination*"[104] to the MTR Specification Document ('**AM Annex**').

5.68 ComReg is also of the preliminary view that not all retail costs are equally relevant to Freephone calls and calls to other NGNs. For example, as noted in Section 4.9, the DotEcon Report recognises that Freephone calls are free to the calling party, which means that the retail bad debt and revenue collection costs that are relevant to other originating calls would not be incurred in the case of Freephone calls, although some element of billing systems costs would still be relevant as the call data still needs to be collated to facilitate billing the called party hosted on the terminating network. Similarly, it could be argued that the marketing and sales costs for calls to Freephone numbers tends to be incurred by the service provider receiving the call, so the retail marketing and sales costs that are relevant to other originated calls would not be as relevant to Freephone. Other costs such as product management or customer acquisition costs (including handset subsidies) could be considered relevant to all calls. The Notified Draft MTR Model also assumes an uplift of 12% to network costs for business-related overheads and ComReg is of the preliminary view that the same uplift should be applied to the relevant retail costs to estimate the mobile retail-related business overheads.

5.69 Based on the analysis undertaken by AM a summary of the retail costs identified as potentially attributable with calls originated to Freephone NGNs and calls to other NGNs is shown below:

Table 8: Summary of possible retail cost components, cents per minute [✂PARTIALLY REDACTED]

Category	Freephone numbers	Other non-geographic numbers
Billing	[[redacted]]	[✂ [redacted]
Bad debt related	–	[✂ [redacted]]
Sales and marketing	–	[✂ [redacted]]

[104] Please see Figure E:7 of ComReg Document No 19/46b

Other costs	[[redacted]	[✂ [redacted]]
Overheads (12% of the above)	[✂ [redacted]	[✂ [redacted]
Total retail costs	**0.53**	**0.78**

Source: Analysys Mason and ComReg, 2019

5.3 ComReg's Preliminary Opinion

5.70 It is ComReg's preliminary view that cost oriented charges for calls to NGNs should be informed by an analysis of network costs based on a LRAIC++ approach with an initial mark-up to include the recovery for network-related overheads and a further mark-up to allow for recovery of a proportion of common costs that were not recovered by the Pure LRIC approach used to set MTRs in the Notified Termination Markets Pricing Draft Decision.

5.71 ComReg is also of the preliminary view that, in order to minimise any distortions that might affect the choice of SPs between different NGN number ranges and between NGNs and geo-numbers, cost-oriented charges should also allow for the recovery of retail costs that are considered relevant to calls to the different categories of NGNs. Combining the LRAIC++ of network costs identified in Figure 15 with the possible retail unit cost categories identified in Table 8 gives the following cost-oriented WORs:

Table 9: WORs for calls to Freephone 1800 from mobile networks (euro cent per minute).

Year	Network Costs	Retail Costs	WOR
2019	1.11	0.53	1.64
2020	1.09	0.53	1.62
2021	1.08	0.53	1.61
2022	1.07	0.53	1.60
2023	1.07	0.53	1.60
2024	1.06	0.53	1.59

Table 10: WORs for calls to other NGNs from mobile networks (euro cent per minute).

Year	Network Costs	Retail Costs	WOR
2019	1.11	0.78	1.89
2020	1.09	0.78	1.87
2021	1.08	0.78	1.86
2022	1.07	0.78	1.85
2023	1.07	0.78	1.85
2024	1.06	0.78	1.84

5.72 ComReg's preliminary opinion is that the schedule of tariffs for MVCO to Freephone should be applied over the period as outlined in the table above. This also aligns with the guidance from DotEcon[105], for both the period assessed and the use of annual prices rather than a glide path

5.73 When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full, and provide supporting information.

Q8. Do you agree with ComReg's preliminary view that the Draft MVCO Model is appropriate for determining a LRAIC+ for Mobile Voice Call Origination to a Freephone NGN?

Q9. Do you agree with the approach taken to include an additional mark-up to the LRAIC+ for MVCO to allow for the recovery of a proportion of the common costs not recovered in the Pure LRIC for Mobile Voice Call Termination?

Q10. Do you agree with the approach taken to quantify the reasonable retail costs that are relevant to calls originating to Freephone numbers hosted on another operator's network?

[105] See Annex A.9 of the DotEcon report "A price control for regulation of wholesale charges for non-geographic numbers"

Chapter 6

6 Price control for wholesale NGN calls originated by FNOs

6.1 Overview

6.1 In this chapter, ComReg discusses the model used to determine the appropriate level of costs associated with calls to NGNs originating from fixed networks. As outlined in the Costing Principles at Section 4.10 of this Consultation, ComReg is now proposing to use a LRAIC+ approach to derive the cost for originated voice calls (to NGNs). ComReg has previously appointed TERA to develop a cost model to determine the costs of Fixed Voice Call Termination ('MVCT'). This cost model (the '**Notified Draft FTR Model**') was itself based on a model of a fixed core network developed to support cost oriented prices for broadband services in the WLA and WCA markets as part of ComReg D11/18 [106] ('**2018 NGN Core Model**').

6.2 ComReg is of the preliminary view that, in order to maximise consistency with the cost analysis underpinning the calculation of FVCT charges, the Notified Draft FTR Model should be amended to derive the cost oriented charges to apply to fixed-originated voice calls to NGNs. Consequently, ComReg is proposing to use the amended Notified Draft FTR Model to calculate costs relevant to fixed voice calls originated (FVCO) using a LRAIC+ approach. In this regard, ComReg has now appointed TERA Consultants ('**TERA**') to further amend the Notified Draft FTR Model to calculate the LRAIC+ charges for FVCO to Freephone NGNs (the '**Draft FVCO Model**'). TERA has also prepared a specification document[107] that outlines the main amendments that have been made to the Notified Draft FTR Model in order to calculate the LRAIC+ charges for FVCO to Freephone NGNs in the Draft FVCO Model ('**Draft FVCO Specification**'). A non-confidential version of this specification document is published on ComReg's website, document number 19/46c.

[106] See ComReg Decision 11/18, Document 18/95, "Pricing of Wholesale Broadband Services in the WLA and WCA Markets", 19 Nov 2018, https://www.comreg.ie/publication/pricing-of-wholesale-broadband-services-in-the-wla-and-wca-markets/ for details of the finished NGN Core Model

[107] Tera Consultants-Assessment of Fixed Retention Rates of Non Geographic numbers in Ireland-Specifications and results.

6.2 Fixed voice call origination modelling

6.2.1 Background

6.3 In 2018 ComReg completed its analysis of markets 3a and 3b, and in that context developed the 2018 NGN Core Model. The fixed core network supports a range of services including voice, leased lines, broadband and IPTV / multi-casting and the NGN Core Model can be used to determine the LRAIC+ costs for the provision of core network services.

6.4 The 2018 NGN Core Model ComReg has also been used as the basis of the '**Notified Draft FTR Model**'[108], which is the cost model that ComReg is proposing to use to set prices for voice services in the wholesale market for the provision of FVCT. The charges for FVCT were set on a Pure LRIC basis but the Notified Draft FTR Model also has the capability to determine charges for FVCT on a LRAIC+ basis.

6.5 The main difference between the Notified Draft FTR Model and the 2018 NGN Core Model is that the Notified Draft FTR Model includes additional modelling of voice specific costs including additional analysis of the transmission costs associated with voice services to facilitate the costing of sub sets of voice services such as call origination, transit or termination. ComReg is now proposing to further adapt the Notified Draft FTR Model to determine the costs relevant to FVCO on a LRAIC+ basis to inform the cost-oriented charges for calls originated to Freephone NGNs.

6.6 The following sections provide an overview of the main modelling principles and methodologies that applied in the Notified Draft FTR Model that is used to model the Pure LRIC cost of FTRs, together with an outline of the refinements to the modelling approach that have been considered specifically for the purposes of modelling the LRAIC+ cost for FVCO in the Draft FVCO model, guided by the recommended costing principles contained in the DotEcon Report.

6.3 Overview of the Draft FVCO model

6.7 To maintain consistency with the overview of the Draft MVCO Model in Chapter 5 of this Consultation, the main modelling parameters in the Draft FVCO Model have been grouped as follows:

(a) operator-related parameters – including the form of the modelled operator (hypothetical efficient existing operator), structural implementation (bottom-up model using scorched node approach reflecting actual operator data), market share assumptions and network footprint;

[108] Notified Draft FTR Model is included in the Notified Termination Markets Draft Pricing Decision. Model

(b) service-related parameters – including the service set (voice, broadband, leased lines, IPTV), service volumes per customer, average usage/routing factors;

(c) technology-related parameters – including, transmission network and network expenditure;

(d) implementation-related parameters – including depreciation approach, WACC, LRAIC calculations, recovery of common costs, modelling timeframe.

6.8 This chapter also provides an overview of a number of amendments that have been made in the Draft FVCO Model to facilitate the calculation of a LRAIC+ charge for FVCO to Freephone NGNs, including the analysis undertaken by ComReg to identify the level of retail costs that should be recovered from FVCO to Freephone NGNs. Additional insight into the cost model structure and design can be found in the specification document provided by TERA Consultants

6.3.1 Operator Related Parameters

6.9 In the Notified Termination Markets Pricing Draft Decision, ComReg concluded that cost modelling for the Notified Draft FTR Model should be based on a bottom-up model of a hypothetical efficient existing operator with Eircom's scale. Eircom is the only fixed operator with national coverage in Ireland and so Eircom's scale best represents the actual scale achievable in the Irish market. The model also follows a scorched node approach as the hypothetical efficient existing operator is assumed to operate an NGN network that is located in Eircom's exchanges and serving Eircom's customer base.

6.10 Therefore, ComReg has constructed the 2018 NGN Core Model and the related Notified Draft FTR Model and Draft MVCO Model, based on information sourced from Eircom. Such information includes:

(a) demand, e.g. customer numbers and location, traffic volumes per customer, busy hour traffic profile;

(b) network design e.g. exchange location, choice of modern technologies, efficient engineering rules, planned asset capacities;

(c) and cost e.g. unit capex, asset lives.

6.11 The operating cost data used in the model is based on data extracted from Eircom's cost accounting systems but adjusted to reflect the fact that the modelled network design is more efficient than Eircom's actual core network. Eircom still operates a number of legacy platforms alongside the Next Generation technologies it is deploying in its core network and this requires that some efficiency adjustments are applied to the operating costs processed in the 2018 NGN Core Model and the related Notified FTR and Draft MVCO Models.

6.12 The fact that the model recognises the technology choices and network locations that are evidenced in Eircom's fixed core network helps ensure that the bottom-up modelling of the fixed core network costs of the hypothetical efficient existing operator is consistent with the recommendation outlined in the DotEcon Report and also with the 2009 Termination Rates Recommendation which requires that a cost model should "*produce as robust results as possible and to avoid large discrepancies in operating cost, capital cost and cost allocation between a hypothetical and a real operator*". It will also ensure that the cost oriented prices produced by such models will suitably inform operator's 'build or buy' decisions and help promote efficient investment and innovation.

6.3.2 Service Related Parameters

6.13 A bottom-up model dimensions the network based on the level of demand that the network is designed to support so it is first necessary to gain an understanding of the aggregate historic and forecast traffic that is assumed to be supported by the network over the timeframe of the model. Service parameters in the 2018 NGN Core Model includes information on customer numbers and location, the volumes of the different services supported on the fixed core network (voice, leased line, broadband and IPTC services) and the associated traffic patterns. The Draft FVCO Model assumes the same level of traffic demand that is modelled in the Notified Draft FTR Model and the 2018 NGN Core Model thereby ensuring that the same economies of scale and scope (reducing the unit costs for all services) are recognised in all three models.

6.14 To determine the network capacity demands for voice services, the 2018 NGN Core Model first calculates the number of voice channels active at the busiest hour of the year in Erlang[109] as a percentage of the total customer base. The number of busy hour channels is augmented with a cell blocking probability formula before being converted to the number of equivalent links of STM-1 capacity, then all voice traffic is converted in Mbps. Peak traffic demands for broadband and leased lines (using exchange sites) are also calculated based on the usage of the different parts of the fixed core network, and voice capacity demand is further split between the various call types i.e. local, national, primary termination etc. as each call type can use the network assets in different ways.

6.15 Average usage factors measure how each of the services modelled uses the various network components in the fixed core network and, when combined with service volumes, capture the usage of the various network components by each service. This, in turn, informs both the network dimensioning algorithms that determine network asset quantities in the bottom-up model and the subsequent allocation of the associated network costs to services. The Draft FVCO Model uses

[109] An Erlang is a measurement of telecommunications traffic on a network and represents the continuous use of one voice path.

the similar usage factors as the 2018 NGN Core model and the Notified Draft FTR Model, but which reflect more detailed routing factor information for FVCO services as outlined in the FVCO specification (in sections 2.2 and 2.3) document. Consequently the modelling approach in the Draft FVCO Model adheres to the principle of using demand forecast data consistent with other relevant modelling exercises, such as those employed in the determinations within the proposed FTR cost model.

6.16 In order to categorise the traffic between the different traffic topologies (voice, broadband and leased lines), the model uses a list of the exchanges (access nodes) based on information provided by Eircom with:

(a) The site code of the aggregation node to which it is connected;

(b) The region of the site (the NGN core network is divided in 17 regions);

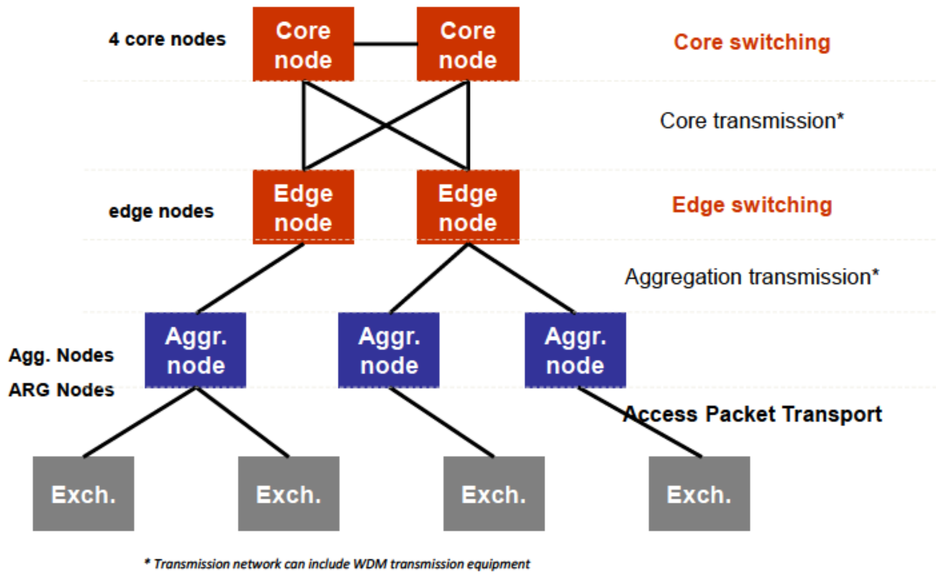
(c) If the site is connected to an APT.

6.17 This process, permitted the allocation of network costs to all services using the core NGN including voice products. The more detailed analysis of the voice traffic demands and routing factors associated with each variant of voice services ensures that the Draft FVCO cost model is capable of determining the LRAIC+ charges for call origination to Freephone Non Geo numbers. Therefore the modelling approach adheres to the principle of using demand forecast data consistent with other relevant modelling exercises, such as those employed in the determinations within the proposed FTR cost model.

6.3.3 Technology Related Parameters

6.18 As noted above, the Draft FVCO Model is ultimately based on the 2018 NGN Core Model, which was developed using a scorched node approach. As a result the model references the location of Eircom's aggregation nodes, edge nodes and core nodes. It also considers when and where Eircom had deployed, or was planning to deploy, DSLAMs and other next generation technologies and the core network is organised in several hierarchical levels (APT, aggregation, core) as set out in Figure 18:

Figure 18: Overview of Eircom's NGN



6.19 *Source: TERA Consultants*

6.20 This network structure is considered to be representative of an efficient network topology in Ireland over which fixed voice and other core network services are delivered for the period of the proposed price control and beyond. Network components in the fixed core network includes the nodes and switching equipment necessary to provide the various services such as call routing, data transfer and internet access for the subscribers connected through the fixed access network as well as the transmission infrastructure that connects this active equipment to ensure the transport of all core network traffic between the different network equipment nodes.

6.21 To dimension the fixed core network, service demand from all traffic services is combined with network usage/routing factors to form aggregated cost drivers to capture the relative usage of each network component by each unit of service demand. The bottom-up model then applies the technology parameters of the hypothetical fixed network operator to the derived level of network demand to determine the types and quantities of network equipment and infrastructure that will be required to deliver those services to End Users.

6.22 The 2018 NGN Core Model uses internet protocol ('**IP**') switching[110] equipment in the switching layer and the transmission layer assumes the deployment of fibre cables as well as civil engineering infrastructure (trenches, ducts) between the core nodes in the various layers of the fixed core network. The NGN Core Model assumes trench sharing between the access and core networks and the links between aggregation node and IP edge node sites also share part of the trench

[110] The term IP Switching here refers to the conveyance of data or packetized voice at either layer 2 or 3 of the Open Systems Interconnection model.

with the aggregation to APT node. The trench lengths are calibrated so that a similar length of trench is considered in the modelled core network as Eircom has in reality.

6.23 The 2018 NGN Core Model also has the functionality to model wavelength division multiplexing[111] ('**WDM**') in the transmission layer but, given that the 2018 NGN Core Model includes sufficient fibre capacity between core network nodes to cater for the assumed levels of demand, CWDM or DWDM is not required to augment the fibre capacity and the costs of these technologies are not included in the cost base used to determine cost oriented tariffs for services in the 2018 NGN Core Model. However, ROADM[112] technology is assumed to be deployed for each and every EDGE to CORE link and all the AGG to Edge links that are required to support over 100 Gbps of traffic.

6.24 Interconnection facilities, which connect the transmission and signalling systems or voice platforms of FNOs, permit calls to be set up between customers of those operators. When connecting networks both use TDM for voice calls the signalling used is SS7[113]. Where voice is transported using IP then signalling via SIP or SIP-I[114] protocols may be used. Throughout Europe there is a transition (albeit quite slow) from TDM to SIP interconnection

6.25 Eircom has recently confirmed that SIP interconnection is to be made available for interconnection to its network late in the year 2019. ComReg has assessed the impact of using exclusively either TDM or SIP interconnection by modelling both options in the draft FVCO Cost Model and noted that the impact on tariffs for fixed voice origination services was only marginally higher when SIP interconnection was exclusively used. In addition the expectation is that during the medium term, a large share of interconnected voice traffic will still be connected over TDM technology. For these reasons ComReg are of the view that the Draft FVCO cost model should continue to assume that voice interconnection should be based on TDM only.

1.3 Regardless of the form of interconnection for voice services, the voice platform cost base that was included in the FTR Model and now in the Draft FVCO cost model reflects the use of an IMS IP based network, with facilities such as Media Gateways which can be leveraged to interconnect via TDM or SIP. In that context the voice platform cost base reflects that of a modern efficient network design. Other network related costs such as buildings, power and network management systems are

[111] WDM is a method of combining multiple optical carrier signals at various wavelengths for transmission along a single fibre optic cable.

[112] Reconfigurable Optical Add-Drop Multiplexers are used in systems that employ wavelength division multiplexing.

[113] Signalling System No. 7 (SS7) also known as C7 is the core signalling/control protocol used within legacy fixed and mobile networks. This is used to set up and tear down most of the world's public switched telephone network (PSTN) telephone calls. It also performs number translation, local number portability, prepaid billing, Short Message Service (SMS), and other mass market services.

[114] SIP with encapsulated ISDN User Part signalling ("**ISUP**")

included in the 2018 NGN Core Model. The process of calculation of such costs is set out in the FVCO Specification Document.

6.26 Before finalisation, a calibration exercise was undertaken to ensure the asset count in the model was comparable to the asset count in Eircom's core network after efficiency adjustments had been considered. ComReg is therefore of the opinion that the technological parameters that are applied in the 2018 NGN CORE Model and also inform the Draft FVCO Model, are appropriate for a hypothetical efficient network operator's with Eircom's scale and can support the delivery of the modelled level of core network services, including fixed voice, for the duration of the proposed price control and beyond.

6.3.4 Implementation Related Parameters

6.27 TERA proposed that depreciation be based on a tilted annuity approach. This has been consistently applied by ComReg for modelling of Eircom's core network and is regarded as a reasonable proxy for economic depreciation as recommended in the DotEcon Report. TERA also address this point in the specification document, noting that a titled annuity mechanism is good proxy for economic deprecation in a mature network where fluctuations in demand are relatively stable.

6.28 A nominal pre-tax weighted average costs of capital[115] ('**WACC**') rate of 8.18% is used in the tilted annuity equations applied in the Draft FVCO Cost Model. This is consistent with the rate set out in ComReg Decision D15/14[116] for the fixed line telecommunications sector.

6.29 Operating costs in the model are based on the core network operating costs contained in Eircom's cost accounting systems that are used to produce the audited regulatory accounts[117]. Efficiency adjustments are applied to these operating costs to reflect the fact that Eircom continue to operate a legacy core network in parallel with its NGN core network[118].The 2018 NGN Core Model attributes the operating costs from Eircom's accounts (net of efficiency adjustments) to each part of the NGN network by category (e.g. exchange to Aggregation links, Aggregation node, Edge node, Core node and all other relevant links connecting the locations of the routers). The cost of each network asset is then allocated to each of the NGN network regions using allocation keys based on the capital cost for equipment and trench length. The NGN Core Model allocates the operating costs between the

[115] A weighted average cost of capital is the rate that a company is expected to pay on average to all its security holders to finance its assets.

[116] ComReg Decision D15/14, Document 14/136,"Cost of Capital – Mobile Telecommunications – Fixed Line telecommunications – Broadcasting (Market A and Market B)" Response to Consultation and Decision" 18/12/2014, https://www.comreg.ie/media/dlm_uploads/2015/12/ComReg14136.pdf

[117] See https://www.comreg.ie/media/2018/12/Note1a.pdf for auditing information

[118] See Annex A, ComReg D11/18, Sections A1.146 to A1.156

three services its supports, including Broadband, Voice and Leased Lines. This process is set out in greater detail in Section 2.1.3.5 of the Draft FVCO Specification.

6.30 Basing the Draft FVCO Model on the 2018 NGN Core model also means that the LRAIC+ approach adopted to determine the costs of FVCO should also be consistent with the LRAIC+ approach previously adopted to cost other services carried on the core NGN, such as broadband services. ComReg D11/18 determined that a revenue per user approach (referred to as Option 3) adjusted to take account of the use of each of the network layers by a given service (as discussed at paragraphs 8.89-8.91) is the appropriate basis for allocating the fixed costs across the various services in the NGN Core Model. Applying the revenue per user approach means that the level of fixed and common costs that are attributed to voice services is higher than it would be if an alternative such as a capacity based approach is adopted. Further discussion of the treatment of fixed costs in NGN Core model can be found in Section 8.3 of ComReg D11/18.

6.31 As the Draft FVCO Model is a bottom-up model using a tilted annuity approach the network is dimensioned each year based on the assumed level of demand from all services in that year and the model time-frame covers the period 2017 to 2024.

6.3.5 Further amendments in Draft FVCO Model

6.32 In the following sections we outline the amendments to the Notified Draft FTR Model that ComReg consider are appropriate for determining the LRAIC+ cost of FVCO. These include the amendments necessary:

(a) to calculate the network costs of FVCO on a LRAIC+ basis;

(b) the additional mark-up to allow for the recovery costs (i.e. common and joint costs) that are unrecovered due to setting the charges for termination services on a Pure LRIC basis and;

(c) the allowance to recover relevant retail costs of the originating operator in the FVCO to Freephone NGNs charge.

6.33 The Notified Draft FTR Model has the capability to calculate FTR charges using either a Pure LRIC or a LRAIC+ approach and a key requirement of the Draft FVCO Model is to calculate the LRAIC+ charges for FVCO traffic. . While the 2018 NGN Core Model and the Notified Draft FTR Model include the demands from all services, including all call traffic types based on a combination of historic data and forecast service demands, further analysis was undertaken in the Draft FVCO Model to isolate the traffic volumes and routing factors associated with FVCO services to facilitate the calculation of the FVCO services' share of the general NGN transmission and node costs.

6.34 Modelling the LRAIC+ of FVCO services also has to consider the costs in the NGN Core Network that is specific to voice services, which include the costs associated with the voice platform in the core network. The voice services platform costs worksheet was an add-on that was introduced to the 2018 NGN Core Model during the development of the Notified FTR Cost Model in support the calculation of FTR charges and the same worksheet is now leveraged in the Draft FVCO Model to identify the allocation of the voice platform costs to FVCO services.

6.35 TERA Consultants have added two further sheets to the FTR Model called “FVCO Variable Platform Costs” and “FVCO LRAIC Analysis”. The worksheets compile the costs associated with the various cost components that are derived elsewhere in Draft FVCO Model to derive the LRAIC+ costs for FVCO services. This is done by deriving a LRAIC+ costs that includes the general NGN transmission and equipment costs that are shared between voice, broadband and other core network service categories as well as the voice specific platform costs, including fixed cost associated with the IMS platform. The fixed costs of the IMS platform are the capital costs that are annualised in the Draft FVCO Model using a tilted annuity based on the original capital expenditure and an assumed price trend. As the costs are fixed they do not form part of the Pure LRIC cost of FVCT but are relevant to the LRAIC+ calculation of FVCO.

6.36 The operating costs for the voice platform are analysed in more detail in the Draft FVCO Model to facilitate the calculation of the LRAIC+ charges for FVCO. Eircom provided information on the various licence and support costs for the IMS platform and the level of costs included in the Draft FVCO Model is based on the assumed level of demand for voice services. Mark-ups for the recovery of associated indirect costs are also included and checks are undertaken to ensure that there is no double-recovery of costs and that the overall level of operating costs recovered against all services using a LRAIC+ approach in the Draft FVCO Model is consistent with the costs of a hypothetical efficient operator.

6.37 In the Notified Termination Rate Decision, ComReg also considered the issue of the recovery of costs (i.e. common and joint costs) that are unrecovered due to setting the charges for FVCT services on a Pure LRIC basis and is proposing that efficient costs unrecovered from Eircom’s voice termination services could be recovered from other (regulated and unregulated) wholesale and/or retail voice/non-voice services as appropriate. Therefore, ComReg’s preliminary view is to include an allowance (for a proportion of the costs that are unrecovered by the Pure LRIC-based charges for FVCT) in the network costs associated with the charges for FVCO to Freephone NGNs. The level of unrecovered costs is first identified as the differential between the revenues that are generated based on the Pure LRIC based charges for FVCO when compared with revenues that would be generated if a LRAIC+ charge for FVCO was use. This differential is then derived as a percentage of the total wholesale/network costs in the most recent set of its separated accounts, excluding fixed voice terminations to determine the approximate percentage mark-up. As a result, the inclusion of this additional mark-up increases the LRAIC+ for FVCO service by less than 1%.

6.3.6 Modelling of retail costs

6.38 ComReg is also of the preliminary view that there is a need to include a mark-up to allow for the recovery of relevant retail costs in the charges for FVCO to Freephone numbers. This approach is consistent with the existing FVCO regulation that applies to Eircom's tariffs for Non Geo Number call origination, which permits such a mark-up. In this context ComReg sought information from FNOs and FVNOs on the retail costs that relate to calls originated to non-geographic numbers services including calls to Freephone numbers. The data provided by FNO/FVNOs was limited but based on an analysis of this data ComReg and its advisors have identified retail costs that could potentially be added to the network-related costs derived in the Draft FVCO Model.

6.39 The retail cost data provided to ComReg was presented in terms of a number of different functional cost categories including product management, marketing and sales, billing and credit management and IT, as well as general and central overheads such as accommodation, finance, personnel and general management costs. However, the cost data was not specific to calls originated to Freephone NGNs and so ComReg has had to make a judgement call as to the extent that each cost category might be relevant to calls originating to Freephone NGNs.

6.40 For example, the fact that Freephone calls are free to the calling party should minimises the risks associated with revenue collection and bad debt exposure to the originating operator as the Freephone related revenues are collected by the network operator from the terminating party. Therefore, ComReg's preliminary view is that relevant billing costs for call origination to Freephone NGNs should not be expected to make a contribution to bad debt/credit management activities and only the costs associated with collating call records are relevant.

6.41 Similarly, the marketing and sales costs related to Freephone NGNs tend to be incurred by the service provider receiving the call. Therefore, the level of marketing and sales costs incurred by the originating operator would not be as high for calls originated to Freephone NGNs as it would be for calls to geographic numbers. However, other retail related costs such as product management or and a share of IT and central/general overheads could be considered relevant to all originating calls.

6.42 ComReg's preliminary view is that the analysis of retail costs it has undertaken with TERA provides a basis for determining the level of retail costs that are relevant to call origination to Freephone NGNs and, consequently, an allowance for retail cost recovery has been included in the average per minute FVCO charge for Freephone NGNs.

6.4 Derived FVCO to Freephone charges

6.43 The total charges, including the network and retail elements, that are derived in the Draft FVCO Model for the years 2020 - 2024 are as follows:

Table 11: WORs for calls to Freephone 1800 from fixed networks (euro cent per minute).

Year	Network Costs	Retail Costs	WOR
2020	0.556	0.273	0.829
2021	0.577	0.291	0.868
2022	0.597	0.309	0.906
2023	0.610	0.329	0.939
2024	0.628	0.348	0.976

6.44 The tariffs outlined are inclusive of the costs incurred for both the establishment of the call connection and the duration of the call event, based on a 4.4 minute average duration for calls to Freephone NGNs.

6.45 ComReg's preliminary opinion is that the schedule of tariffs for call origination should be applied over the period as outlined in the table above. This also aligns with the guidance from DotEcon[119], for both the period assessed and the use of annual prices rather than a glide path.

6.5 ComReg's Preliminary Opinion

6.46 ComReg is of the preliminary opinion that the proposed cost model inputs and assumptions as set out above are appropriate to determine a proposed LRAIC+ cost per minute for fixed Call origination to Freephone numbers in Ireland.

6.47 When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full, and provide supporting information.

Q11. Do you agree with ComReg's preliminary view that the Draft FVCO Cost Model is appropriate for determining a LRAIC+ cost for Fixed Voice Call Origination to a Freephone NGN?

Q12. Do you agree with the approach taken to include an additional mark-up to the LRAIC+ for FVCO to allow for the recovery of a proportion of the common costs not recovered in the Pure LRIC for Fixed Voice Call Termination?

[119] See Annex A.9 of the DotEcon report "A price control for regulation of wholesale charges for non-geographic numbers"

Q13. Do you agree with the approach taken to quantify the reasonable retail costs that are relevant to calls originating to Freephone numbers hosted on another operator's network?

Chapter 7

7 Regulatory Impact Assessment

7.1 Overview

7.1 A Regulatory Impact Assessment ('**RIA**') is an analysis of the likely effect of proposed new regulation or regulatory change. The RIA should help identify regulatory options, and should establish whether the proposed regulation is likely to have the desired impact. The RIA is a structured approach to the development of policy, and analyses the impact of regulatory options on various stakeholders.

7.2 A RIA should be carried out as early as possible in the assessment of regulatory options, where appropriate and feasible. The consideration of the regulatory impact facilitates the discussion of options and a RIA should therefore be integrated into the overall preliminary analysis. This is the approach which ComReg follows in this Consultation and this RIA should be read in conjunction with the overall Consultation. A RIA will be finalised in the final Decision arising from this Consultation, having taken into account responses to this Consultation and any comments from the European Commission.

7.3 ComReg's approach to the RIA is set out in the Guidelines published in August 2007 in ComReg document No. 07/56 and 07/56a. In conducting the RIA, ComReg takes into account the RIA Guidelines[120], issued by the Department of An Taoiseach in June 2009 under the Government's Better Regulation programme. Section 13(1) of the Act, requires ComReg to comply with Ministerial Policy Directions. The Policy Direction of February 2003[121] requires that, before deciding to impose regulatory obligations on undertakings, ComReg shall conduct a RIA in accordance with European and International best practice and otherwise in accordance with measures that may be adapted under the Government's "Better Regulation" programme.

7.4 In conducting the RIA, ComReg has regard to the RIA Guidelines, while recognising that regulation by way of issuing decisions e.g. imposing obligations or specifying requirements in addition to promulgating secondary legislation may be different to regulation exclusively by way of enacting primary or secondary legislation. Our ultimate aim in conducting a RIA is to ensure that all measures are appropriate, proportionate and justified. To ensure that a RIA is proportionate and does not

[120] See "RIA Guidelines: How to conduct a Regulatory Impact Analysis", October 2005 and revised in 2009 - see https://www.djei.ie/en/What-We-Do/Business-Sectoral-Initiatives/Reducing-Administrative-Burdens/Responsibility-for-Better-Regulation-in-Ireland/

[121] Ministerial Policy Direction made by the Minister for Communications, Marine and Natural Resources on 21 February 2003.

become overly burdensome, a common sense approach will be taken towards a RIA. As decisions are likely to vary in terms of their impact, if after initial investigation, a decision appears to have relatively low impact ComReg may carry out a lighter RIA in respect of that decision.

7.5 The following sections, along with the analysis and discussion set out elsewhere in this Consultation represent a RIA. It sets out a preliminary assessment of the potential impact of regulatory price control and transparency obligations that ComReg proposes to impose in relation to NGNs.

7.2 Steps for assessing regulatory options

7.6 In assessing the available regulatory options, ComReg's approach to the RIA is based on the following five steps:

Step 1: describe the policy issue and identify the objectives

Step 2: identify and describe the regulatory options

Step 3: determine the likely impacts on stakeholders

Step 4: determine the likely impacts on competition

Step 5: assess the likely impacts and choose the best option

7.7 Each step is discussed in detail below.

7.2.1 Step 1: Describe the policy issue and identify the objectives

7.8 ComReg is responsible for regulating the electronic communications sector in the State, in accordance with European Union and Irish Law. This includes managing the national numbering resource which is essential to all telecommunications and thus underpins many key economic and social activities. In exercising its number management function ComReg must ensure, amongst other things, that numbers are used efficiently and in a manner that protects End Users and promotes competition.

7.9 As set out in NGN Decision[122] ComReg made the decision to implement retail remedies with regard to the functioning of the NGN platform. It was noted that any issues identified at the wholesale level would be addressed in line with the preferred options identified.

7.10 Having identified the issues arising in the wholesale level in Consultation 18/65 ComReg was of the preliminary view that intervention was justified and

[122] ComReg Decision D15/18 published 3 December 2018 and the preceding documents ComReg Document No. 17/70 and ComReg Document No. 18/65.

proportionate. Having assessed the possibility of No Intervention along with 6 options for possible intervention the imposition of a price control was considered the preferred approach.

7.11 The NGN Decision published in December 2018 further reinforced ComReg's view of a recommendation for a price control for the regulation of wholesale charges for NGNs. The NGN Decision concluded [123] that, a wholesale price control is necessary to ensure the effective functioning of the NGN platform.

7.12 In considering the form of price control ComReg outlined the two regulatory methods of implementing a price control – a market based analysis and assessment of SMP under Regulation 27 of the Framework Regulations or the imposition of SMP-type obligations on non-SMP operators under Regulations 8(3) of the Access Regulations in conjunction with Regulation 6(2) of the Access Regulation and/or Regulation 23(1) of the Universal Service Regulations.

7.13 ComReg was of the view that an SMP assessment approach is not necessary or appropriate as such an approach would not be (a) timely to ensure effective implementation in line with retail remedies or (b) proportionate with regard to other available options. This point is further considered below and in Section A8.2.4 of Annex 8 to this Consultation.

7.14 In June 2017, ComReg published an Information Notice[124] setting out the commencement of the current project to consider WORs for calls to five classes of NGN. This was in tandem with the NGN Decision (and preceding consultation documents). As a result of this project and those projects related to the NGN Decision a large amount of evidence has been identified and considered. Having reviewed the evidence ComReg remains of the preliminary view that it may address the identified harm and implement wholesale remedies in line with Regulation 8(3) of the Access Regulations in conjunction with Regulation 6(2) of the Access Regulations and/or Regulation 23(1) of the Universal Service Regulations as such a control would constitute a necessary step to ensure end-to-end connectivity and ensure that end-users are able to access numbers and service using NGNs.

7.15 Initiating an SMP assessment when ComReg has a more efficient mechanism for addressing the identified harm is not proportionate as an alternative option when an option that will likely achieve the same ends is available. It is also unlikely that an SMP assessment would be completed in a timely manner to ensure effective implementation in line with the proposed introduction of the Geo-linking Condition. Any delay in implementing possible wholesale measures would ultimately delay the retail measures leading potentially to further consumer harm.

7.16 In this RIA we deal with Freephone and Non-Freephone numbers separately. The options considered as part of this RIA for Non-Freephone numbers are

[123] See paragraphs 113 and 167 of ComReg Decision D15/18.

[124] ComReg Document 17/53r – Information Notice: Wholesale Charges for Non-Geographic Numbers.

concentrated on the 0818 number range. It is worth noting some points in relation to the other Non-Freephone number ranges – namely 076, 1850 and 1890.

(c) 076 – The introduction of NGN Consolidation and the Geo-linking Condition in the NGN Decision and if the proposed adoption of the Notified Termination Markets SMP Draft Decisions, may result in 076 numbers being treated in the same manner as geographic numbers. ComReg is of the view that in light of the proposed measures no further action

(a) is likely to be required at the wholesale level for 076. The risks associated with OOs taking advantage of their bottleneck power will be constrained when these decisions take effect.

(b) 1850/1890 – The retail measure in the NGN Decision of increasing the maximum retail rate from local to national has an effect at the wholesale level in that an OO need not levy a WOR to recover these costs. ComReg considers that there are no wholesale measures required for 1850/1890 number ranges.

7.17 Please see Chapter 3 and Chapter 4 of this Consultation for a full background and discussion in relation to the wholesale approach for all NGN number ranges.

7.18 ComReg is carrying out this RIA having regard to its statutory objectives which include to encourage the efficient use and ensure the effective management of the national numbering resource, contribute to the development of the internal market, to promote the interest of users and to promote competition in the electronic communications sector. This RIA shall also have regard to the fact that ComReg, as the designated national regulatory authority for the electronic communications sector in the State, is required to take all reasonable measures which are aimed at achieving its prescribed statutory objectives while such measures must also be proportionate to those objectives.

7.2.1.1 Section 12 of the Communications Regulation Act 2002 (the ‘Act’)

7.19 As per Section 12 of the Act the objectives of ComReg are to (a) promote competition, (b) to contribute to the development of the internal market; and (c) to promote the interests of users within the community. The objectives also include to ensure the efficient use of numbers from the national numbering scheme in the State.

Promote Competition

7.20 In so far as the promotion of competition is concerned ComReg has a responsibility of:

(a) ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality,

(b) ensuring that there is no distortion or restriction of competition in the electronic communications sector, and

(c) encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.

7.21 It was identified as part of the 2017 DotEcon Report that the relatively high wholesale charges and resulting high retail charges faced by SPs for NGNs is one of the main factors that has seen the use of NGNs decrease over time[125]. ComReg is of the view that NGNs provide a valuable service in connecting SPs to customers and that this should be preserved.

7.22 Despite the development of other forms of communication services, voice services remain an essential aspect for the connection between individuals across society. Furthermore, for some groups of consumers, particularly vulnerable groups such as disabled users, voice calls are the only practical form of contact for some services.

7.23 Implementing a price control at the wholesale level and the requirement for OOs to make publicly available the 1800 and 0818 MVCO and FVCO rates may mean that SPs become more aware of these charges and can use them as factor in determining which operator they wish to use to provide the service.

7.24 ComReg considers that the proposed price control obligations in relation to 1800 and 0818 FVCO and MVCO are likely to lead to a more efficient pattern of prices than the status quo. The proposed obligations ensure that OOs are able to cover their efficiently-incurred costs on an incremental basis, so are no worse off from providing NGNs. The pricing approach for 1800 FVCO and MVCO also promotes competition through i.e. the proposed modelling structure (bottom up), cost standard (LRAIC+) and choice of cost base (hypothetically efficient operator).

Development of internal market

7.25 Further to Regulations 13 and 14 of the Framework Regulations, the draft measures will be made accessible to the Commission, the Body of European Regulators for Electronic Communications ("BEREC") as well as other national regulatory authorities ("NRAs") in other European Member States. Article 7a of the Framework Directive (referred to in Regulation 14 of the Framework Regulations) lays down the procedure for the consistent application of remedies concerning, inter alia, the imposition, amendment or withdrawal of various obligations on operators. ComReg will take the utmost account of any comments received as part of the notification process referred to in Regulations 13 and 14 of the Framework Regulations.

7.26 We will also consider all responses received to this Consultation before proceeding to a final decision.

[125] See paragraph 3.25 – 3.39 of ComReg Document 18/65

Promote the interests of users within the community

7.27 ComReg is of the view that the NGN platform provides SPs with a valuable service, enabling them to connect with users. The proposed measures also aim to ensure that all users, have the ability access to NGNs if required.

7.28 Furthermore, the proposed transparency measures promote the provision of clear, publicly available information regarding pricing of NGNs. This will help create awareness among interested parties of the pricing of NGNs. As SPs become more aware of pricing it may encourage them to consider using different operators to provide their service which should increase competition.

7.29 As set out in the earlier chapters of this Consultation (and in particular chapter 3) ComReg identified that excessive WORs set by OOs may result in some SPs shifting away from the use of NGNs to numbers where the caller must cover (some or all of) the cost of the call or even ceasing to offer services altogether. ComReg observed that even where SPs continue to provide service over NGNs, the expense may diminish resources available for improving services and reduce incentives to develop such services. This is a particular issue where the services being provided are valuable to vulnerable members of society. The overall impact of high WORs is therefore to reduce the effectiveness of the NGN platform in allowing SPs to connect to callers; constituting an effective obstacle to access to NGNs. As a result, price, choice and quality of services ultimately delivered to end-users is undermined.

7.30 Section 12(2)(c) also highlights the requirement to address the needs of specific social groups, in particular disabled users. As noted above, Freephone numbers are often used by charitable or not-for-profit organisations to provide welfare services and for some groups of consumers, particularly vulnerable groups, voice calls are the only practical form of contact. ComReg considers that protecting and encouraging the use of Freephone numbers is consistent with the need to safeguard the interests of users.

7.2.1.2 Regulation 16 of the Framework Regulations

7.31 Regulation 16 of the Framework Regulations also sets out ComReg’s objectives. While these objectives overlap with those under the Act, there are additional more granular objectives such as the need to promote the ability of end-users to access and distribute information or use applications and services of their choice. Furthermore, under Regulation 16(2) of the Framework Regulations in pursuit of its objectives ComReg shall apply objective, transparent, non-discriminatory and proportionate regulatory principles by, among other things:

(a) **Promoting regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods.** ComReg decided to initiate the NGN projects as it appeared to it, that the functioning of these NGNs were not working well for consumers or for those being called. The dysfunctional nature of NGNs has persisted for a number of years (see Section 2.3 above in Chapter 2 for a list of the information sources relied upon) and so needed to be addressed.

ComReg has set out in this Consultation[126] and in Document Number 18/65[127] why an SMP Designation approach under Regulation 27 of the Framework Regulations is not appropriate to address the harm identified.

As required under Regulation 6(4) of the Access Regulations, ComReg is acting in accordance with the Access Regulations and the procedures set out in Regulation 12 and 13 of the Framework Regulations. Accordingly, the draft measures will be consulted upon and made accessible to the Commission, BEREC as well as other NRAs in other European Member States. ComReg will consider comments received as part of the consultation process and will also take the utmost account of any comments received as part of the notification process.

Furthermore, in its assessment of the modelling parameters for 1800 FVCO and MVCO price control, ComReg has given due regard to regulatory best practice, including European Commission recommendations[128] and ComReg's general approach to modelling costs of provision of other services in Ireland to ensure consistency. Cost orientation also ensures predictability of wholesale price levels for operators as cost oriented prices can be determined for the entire period of the price control allowing greater confidence in business decisions. Annex 9 and Annex 10 set out the maximum WORs for calls to 1800 numbers originating from a mobile and fixed network from 2020 to 2024. ComReg considers that visibility and certainty regarding future prices is important to promote regulatory predictability.

(b) **Ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services.** As set out in Section 4.11 above, ComReg is proposing a wholesale price control (and supporting transparency obligation) for the origination of calls to 1800 and 0818.

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126 See Section A8.2.4 of Annex 8.

127 Paragraphs 3.76 to 3.79.

128 COMMISSION RECOMMENDATION of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC) and COMMISSION RECOMMENDATION of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

The proposed obligations apply to all fixed or mobile operators that have the ability to originate calls to 1800 and 0818. This is reflected in the draft Decision Instruments contained in at Annex 9 and Annex 10 which list all such operators. ComReg considers that this approach does not discriminate between undertakings.

While it is correct that mobile WORs for 1800 are an order of magnitude higher than that charged by fixed operators, ComReg considers that a consistent approach should be adopted in respect of fixed and mobile operators. As set out in Section 7.2.3.3 below ComReg has adopted a consistent approach between fixed and mobile operators, which it considers appropriate.

(c) **Safeguarding competition to the benefit of consumers and promoting, where appropriate, infrastructure based competition.** See paragraphs 7.20 to 7.24 above.

(d) **Promoting efficient investment and innovation in new and enhanced infrastructures.**

Access prices should be set in such a way that OOs are encouraged to make efficient infrastructure investment decisions. Visibility and certainty regarding future prices is important so that operators can progress their investment plans.

In the current regime, all operators, apart from Eircom have the freedom to set their own prices. This also means that they have the freedom to change their prices whenever they view it as necessary. The effect of this was seen when the “deemed-to-be” regime unravelled. Some operators increased prices and due to the bottleneck control exercised by these OOs the other operators were unable to respond to the price change in a meaningful way.

Furthermore, the choice of a long run incremental costing methodology for the 1800 FVCO and MVCO price control can provide adequate long-term incentives by ensuring that prices are sufficient to incentivise capacity-expanding investments. It is intended that the costing models used will ensure that the cost oriented prices produced by such models will suitably inform operator’s ‘build or buy’ decisions and help promote efficient investment and innovation. The approach is consistent with the recommendation outlined in the DotEcon Report and also with the 2009 Termination Rates Recommendation which requires that a cost model should “…*produce as robust results as possible and to avoid large discrepancies in operating cost, capital cost and cost allocation between a hypothetical and a real operator”*.

(e) **Taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within the State.** ComReg considers that in the context of this review and the nature of NGNs, differentiated competitive conditions based on geographic areas is a less relevant consideration.

(f) **Imposing ex-ante regulatory obligations only where there is no effective and sustainable competition and relaxing or lifting such obligations as soon as that condition is fulfilled.** As set out in Chapter 4 above, ComReg is proposing a wholesale price control (and supporting transparency obligation) for origination of calls to 1800 and 0818 numbers. ComReg considers that these obligations address the specific harm that has been identified (as set out in Chapter 3 above). ComReg will keep the imposed WORs under review to ensure that they address this harm and where appropriate, will reassess the imposed rates.

ComReg considers that regulatory forbearance is the more appropriate approach for wholesale origination of calls to 1850, 1890 and 076 numbers. This would mean that no price control would be imposed and operators would continue to have freedom to set their own charges for wholesale origination. ComReg would have no influence over these charges.

7.2.1.3 Regulation 23(1) of the Universal Service Regulations

7.32 "The Regulator may, where technically and commercially feasible and except where a called subscriber has chosen for commercial reasons to limit access by calling parties located in specific geographical areas, specify requirements for compliance by an undertaking operating a public telephone network or providing publicly available telephone services for the purpose of ensuring that end-users are able to

(a) Access and use services using non-geographic numbers within the European Union, and

(b) Access all numbers provided in the European Union, regardless of the technology and devices used by the operator, including those in the national numbering plan of Member States, those from the European Telephony Numbering Space (ETNS) and Universal International Freephone Numbers (UIFN)."

7.33 Pursuant to recital 46 of the Universal Service Directive, *"cross-border access to numbering resources and associated services should not be prevented, except in objectively justified cases, for example to combat fraud or abuse …, when the number is defined as having a national scope only … or when it is technically or economically unfeasible"*.

7.34 The regulatory framework allows ComReg to safeguard the rights and interests of End Users in all events where justified to secure policy objectives and regulatory principles and where the required procedures are adhered to. It is on this basis that ComReg considers it necessary to intervene to adopt a price control obligation (and supporting obligations), as set out in this Consultation, to remove excessive prices which ComReg considers to constitute a non-technical obstacle to calling non-geographic numbers. Chapter 3 (with reference to ComReg's earlier analysis and supporting DotEcon reports) sets out the specific harm that has been identified. ComReg is of the view that high wholesale charges levied by OOs on other network operators lead to high charges being faced by those organisations that want to use NGNs as a means of communicating with callers. These excessive charges result in an obstacle to access to NGNs and consequently discourage organisations from using NGNs, which is ultimately to the detriment of end-users.

7.35 It is intended that the proposed measures in combination with the measures imposed in the NGN Decision will encourage more organisations to use NGNs and therefore increase and improve the services that callers may avail of.

7.2.1.4 Regulation 6(1) of the Access Regulations

7.36 Regulation 6(1) of the Access Regulations provides that

> *"The Regulator shall, acting in pursuit of its objectives set out in Section 12 of the Act of 2002 and Regulation 16 of the Framework Regulations encourage and, where appropriate, ensure, in accordance with these Regulations, adequate access, interconnection and the interoperability of services in such a way as to –*
>
> *(a) promote efficiency*
>
> *(b promote sustainable competition*
>
> *(c) promote efficient investment and innovation, and*
>
> *(d) give the maximum benefit to end-users*

7.37 ComReg considers each of constituent sections of 6(1) of the Access Regulations below.

<u>Promote efficiency</u>

7.38 A cost oriented price control aims to ensure that prices do not exceed an appropriate level of efficient costs where there is a risk that competitive pressure alone would not achieve this outcome.

7.39 The use of LRAIC+ is consistent with recommendations in the context of general costing methodologies, for example as outlined in the 2013 Non-Discrimination Recommendation. If non-geographic OO's were only allowed a WOR that gives them LRIC this could make a geo-linked NGN call cheaper on an end-to-end basis than a geo call given that FVCO is regulated at LRAIC+. This would create a regulatory distortion and should be avoided.

7.40 At the wholesale level due to the bottleneck control that OOs have over the NGN supply chain a price control is considered to be the most effective option in addressing the pricing issues identified for Freephone numbers (1800) and Universal Access numbers (0818) .

Promote sustainable competition

7.41 Please see paragraphs 7.20 to 7.24 of this Consultation.

Promote efficient investment and innovation

7.42 See paragraph 7.31(d) above.

Maximum benefit to end-users

7.43 See paragraphs 7.27 to 7.30 above.

7.2.1.5 Regulation 6(2) of the Access Regulations

7.44 Regulation 6(2) of the Access Regulations provides that, “Without prejudice to any measures that may be taken in accordance with Regulation 8 in respect of undertakings with significant market power, the Regulator may –

(a) To the extent that it is necessary to ensure end-to-end connectivity, impose obligations on undertakings that control access to End Users including, in justified cases, the obligation to interconnect their networks where this is not already the case.

(b) In justified cases and to the extent that it is necessary, impose obligations on undertakings that control access to end-users to make their services interoperable, and

7.45 End-to-end connectivity is the mechanism through which all consumers can access services provided by all SPs regardless of operator. An SP providing a service using an NGN generally relies on that service being available to all potential callers across all OOs. An SP has few, if any, options if an OO increases the WOR charged because the SP cannot, by way of response to the increased charges, threaten to reject calls to that OO as accessibility to all potential customers is likely to be of the utmost importance.

7.46 Given the threat to end-to-end connectivity posed by the bottleneck control exercised by OOs ComReg is of the view that it is appropriate to exercise its powers under Regulation 6(2) to impose the proposed wholesale price control (and supporting transparency obligation) for origination of calls to 1800 and 0818 numbers.

7.2.1.6 Regulation 6(4) of the Access Regulations

7.47 With regard to access and interconnection referred to in paragraphs (1) and (2) the Regulator may exercise its powers under the Specific Regulations on its own initiative where justified in order to secure the policy objectives and regulatory principles set out in Section 12 of the Act and Regulation 16 of the Framework Regulations, in accordance with these Regulations and the procedures referred to in Regulations 12, 13 and 14 of the Framework Regulations

7.48 In light of the foregoing, ComReg is proposing to impose transparency and price control obligations to remove an obstacle to calling non-geographic numbers which is not technical in nature but results from the tariffs applied. These controls are being proposed (without a market analysis having been carried out that shows that the undertakings concerned have SMP), on the basis that such obligations constitute a necessary step to ensure that end-users are able to access non-geographic numbers.

7.49 ComReg decided to initiate the NGN projects as it appeared to it, that the functioning of these NGNs were not working well for consumers or for those being called. The dysfunctional nature of NGNs has persisted for a number of years (see Section 2.3 above in Chapter 2 for a list of the information sources relied upon). Chapter 3 (with reference to ComReg's earlier analysis and supporting DotEcon reports) sets out the specific harm that has been identified.

7.50 In accordance with Regulation 12(3) of the Framework Regulations before imposing the proposed obligations, as part of this Consultation ComReg is publishing the text of the proposed measure (see the draft Decision Instruments contained in Annexes 9 and 10). This Consultation (with relevant documents such as ComReg Document No. 18/65 and supporting DotEcon reports) set out in detail the reasons for the proposed measures, including information as to which of ComReg's statutory powers gives rise to the measure. In this Consultation, ComReg asks a number of questions regarding ComReg's proposed action, and requests that interested parties to respond within the specified number of weeks.

7.51 As provided for in Regulation 12(4) ComReg, having considered any representations received in response to the Consultation, may take the measure with or without amendment. Furthermore, in accordance with Regulation 13(3) of the Framework Regulations ComReg shall make the draft measure accessible to the European Commission, BEREC and the NRAs in other Member States.

7.2.1.7 Regulation 8 of the Access Regulations

7.52 "(3) Without prejudice to (a) Paragraphs (1) and (2) of Regulation 6….. and (e) Regulations 21,23 and 25 of the Universal Service Regulations" the Regulator shall not impose the obligations set out in Regulations 9 to 13 on operators that have not been designated in accordance with paragraph (1).

7.53 (6) Any obligations imposed in accordance with this Regulations shall –

(a) be based on the nature of the problem identified,

(b) be proportionate and justified in light of the objectives laid down in Section 12 of the Act and Regulation 16 of the Framework Regulations, and

(c) only be imposed following consultation in accordance with Regulations 12 and 13 of the Framework Regulations

Based on the nature of the problem identified

7.54 ComReg has identified that there is harm at the wholesale and retail level that results from relatively high charges for wholesale services associated with NGNs. The price control/transparency measures proposed seek to directly address this harm.

7.55 The harm is discussed in Chapter 3 of this Consultation (see Section 3.3 which in turn, refers to ComReg's earlier analysis and supporting DotEcon reports). In summary, high wholesale origination charges ultimately restrict access to services provided over NGNs to the ultimate detriment of consumers.

7.56 The proposed price control and transparency measures should lead to OOs recovering no more than their efficiently incurred cost for providing NGNs. It is anticipated that the measures should increase access to services over NGNs and in particular increase access to Freephone service.

Proportionate and justified in light of objectives

7.57 ComReg is of the view that the proposed approach is justified based on the detail, reasoning and information provided in this Consultation. Please refer to Chapters 4, 5 and 6 of this Consultation for full details. As set out above, ComReg has illustrated how the proposed measures are consistent with the objectives laid down in Section 12 of the Act and Regulation 16 of the Framework Regulations.

7.58 Chapter 4 of this Consultation, explains that ComReg is proposing a wholesale price control (and supporting transparency obligation) for origination of calls to 1800 and 0818 numbers only. ComReg considers that these obligations address the specific harm that has been identified (as set out in Chapter 3 of this Consultation).

7.59 ComReg has established that, on the whole, the current commercially negotiated WORs are set significantly above the Eircom regulated rates and are very likely to be excessive. Mobile WORs for 1800 are an order of magnitude higher than that charged by fixed operators (either by BT or under the "deemed to be" regime), as set out in table 303 of the STRPL (v 151.0)[129] and replicated in Table 3 of the

[129] 1800 Charges for Mobile - less transit fee where appropriate (Euro Cent).

DotEcon Report these can be up to 34.2 cent per minute (peak) which is in stark contrast to the proposed cost base rate of 1.6 cent per minute.

7.60 As set out in Chapters 5 and 6 of this Consultation (with support from TERA and Analysis Mason) ComReg proposes to apply a BU LRAIC+ cost standard to derive the modelled WORs for 1800 numbers. Such a price control, with reference to detailed cost modelling, would be transparent, provide regulatory certainty and ensure that OOs can recover efficiently incurred costs but cannot over-recover costs.

7.61 ComReg will keep the imposed WORs under review to ensure that they address this harm and where appropriate will reassess the imposed rates.

7.62 Rather than a cost orientated rate, ComReg is proposing to impose a price control (and supporting transparency) obligations in respect of wholesale origination of calls to 0818 numbers which ensure that the net money flow between the relevant OO and terminating operator ('TO') should be such that the TO receives no more than the regulated termination rate. For reasons set out in Chapter 4, ComReg considers that this is the more proportionate measure to address the harm identified.

7.63 On the other hand ComReg considers, in light of its assessment, that regulatory forbearance is the most appropriate approach for wholesale origination of calls to 1850, 1890 and 076 numbers. This would mean that no price control would be imposed and operators would continue to have freedom to set their own charges for wholesale origination. In light of retail regulation imposed pursuant to the NGN Decision (as of 1 January 2022 these three NGNs will be withdrawn) and the Notified Termination Markets Draft Decisions ComReg considers it appropriate to limit its intervention, in respect of non-Freephone NGNs, to wholesale origination of calls to 0818 numbers.

<u>Only imposed following consultation</u>

7.64 As set out in Section 7.2.1.6 above, ComReg will consider all responses it receives to this Consultation and, based upon those responses it may amend some of its views before it proceeds to a final decision.

7.2.1.8 Summary of policy issues and objectives

7.65 We have outlined above ComReg's statutory obejctives under Section 12 of the Communications Act 2002 and Regulation 16 of the Framework Regulations. The discussion includes the regulatory principles that govern the pursuit of these objectives.

7.66 Following on from these we have set out the powers that ComReg can exercise under Regulation 23(1) of the Universal Service Regulations, and Regulations 6 and 8 of the Access Regulations in pursuit of these objectives and the application of same in the context of the current consultation.

7.67 High retail and wholesale NGN charges along with a lack of transparency around these charges have led to decreased utilisation of the NGN platform. SPs requires end-to-end connectivity in order to be accessible by all callers. Reduced utilisation of the NGN platform and consequential reduction in services available over the platform is to the detriment of SPs and consumers.

7.68 At the wholesale level the key problem to be addressed for NGN number ranges is originator control, and misuse, of access to end-users. Each OO has the potential to raise prices above cost given the end-to-end connectivity requirements and the fact that SPs need to be accessible to all callers regardless of what network they might subscribe to.

7.69 ComReg's preliminary view is that if a price control on WORs is not imposed, end-to-end connectivity is potentially threatened by high WORs. SPs will ultimately withdraw from the NGN platform due to the high costs involved and callers would therefore not be able to access their services (which in the case of Freephone NGNs typically affects the most vulnerable callers). This approach would not be in line with ComReg's statutory objectives as outlined above and could even contradict those of promoting competition and the interests of end-users.

7.70 Having regard to the above ComReg is opting to use its powers under Regulations 6, 8, 9, 13 of the Access Regulations in conjunction with Regulation 23 of the Universal Service Regulations and impose price control and transparency measures to address the harm identified.

7.2.2 Step 2: Identify and describe the regulatory options

7.71 The regulatory options considered in this Consultation are as follows:

(a) No Intervention

(b) Intervention in the form of a price control with supporting transparency obligations

7.72 While a large part of the issues are common to Freephone and Non-Freephone numbers we have considered the different number classes separately.

7.2.3 Step 3: Determine the likely impact on stakeholders

7.73 This section summarises the impact of the options above on the various stakeholders. The main stakeholders are as follows:

(a) Users of the NGN Platform:

(i) End Users

(ii) Service Providers

(b) Industry Stakeholders

(i) Fixed Line and mobile OO[130]s;

(ii) Fixed Line and mobile TOs;

(iii) Transit operators

7.74 The likely impact on stakeholders is discussed under the following headings:

(a) Impact of No Intervention - Freephone

(b) Impact of No Intervention – Non-Freephone

(c) Impact of Imposing Price Control/Transparency Measures – Freephone

(d) Impact of Imposing Price Control/Transparency Measures – Non-Freephone

7.2.3.1 Impact of No Intervention - Freephone

7.75 ComReg has identified existing wholesale harm in the market for NGNs, specifically high wholesale origination charges (particularly mobile charges). There is also potential consequences arising from the imposition of retail remedies pursuant to the NGN Decision.

7.76 For Freephone numbers failure to address the problem could lead to a worsening of the situation whereby fewer SPs will choose to offer a Freephone services instead switching to other NGNs or geographic numbers which are less costly for them but will require End Users to pay, making the services of the SP less accessible, for example to potentially vulnerable callers.

7.77 As noted in the 2017 DotEcon Report[131], despite the growth of the internet, smartphones and apps as alternative means of delivering some of the traditional services provided over NGNs, there is and will remain an important role for voice-based services. A voice based service is easily accessible to anyone with a phone (fixed or mobile) and so provides largely universal accessibility to service providers in a way that other platforms cannot. Therefore the NGN platform is important, particularly for Freephone numbers, as a means of connecting SPs.

[130] In this context the term "OOs" can include network operators who own their own network or virtual network operators that provide network service such as call origination without owning the underlying fixed or mobile networks.

[131] See Section 1.1 of ComReg Document 17/70a – *Non-Geographic Numbering – Report from DotEcon on non-geographic numbers in Ireland* – https://www.comreg.ie/publication/report-dotecon-non-geographic-numbers-ireland/

7.78 As mentioned above Freephone numbers are often used by charitable or not-for-profit organisations to provide welfare services and for some groups of consumers, particularly vulnerable groups, voice calls are the only practical form of contact.

7.79 In the absence of a price control OOs would continue to set their own WORs without limitation. This does nothing to address the excessive wholesale pricing identified by ComReg/DotEcon as part of Consultation 17/70 and does not reduce the risk of OOs increasing WORs in the future to recover eliminated retail margins. Not setting a price control would not be in line with ComReg's statutory objectives under Section 12 of the Act and Regulation 16 of the Framework Regulations as outlined at paragraphs 7.19– 7.31 above.

7.2.3.2 Impact of No Intervention – Non-Freephone (0818)

7.80 As outlined in the 2017 DotEcon Report[132] callers benefit from the services that SPs can offer through the NGN platform. However by using NGNs, SPs typically cover some (or all in the case of Freephone number above) of the cost of being called. Therefore we may think about SPs using NGNs as a means to make themselves contactable by callers, at terms chosen by the SP. Helplines, product support lines, marketing response numbers etc. are good examples of organisations using NGNs to reach out to callers and make themselves accessible.

7.81 Evidence of surveys[133] carried out by DotEcon identified the main factors or value that SPs have for using NGNs. For Non Freephone the relevant factors are:

(a) Reduce the costs to customers of calling SPs

(b) Provide memorable contact numbers

(c) Offer a single contact number

(d) Avoid showing where organisation is based, or facilitate moving without changing contact numbers.

7.82 The above points aim to demonstrate the value that NGNs have for SPs, and therefore reiterate the importance of ensuring the platform functions effectively.

7.83 If ComReg were not to impose a price control on the WORs for the 0818 number range the immediate risk is that the reduced retail margins on these numbers (following the introduction of the Geo-linking Condition as outlined in the NGN Decision) might lead to OOs to seek increased wholesale margins. Requiring lower retail prices is likely to need corresponding wholesale measures if OOs are not to seek to recover lost retail margins by increasing WORs.

7.84 In the absence of a price control OOs would continue to be able to set their own WORs which does nothing to remedy the problems identified. If rates were to rise

[132] See Section 2.1 of ComReg Document 17/70a

[133] See Section 6.1.1 of ComReg Document 17/70a

further there is a risk that it could result in fewer operators providing NGN services. Not setting a price control would not be in line with ComReg's statutory objectives

7.2.3.3 Impact of Imposing Price Control/Transparency Measures – Freephone

7.85 ComReg has considered the imposition of a price control separately for Freephone and Non-Freephone numbers.

7.86 Setting a price control of cost orientation for Freephone using modelled costs sets a cap that will allow OOs recover reasonable costs but will avoid compensating OOs with inefficiently high costs. This measure ensures that both OOs and TOs are no better or worse off for providing Freephone services.

7.87 SPs are currently unable to take countervailing action against OOs to deter excessive charges for Freephone. The use of modelled costs is transparent. It provides greater cost certainty to SPs in terms of what it might cost them to use the NGN network as a means of connecting with callers. This will likely increase/improve the extent to which SPs provide access to services over Freephone numbers, which is to the ultimate benefit of End Users.

7.88 Many charities offer Freephone numbers. The bottleneck control exercised by OOs and the relatively high charges faced by SPs in operating NGNs acts as barrier to access. The introduction of a price control ultimately should remove any barriers and increase and improve access to services. This will ensure that the interest of potentially vulnerable callers are better protected.

7.89 ComReg recognises that the imposition of price control/transparency obligations on OOs that have not previously been subject to this form of regulation will impose a greater burden on these OO's than had previously been the case.

7.90 However ComReg is of the view that the remedies it is proposing are necessary and proportionate and amount to the minimum level of regulation required to address the identified harm and protect SPs and consumers.

7.91 In respect of the proposed transparency obligations ComReg considers that the implementation of an obligation on all OOs to make MVCO/FVCO rates publicly available would not place a disproportionate burden on them. ComReg notes that initial implementation may be slightly more burdensome for those OOs who have never been subject to formal measures previously.

7.2.3.4 Impact of Imposing Price Control/Transparency Measures – Non-Freephone (0818)

7.92 The issues with Non-Freephone are largely similar to those identified for Freephone numbers. – i.e. high WORs that may make the NGN platform less attractive and reduce the effectiveness of the NGN platform as a means of SPs connecting with callers/customers.

7.93 The main difference stems from who pays for the call. As outlined at Section 3.2.3 above the CPP principle applies to calls to 0818 whereas the RPP principle applies to Freephone calls.

7.94 Calls to Freephone (1800) are not impacted by the Geo-linking condition imposed following the NGN Decision whereas calls to 0818 will be impacted. As calls to 0818 will in future be included in a customer's bundled minutes OOs will likely see a reduction in retail revenues earned from this number range.

7.95 High WORs is one of the main issues identified for Freephone numbers. WORs while not prohibited, are not currently observed on the 0818 range. There is however a risk that OOs could seek to introduce such charges at the wholesale level as a means of recovering some of the lost retail revenues. The introduction of excessive WORs would be problematic for TOs in that it may result in them not recovering their termination costs

7.96

7.97 The proposed price cap will allow OOs to cover their origination costs ensuring that they are no better or worse off in providing the service. The measures should prevent them extracting value from anywhere else in the NGN value chain.

7.98 Promotion of the use of NGN platform will enhance End User welfare and maximise long term benefits in terms of price and quality in the provision of the SP's services.

7.2.4 Step 4: Determine the likely impacts on competition

7.99 Competition can take place at different levels of the NGN supply chain:

(a) At the retail level OOs compete to attract subscribers and callers

(b) In the wholesale market TOs compete with each other to provide hosting to SPs

7.100 It is important to ensure that competition is effective at the different levels of the NGN supply chain.

7.101 Under the current proposals and resulting wholesale price obligation it is possible that the volume of NGN calls could increase which in turn could increase revenues for TOs. This should increase competition because each TO should have greater incentive to compete for as many SP calls as possible to be terminated on its network.

7.102 In discussing the appropriate cost standard the DotEcon Report[134] made the argument that in the case of a large integrated operator (originating and terminating calls) they can internalise the cost of providing NGN calls. If this operator were allowed to charge high WORs for calls originating on its own network but terminating on another network a smaller terminating operator might face significant payments to larger competitors and be at a competitive disadvantage. Excessive WORs might be used by integrated operators present in both origination and termination to compete unfairly for SPs against non-integrated operators present only on the termination side. However, once WORs were reduced to recover only LRAIC+ it is unclear that there would be any significant further improvement in terms of avoiding competitive distortions by reducing rates further to LRIC.

7.2.5 Step 5: Assess the likely impacts and choose the best option

7.2.5.1 Option to make no Intervention -

7.103 If there is no price control implemented for NGNs operators will continue to set their WORs as is the current scenario. The NGN platform is not working effectively to the detriment of End Users and SPs.

7.104 Wholesale intervention is justified given that each OO controls access to end-users and SPs need to be accessible to all callers regardless of which network the caller might subscribe to. OOs are exploiting their bottleneck control and SPs are unable to take countervailing action to deter excessive charges.

7.105 ComReg's preliminary view is that if a price control on WORs for Freephone NGNs is not imposed, end-to-end connectivity will be threatened by high WORs. SPs could ultimately withdraw from the NGN platform due to the high costs involved and callers would not be able to access their services. As noted at 7.76 above, in the case of Freephone, some SPs may switch to other NGNs which require End-Users to pay, ultimately making the SPs service less accessible. This approach would not be in line with ComReg's statutory objectives and could possibly undermine those of promoting competition and the interest on End Users.

7.106 There are two methods of implementing a price control 1) a market based analysis and SMP assessment or 2) the imposition of SMP-type obligations on non-SMP operators under Regulation 8(3) of the Access Regulations in conjunction with Regulation 6(2) of the Access Regulation and/or Regulation 23(1) of the Universal Service Regulations.

7.107 For reasons already outlined, ComReg is of the view that an SMP assessment is not necessary as such an approach would not be (a) timely to ensure effective

[134] ComReg Document Number 19/46a "A price control for regulation of wholesale charges for non-geographic numbers – A DotEcon report for ComReg"

implementation in line with retail remedies or (b) proportionate with regard to other available options.

7.108 ComReg's preferred option therefore is to proceed on the basis of implementing a wholesale price control in line with Regulation 8(3) of the Access Regulations in conjunction with Regulation 6(2) of the Access Regulation and/or Regulation 23(1) of the Universal Service Regulations. Such a control constitutes a necessary step to ensure end-to-end connectivity and/or to ensure that End Users are able to access numbers and services using NGNs.

7.2.5.2 Option to impose price control/transparency obligations for Freephone (1800) numbers

7.109 The DotEcon Report provided a recap on the above options that were available to ComReg to address the harm identified. Having considered all options, ComReg is of the view that the appropriate price control for Freephone numbers should be based on a cost orientation obligation using detailed cost modelling. Please see Section 4.9 of this Consultation for a full background and discussion of same.

7.110 Such a price control with reference to detailed cost modelling would be transparent, provide regulatory certainty and ensure that OOs cannot over-recover costs.

7.111 ComReg considered whether there should be any differences in approach in relation to fixed operators and mobile operators. ComReg is of the view that while there are separate models for Fixed and Mobile origination the principles to be applied to regulating fixed OOs and mobile OOs should be consistent.

7.112 ComReg is of the preliminary view that should the decision be made to impose a cost orientation obligation on origination with reference to modelled costs that LRAIC+ is the appropriate cost standard to be used.

7.113 A LRAIC+ methodology is consistent with European Commission recommendations. If non-geographic OOs were only allowed a WOR that gives them LRIC then this could make a geo-linked NGN call cheaper on an end to end basis than a geo call given that FVCO is regulated at LRAIC+. LRAIC+ prices will be higher due to the inclusion of joint and common cost recovery which does not happen with a pure LRIC approach.This would create a regulatory distortion and should be avoided.

7.2.5.3 Option to impose a price control/transparency obligations for Non-Freephone numbers

7.114 In Notified Termination Markets SMP Draft Decision, ComReg indicated that 0818 will not be included in the relevant termination markets and there will not be an explicit, regulated WTR set by ComReg for termination of calls to 0818.

7.115 A likely outcome of the Geo-linking Condition is that the competitive characteristics of 0818 will more closely resemble those of Geographic Numbers and 076. ComReg intends to consult on whether 0818 numbers fall within the definition of the Relevant FVCT Markets in advance of the effective date of the Geo-linking Condition in the NGN Decision on 1 December 2019.

7.116 When the Geo-linking Condition becomes effective at the retail level, OOs may face a wholesale charge for 0818 that is higher than an equivalent geographic call as absent a regulated, cost-based WTR, OOs may experience a wholesale termination rate for calls to 0818 that is higher than the regulated cost-based WTR. Additionally OOs will no longer be able to charge for all calls to 0818 at relatively high out-of-bundle rates. OOs may take steps to counter this.

7.117 Should the future consultation on Relevant FVCT Markets conclude that 0818 does not fall within relevant FVCT markets ComReg is of the view that a differentiated approach to price control is appropriate in those circumstances. OOs exposure to high WTRs could be offset by permitting an OO to levy a WOR for a 0818 call if the WTR from a TO for 0818 termination is greater than the regulated WTR for a geographic call. In these circumstances only, the OO may charge a WOR for calls to 0818 equal to the difference between the 0818 WTR and the regulated geographic WTR. In the event that a TO charges a WTR for 0818 at a rate equal to the regulated geographic WTR the OO may not charge a WOR for 0818 calls

7.2.6 Monitoring and Compliance

7.2.6.1 Complying with the proposed price control and transparency obligations

7.118 ComReg is proposing to impose price control and transparency obligations on operators for calls to certain NGNs. The price controls mean that, at certain dates the operators will need to have ensured that their wholesale prices will be priced at or below those prices set out in the decision instruments contained in Annexes 9 and 10. The transparency obligations mean that operators will have to publish relevant MVCO and FVCO rates in an accessible format on their website.

7.2.6.2 Monitoring

7.119 ComReg will seek written confirmation from the relevant operators at the dates where publication of new prices are due.

7.2.6.3 Enforcement Measures and Sanctions

7.120 Where there is *prima facie* evidence that a fixed or mobile operator has not complied with the proposed price control and transparency obligations in relation to NGNs, ComReg will initiate a compliance investigation. If necessary ComReg will take relevant action pursuant to Regulation 19 (*Enforcement – Compliance with obligations*) or Regulation 21 (*Prosecution of Offences*) of the Access Regulations and/or Regulations 31 and 35 of the Universal Service Regulations.

Q14. Do you have any comments on the Regulatory Impact Assessment and in your opinion are there other factors which ComReg should consider in completing its Regulatory Impact Assessment? Please provide reasons for your response, clearly indicating the relevant paragraph numbers to which your comments refer, along with relevant factual evidence supporting your views.

Chapter 8

8 Next Steps

8.1 All comments on this Consultation are welcome. It would make the task of analysing responses easier if comments were referenced to the relevant question numbers from this consultation document.

8.2 The consultation period will run from 21 May 2019 to 2 July 2019. During this time ComReg will welcome written comments on any of the issues raised in this Consultation.

8.3 Having analysed and considered the comments received, ComReg will review the main proposals set out in this Consultation, amend if necessary in light of representations received and will then notify the draft measures to the European Commission, other NRAs and BEREC pursuant to Regulation 13 of the Framework Regulations. Once the response under Regulation 13 is received, ComReg, taking utmost account of any comments received from the European Commission, will adopt and publish the final decisions.

8.4 In order to promote further openness and transparency, ComReg will publish all respondents' submissions in relation to this Consultation. Respondents should submit views in accordance with the instructions set out below.

8.5 Respondents should be aware that all non-confidential responses to this Consultation will be published, subject to the provisions of ComReg's guidelines on the treatment of confidential information[135]. Similarly, any associated correspondence received by ComReg from Service Providers in the course of the consultation process may also be published.

8.6 When submitting a response to this consultation that contains confidential information, respondents must choose one of the following options:

(a) Submit both a non-confidential version and a confidential version of the response. The confidential version must have all confidential information clearly marked and highlighted in accordance with the instruction set out below. The separate non-confidential version must have redacted all items that were marked and highlighted in the confidential version; or

[135] See ComReg Document 05/24, "Guidelines on the treatment of confidential information", March 2005.

(b) Submit only a confidential version and ComReg will perform the required redaction to create a non-confidential version for publication. With this option, respondents must ensure that confidential information has been marked and highlighted in accordance with the instructions set out below. **Where confidential information has not been marked as per our instructions below, then ComReg will not create the non-confidential redacted version and the respondent will have to provide the redacted non-confidential version in accordance with Option (a) above.**

8.7 For ComReg to perform the redactions under Option (b) above, respondents must mark and highlight all confidential information in their submission as follows:

(a) Confidential information contained within a paragraph must be highlighted with a chosen particular colour,

(b) Square brackets must be included around the confidential text (one at the start and one at the end of the relevant highlighted confidential information),

(c) A scissors symbol ✂ (Symbol code: Wingdings 2:38) must be included after the first square bracket.

8.8 For example, "Redtelecom has a market share of [✂ 25%]."

Annex 1 List of Consultation Questions

When responding to the question(s) below, ComReg asks that respondents explain the basis for responses in full and, provide supporting information.

Q1. Do you agree with the current and future NGN charge flows detailed in Figure 7 to Figure 13 below in Sections 4.6 to 4.9 and the associated text?

Q2. ComReg requests that if respondents consider that the analysis below in Sections 4.6 to 4.9 is incorrect that a detailed description is provided and supported, where appropriate, with sample (non-confidential) interconnection agreement(s)?

Q3. Do you agree with ComReg's preliminary conclusion on wholesale charges for 076 numbers?

Q4. Do you agree with ComReg's preliminary conclusions on wholesale charges for Shared Cost numbers?

Q5. Do you agree with ComReg's preliminary conclusions on wholesale charges for 0818 numbers?

Q6. Do you agree with ComReg's preliminary conclusions on wholesale charges for calls to 1800 numbers?

Q7. Do you agree with the costing principles proposed for modelling the costs to inform the wholesale charges for call origination to Freephone NGNs, as outlined in the DotEcon Report and summarised in Section 4.10 of this Consultation?

Q8. Do you agree with ComReg's preliminary view that the Draft MVCO Model is appropriate for determining a LRAIC+ for Mobile Voice Call Origination to a Freephone NGN?

Q9. Do you agree with the approach taken to include an additional mark-up to the LRAIC+ for MVCO to allow for the recovery of a proportion of the common costs not recovered in the Pure LRIC for Mobile Voice Call Termination?

Q10. Do you agree with the approach taken to quantify the reasonable retail costs that are relevant to calls originating to Freephone numbers hosted on another operator's network?

Q11. Do you agree with ComReg's preliminary view that the Draft FVCO Cost Model is appropriate for determining a LRAIC+ cost for Fixed Voice Call Origination to a Freephone NGN?

Q12. Do you agree with the approach taken to include an additional mark-up to the LRAIC+ for FVCO to allow for the recovery of a proportion of the common costs not recovered in the Pure LRIC for Fixed Voice Call Termination?

Q13. Do you agree with the approach taken to quantify the reasonable retail costs that are relevant to calls originating to Freephone numbers hosted on another operator's network?

Q14. Do you have any comments on the Regulatory Impact Assessment and in your opinion are there other factors which ComReg should consider in completing its Regulatory Impact Assessment? Please provide reasons for your response, clearly indicating the relevant paragraph numbers to which your comments refer, along with relevant factual evidence supporting your views.

Annex 2 Glossary

Acronym	Full Title
AM	Analysys Mason
BEREC	Body of European Regulators for Electronic Communications
CISPL	Commercial Interconnect Services Price List
CPNP	Calling Party Network Pays
CPP	Calling Party Pays
EC	European Commission
EPC	Enhanced Packet Core
EPMU	Equi-proportionate Manner
FNO	Fixed Network Operator
FRR	Fixed Retention Rate
FTR	Fixed Termination Rate
FVCO	Fixed Voice Call Origination
FVCT	Fixed Voice Call Termination
GA	General Authorisation
GSM	Global System for Mobile Communications
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
IMS	IP Multimedia subsystem
IP	Internet Protocol
LRAIC+	Long Run Average Incremental Cost Plus
LRIC	Long Run Average Incremental Cost
LTE	Long Term Evolution
MEA	Modern Equivalent Asset
MNC	Mobile Network Code
MNO	Mobile Network Operator
MTR	Mobile Termination Rate
MVCO	Mobile Voice Call Origination
MVCT	Mobile Voice Call Termination

Acronym	Full Title
NGN	Non Geographic Number
NRA	National Regulatory Authority
OO	Originating Operator
PSTN	Public Switched Telephone Network
PV	Present Value
RAN	Radio Access Network
RFTS	Retail Fixed Telephony Service
RIA	Regulatory Impact Assessment
RMTS	Retail Mobile Telephony Service
ROR	Retail Origination Rate
RTR	Retail Termination Rate
RoU	Rights of Use
RPNP	Receiving Party Network Pays
RPP	Receiving Party Pays
SMP	Significant Market Power
SP	Service Provider
SIP	Session Initiation Protocol
S-RAN	Single Radio Access Network
STRPL	Switched Transit and Routing Price List
TDM	Time Division Multiplexing
TO	Terminating Operator
TrO	Transit Operator
UMTS	Universal Mobile Telecommunications System
VoB	Voice over Broadband
VoIP	Voice over Internet Protocol
VoLTE	Voice over Long Term Evolution
WACC	Weighted Average Costs of Capital
WDM	Wavelength Division Multiplexing
WiFi	Wireless Fidelity
WOR	Wholesale Origination Rate

Acronym	Full Title
WTR	Wholesale Termination Rate

Annex 3 Worked Examples

A3.1 In this Annex, ComReg considers the rates and payment flows for a number of scenarios using a mobile originated, 10 minute peak time call.

A3.2 In this Annex, ComReg considers the rates and payment flows for a number of scenarios using a mobile originated, 10 minute, peak time call.

(i) 076 Current –vs– 076 Proposed

(ii) 076 Proposed –vs– Geographic

(iii) 0818 Current –vs– 0818 Proposed

(iv) 0818 Proposed –vs– Geographic

(v) 1890 Current –vs– 1890 Future

(vi) 1800 Current –vs– 1800 Proposed

(vii) 1890 Proposed –vs– 0818 Proposed

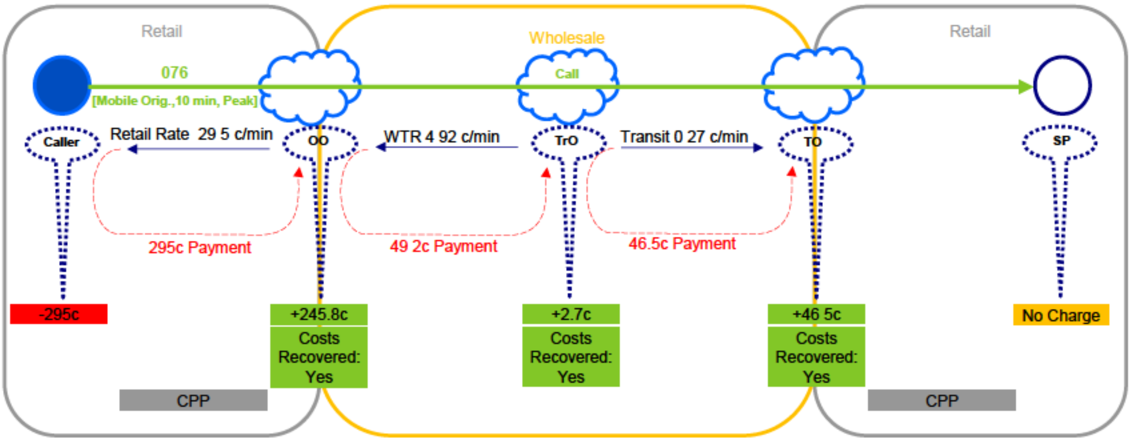
(viii) 1890 Proposed –vs– 1800 Proposed

A3.3 The worked examples will show the flow of revenue and the cost recovery of each of the operators in the NGN Value Chain.

A3.1 076 Current –vs– 076 Proposed

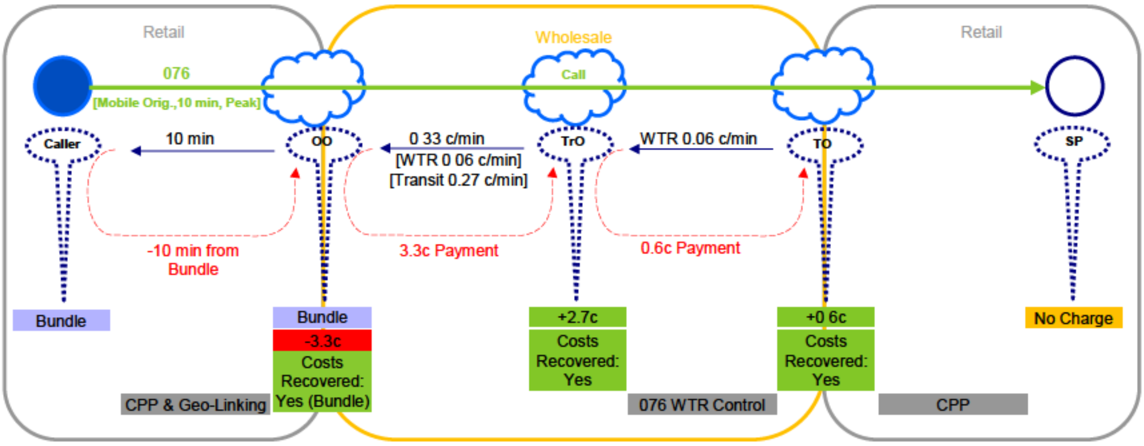
A3.4 Figure 19 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 076 NGN. The caller carries much of the cost at an out-of-bundle national rate. The OO experiences a 4.92 c/min rate as the calls Transit Eircom. Transit is charged to the TO. The all operators recover the incremental cost of the call from revenues received. The OO receives most of the revenue. The SP pays nothing under the CPP principle.

Figure 19: Worked example – 076 Current



A3.5 Figure 20 below shows sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 076 NGN in the presence of the Geo-linking Condition and the inclusion of 076 in termination markets (with a regulated WTR of 0.06 c/min). The caller has a bundle and is decremented by 10 minutes. The OO experiences a 0.33 c/min rate, being the WTR and Transit combined. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call from revenues received. The OO recovers its cost from the callers bundle subscription. The SP pays nothing under the CPP principle.

Figure 20: Worked example – 076 Proposed

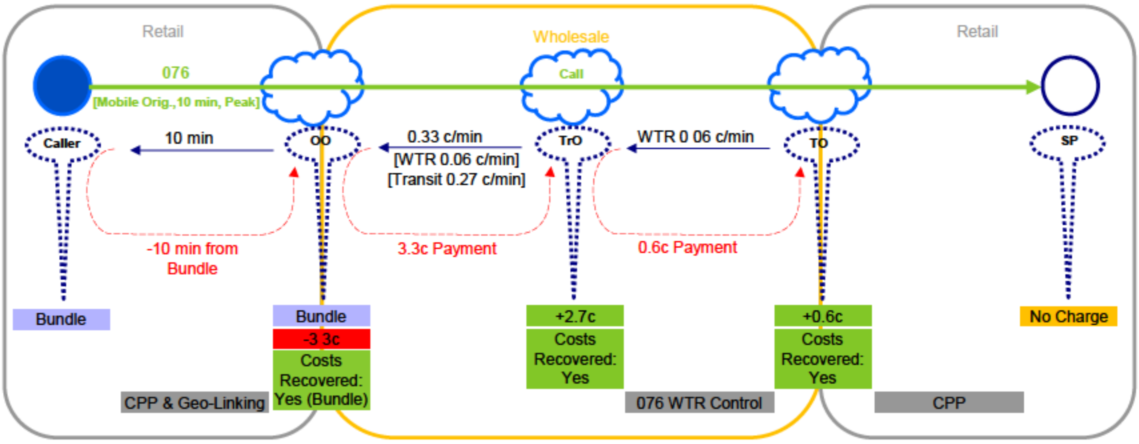


A3.6 Comparing the proposal for 076 NGNs with a current arrangements, with the Geo-linking Condition, callers introduction of a regulated WTR for 076, the rates and payment flows for an 076 call are broadly similar to a Geographic call.

A3.2 076 Proposed – vs– Geographic

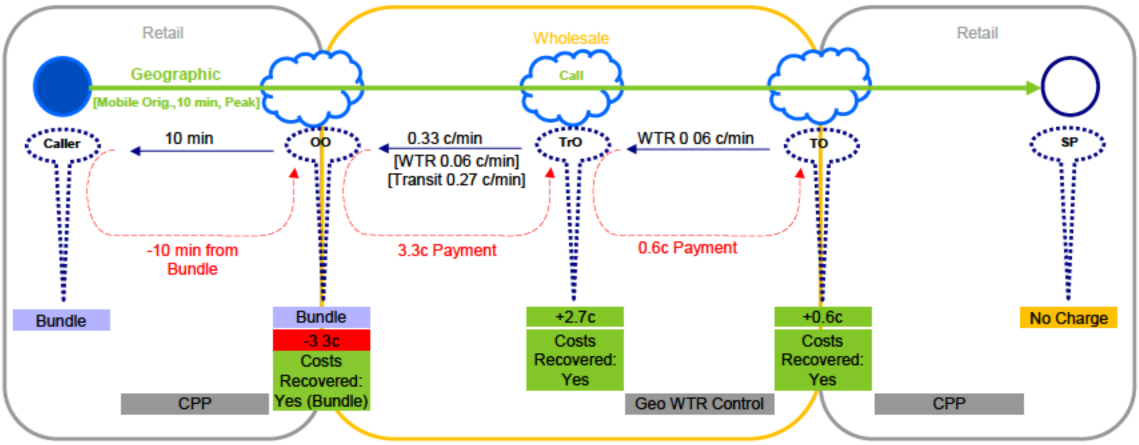
A3.7 Figure 21 below shows sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 076 NGN in the presence of the Geo-linking Condition and the inclusion of 076 in termination markets (with a regulated WTR of 0.06 c/min). The caller has a bundle and is decremented by 10 minutes. The OO experiences a 0.33 c/min rate, being the WTR and Transit combined. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call from revenues received. The OO recovers its cost from the callers bundle subscription. The SP pays nothing under the CPP principle.

Figure 21: Worked example – 076 Proposed



A3.8 Figure 22 below shows sample rates and payment flows for a 10 minute, peak time, mobile originated call to a Geographic number (with a regulated WTR of 0.06 c/min). The caller has a bundle and is decremented by 10 minutes. The OO experiences a 0.33 c/min rate, being the WTR and Transit combined. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call from revenues received. The OO recovers its cost from the callers bundle subscription. The SP pays nothing under the CPP principle.

Figure 22: Worked example – Geographic

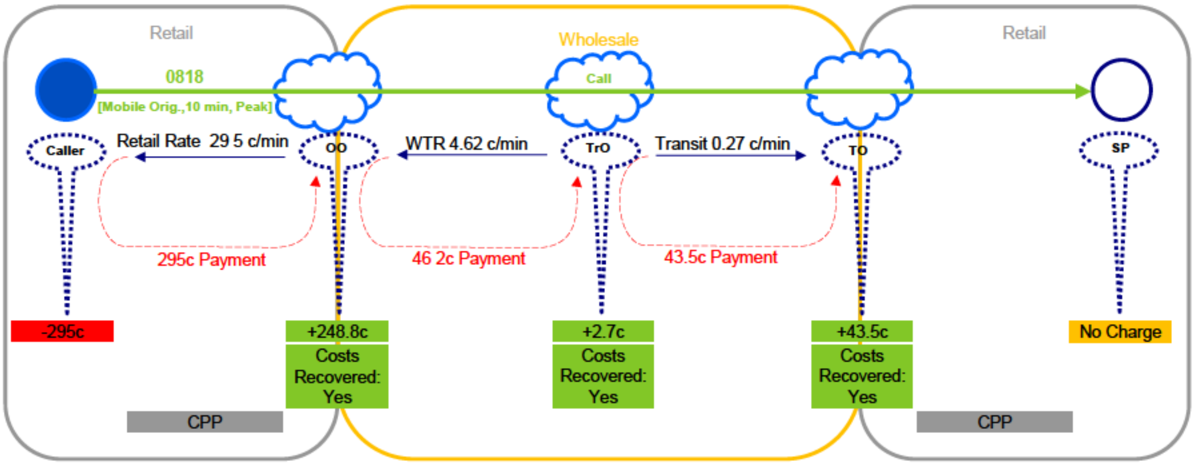


A3.9 Comparing the proposal for 076 NGNs with the current arrangements for this number range, the Geo-linking Condition will reduce caller exposure to high retail rates and a regulated WTR will limit OOs exposure to high WTRs.

A3.3 0818 Current –vs– 0818 Proposed

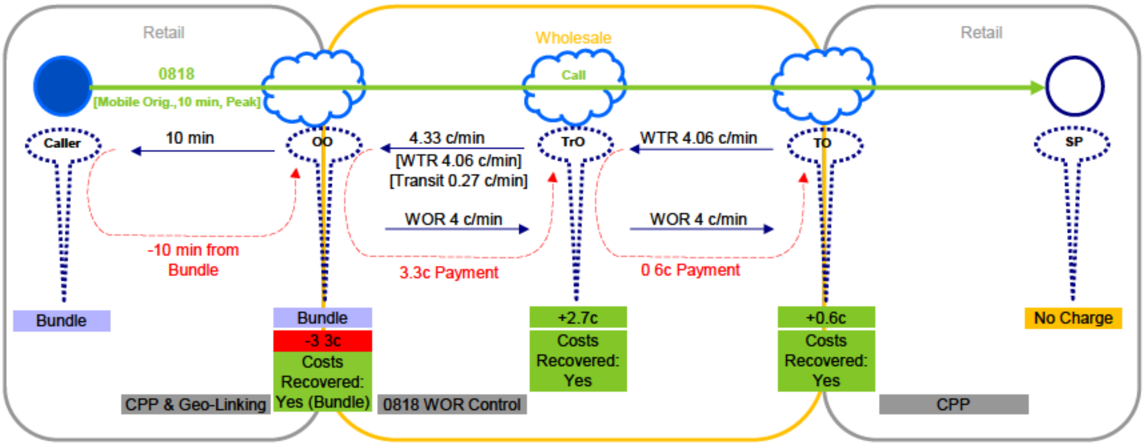
A3.10 Figure 23 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 0818 NGN. The caller carries much of the cost at an out-of-bundle rate. The OO experiences a 4.62 c/min rate as the calls Transit Eircom. Transit is charged to the TO. The all operators recover the incremental cost of the call from revenues received. The OO receives most of the revenue. The SP pays nothing under the CPP principle.

Figure 23: Worked example – 0818 Current



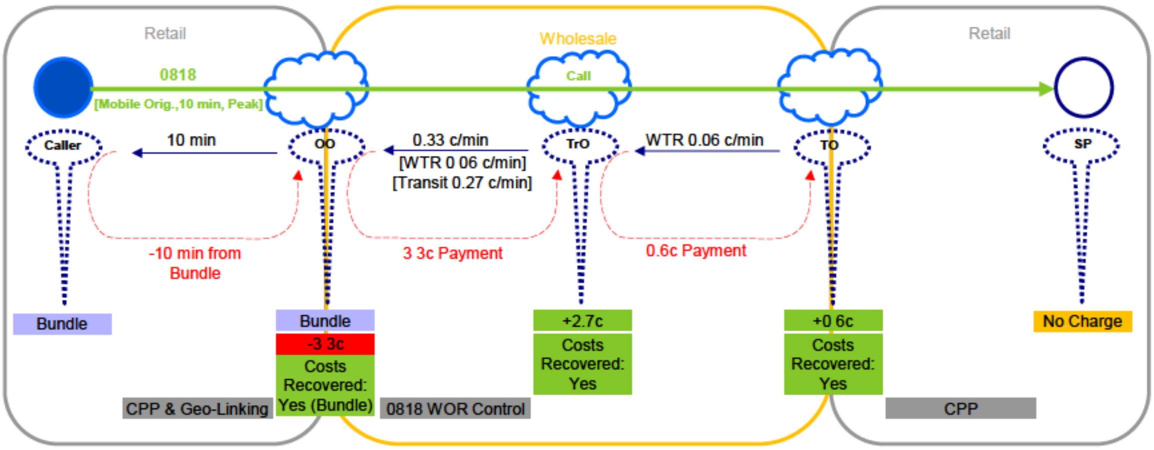
A3.11 Figure 24 below, has the Geo-linking Condition and a 0818 WOR price control in place. The caller has a bundle and is decremented by 10 minutes. The TO charges a WTR of 4.06 c/min, 4 c/min above the regulated geographic fixed termination rate therefore, the OO charges a WOR of 4 c/min in response. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call through revenues received. The OO recovers its costs from the caller's bundle subscription. The CPP principle means that the SP pays nothing.

Figure 24: Worked example – 0818 Proposed (with WOR)



A3.12 Figure 25 below, has the Geo-linking Condition and a 0818 WOR price control in place. The caller has a bundle and is decremented by 10 minutes. The TO charges a WTR of 0.6 c/min, equivalent to regulated geographic termination rate therefore the OO charges no WOR. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call through revenues received. The OO recovers its costs from the caller's bundle subscription. The SP pays nothing under the CPP principle.

Figure 25: Worked example – 0818 Proposed (no WOR)

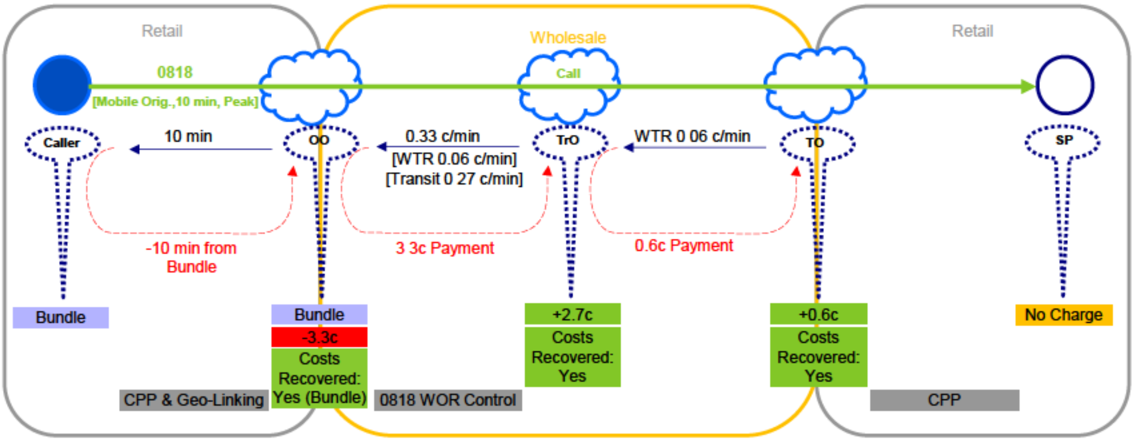


A3.13 Comparing the proposal for 0818 NGNs with the current arrangements for this number range, the Geo-linking Condition will reduce caller exposure to high retail rates and a 0818 WOR Control will limit OOs exposure to high WTRs.

A3.4 0818 Proposed –vs– Geographic

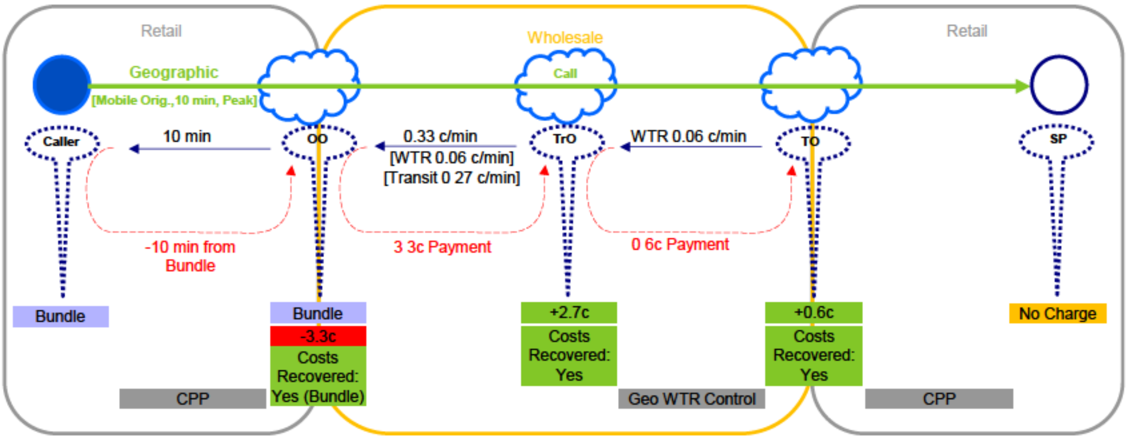
A3.14 Figure 26 below, has the Geo-linking Condition and a 0818 WOR price control in place. The caller has a bundle and is decremented by 10 minutes. The TO charges a WTR of 0.6 c/min, equivalent to the Regulated FTR therefore the OO charges no WOR. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call through revenues received. The OO recovers its costs from the caller's bundle subscription. The SP pays nothing under the CPP principle.

Figure 26: Worked example – 0818 Proposed (no WOR)



A3.15 Figure 27 below shows sample rates and payment flows for a 10 minute, peak time, mobile originated call to a Geographic number (with Regulated FTR of 0.06 c/min). The caller has a bundle and is decremented by 10 minutes. The OO experiences a 0.33 c/min rate, being the WTR and Transit combined. Transit is charged to the OO. The TO and TrO recover the incremental cost of the call from revenues received. The OO recovers its cost from the caller's bundle subscription. The SP pays nothing under the CPP principle.

Figure 27: Worked example – Geographic

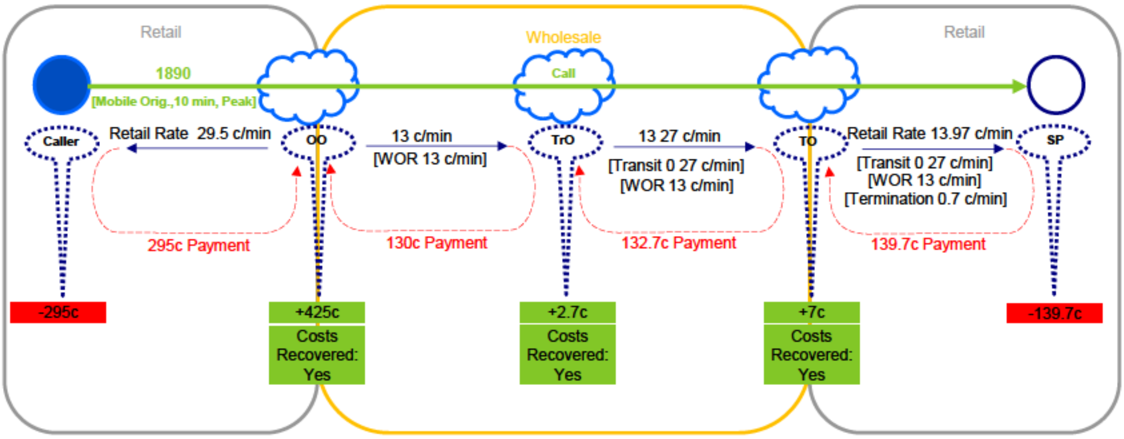


A3.16 Comparing the proposal for 0818 NGNs with a Geographic call, with the introduction of a 0818 WOR Control, the rates and payment flows for an 0818 call are broadly similar to a Geographic call.

A3.5 1890 Current –vs– 1890 Future

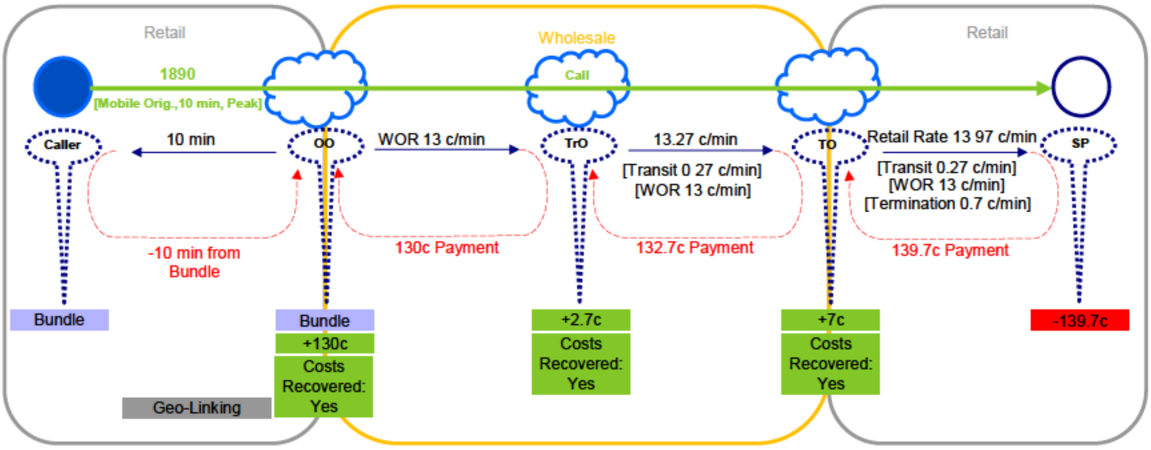
A3.17 Figure 28 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 1890 NGN. The caller carries much of the cost at an out-of-bundle rate The SP also experiences a high charge driven by the high WOR charged by the OO. Transit is charged to the TO. The all operators recover the incremental cost of the call from revenues received. The OO receives most of the revenue.

Figure 28: Worked example – 1890 Current



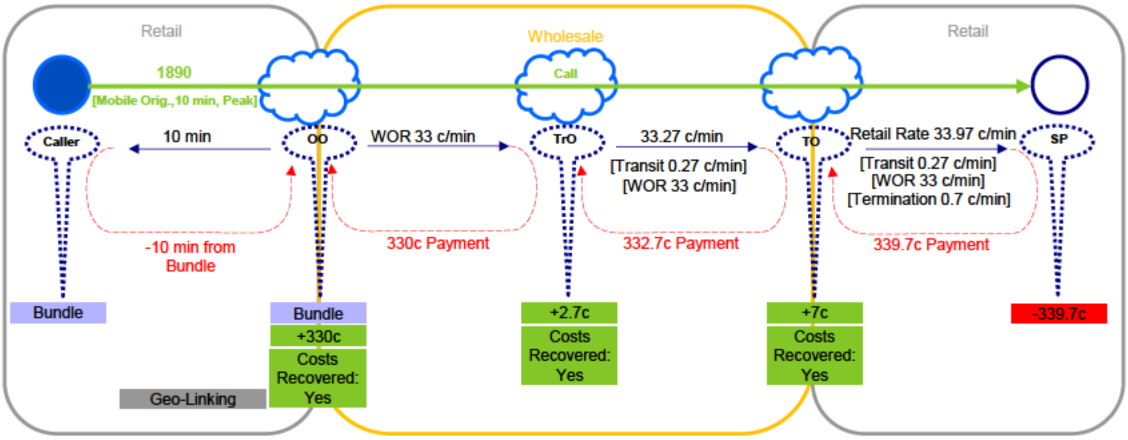
A3.18 Figure 29 below, has the Geo-linking Condition in place. The caller has a bundle and is decremented by 10 minutes instead of the high out-of-bundle rate. The SP still experiences the same high charge driven by the high WOR charged by the OO. In this example, the WOR has not been increased by the OO in response to the Geo-linking Condition. Transit is charged to the TO. The all operators recover the incremental cost of the call from revenues received. The OO still receives most of the revenue but less than in the previous example.

Figure 29: Worked example – 1890 Future (Geo-linking Condition, no increase in WOR)



A3.19 Figure 30 below, is similar to the example above except that the WOR has been increased by 20 c/min by the OO in response to the Geo-linking Condition. The SP now experiences a higher charge driven by the higher WOR. Transit is charged to the TO. All operators recover the incremental cost of the call from revenues received. The OO still receives most of the revenue.

Figure 30: Worked example – 1890 Future (Geo-linking Condition, increased WOR)

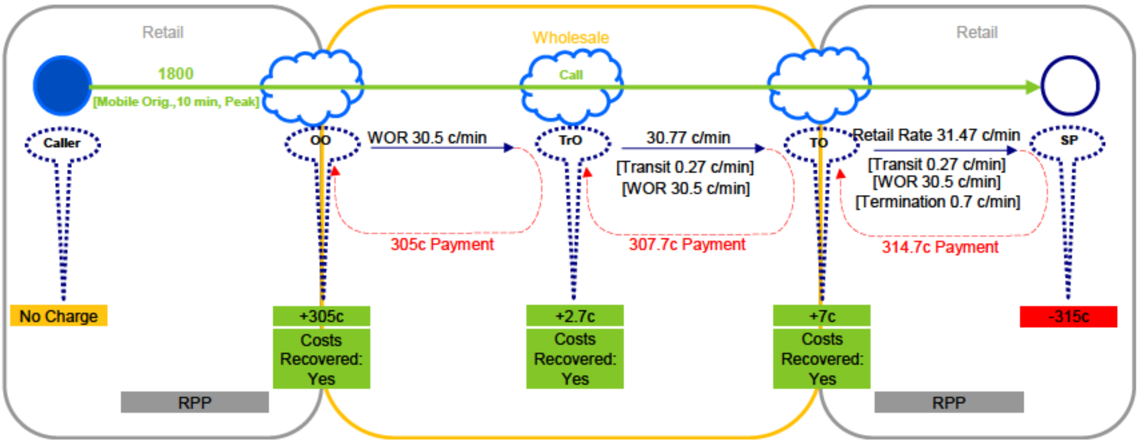


A3.20 Comparing the current and future arrangements for 1890, the Geo-linking Condition will benefit callers. OOs will continue to levy high WORs resulting in high charges to SPs. As ComReg has noted Shared Cost ranges are being consolidated into 0818 and 1800. A comparison of the same 1890 call on 0818 and 1800 (detailed at paragraphs A3.25 to A3.30 of this Consultation) would reduce the rate to SPs to either zero (0818) or ~ 2.5 c/min (1800) from the ~13.97 c/min rate currently.

A3.6 1800 Current –vs– 1800 Proposed

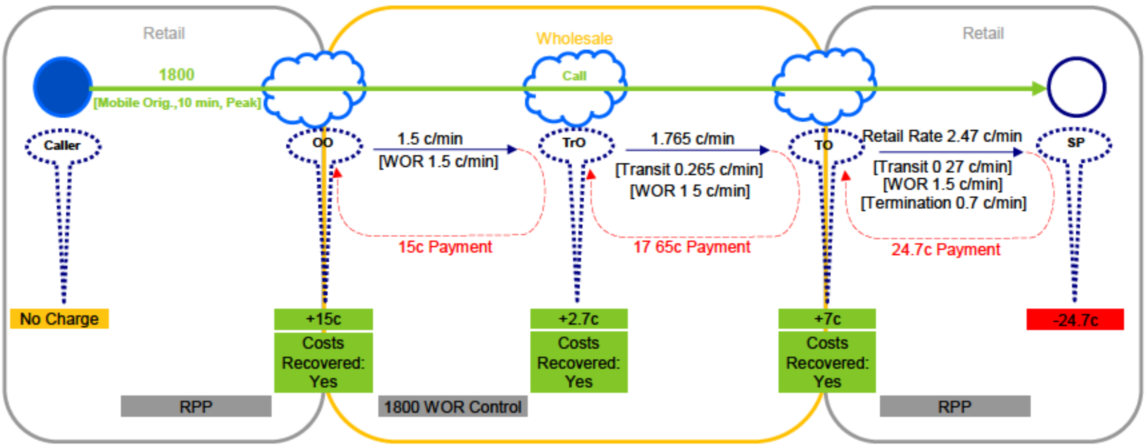
A3.21 Figure 31 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 1800 NGN. The caller pays nothing under the RPP principle. The OO levies a high WOR of 30.5 c/min. Transit is charged to the TO. The all operators recover the incremental cost of the call from revenues received. The OO receives most of the revenue. The SP experiences a high charge driven by the high WOR of the OO.

Figure 31: Worked example – 1800 Current



A3.22 Figure 32 now has a 1800 WOR Control in place. The caller still pays nothing under the RPP principle. The OO levies a reduced WOR of 1.5 c/min. Transit is charged to the TO. The all operators still recover the incremental cost of the call from revenues received. The OO receives most of the revenue. The SP experiences a lower charge driven by the lower WOR of the OO.

Figure 32: Worked example – 1800 Proposed



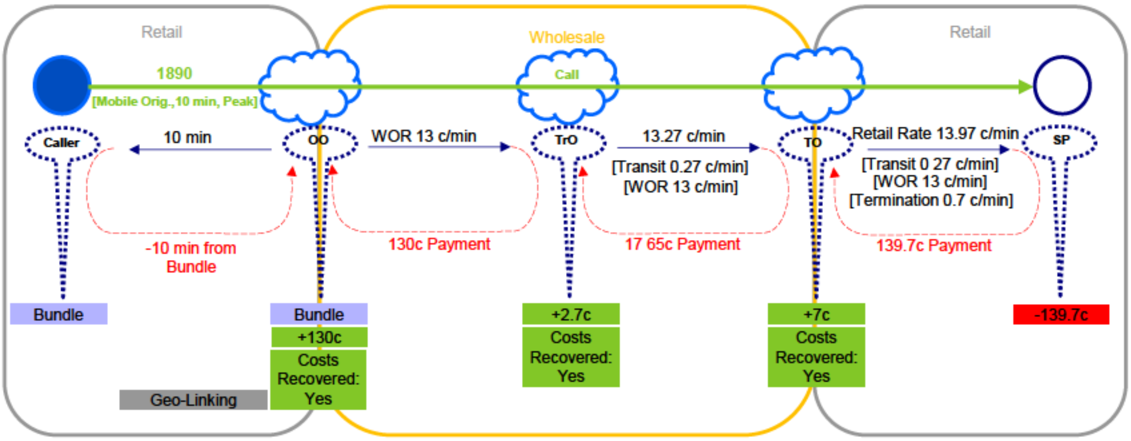
A3.23 Comparing the proposal for 1800 NGNs with the current arrangements for this number range, the 1800 WOR control will reduce the charges faced by SPs.

A3.24 ComReg notes that the examples in Figure 31 and Figure 32 assume a low Retail rate from the TO to the SP close to or at the incremental costs incurred. ComReg notes that it is possible that TOs may increase retail rates negating any reduction in the charge to the SP resulting from the 1800 WOR control. ComReg is of the preliminary view that SPs can move to other TOs and that competition in between TOs for SPs using 1800 NGNs will ensure that retail rates to SPs for 1800 calls are not excessive.

A3.7 1890 Future –vs– 0818 Proposed

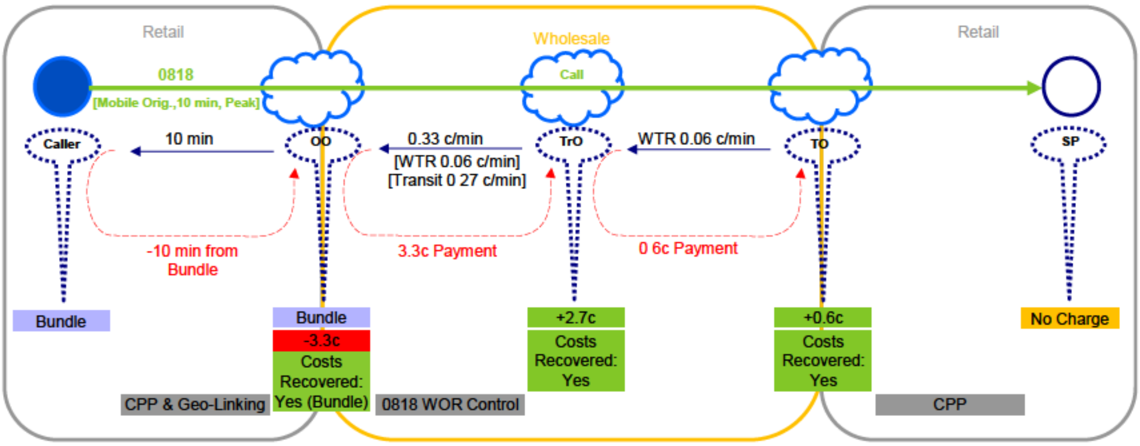
A3.25 Figure 33 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 1890 NGN.

Figure 33: Worked example – 1890 Future (Geo-linking Condition, no increase in WOR)



A3.26 Figure 34 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 0818 NGN with the Geo-linking Condition and a 0818 WOR control in place.

Figure 34: Worked example – 0818 Proposed (no WOR)

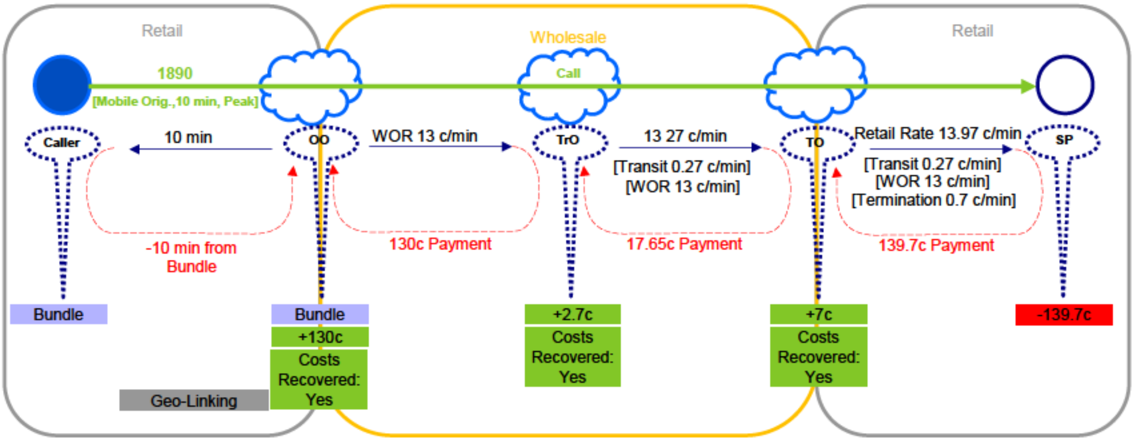


A3.27 SPs migrating from 1890 to 0818 would no longer face high charges to provide services on an NGN. Callers with bundles would benefit from the Geo-linking Condition when calling the SP.

A3.8 1890 Future –vs– 1800 Proposed

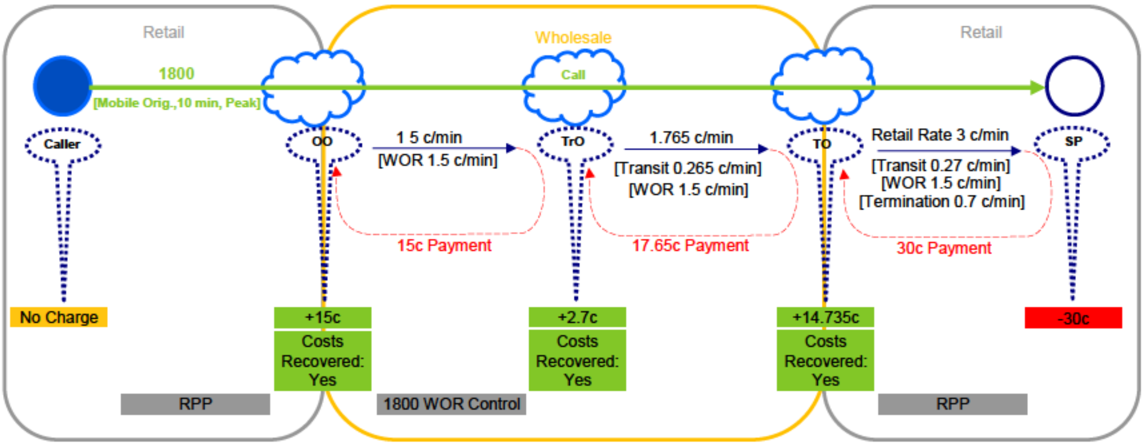
A3.28 Figure 35 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to an 1890 NGN.

Figure 35: Worked example – 1890 Future (Geo-linking Condition, no increase in WOR)



A3.29 Figure 36 below shows current sample rates and payment flows for a 10 minute, peak time, mobile originated call to a 1800 NGN with the Geo-linking Condition and a 1800 WOR control in place.

Figure 36: Worked example – 1800 Proposed



A3.30 SPs migrating from 1890 to 1800 would experience significantly reduced charges to provide services on an NGN. Calls to 1800 are free to the caller under the RPP principle.

Annex 4 Non-Confidential Submissions to ComReg Document Number 18/65

A4.1 See : https://www.comreg.ie/publication/submissions-to-consultation-18-65/

Annex 5 DotEcon Annex

A5.1 See ComReg Document Number 19/46a

Annex 6 AM Annex

A6.1 See ComReg Document Number 19/46b

Annex 7 TERA Annex

A7.1 See ComReg Document Number 19/46c

Annex 8 Review of submissions in response to ComReg Document Number 18/65

A8.1 Summary

A8.1 In ComReg Document Number 18/65, ComReg asked five questions. There were 12 respondents to ComReg Document Number 18/65, comprised of SPs and operators:

(i) BT Communications Ireland ('BT')

(ii) Colt Technology Services Limited ('Colt')

(iii) Commission for Regulation of Utilities ('CRU')

(iv) Eircom Limited and Meteor Mobile Communications Limited ('Eircom')

(v) ESB Networks Ltd. ('ESBN')

(vi) Gas Networks Ireland14 ('GNI')

(vii) Irish Water ('IW')

(viii) Office of the Chief Government Information Officer ('OGCIO')

(ix) Office of the Revenue Commissioners ('Revenue')

(x) Three Ireland Ltd.('Three')

(xi) Verizon Enterprise Services ('Verizon')

(xii) Vodafone Ireland Limited ('Vodafone')

A8.2 ComReg responded to the submissions[136] made in relation to three of the five questions posed, namely questions 1, 4 and 5 in the NGN Decision. The submissions made in response the two wholesale related questions that were posed (i.e. questions 2 and 3) are considered in more detail below. The following table shows the respondents that submitted comments in response to questions 2 and 3:

[136] The non-confidential submissions are published at https://www.comreg.ie/publication/submissions-to-consultation-18-65/

Respondent	Question 2	Question 3
BT	✓	✓
Eircom	✓	✓
ESBN	✓	✓
Revenue	✓	✓
Three	✓	✓
Verizon	✓	✓
Vodafone	✓	✓

A8.3 The main wholesale sections in ComReg Document Number 18/65 and the associated wholesale questions on which feedback was sought were as follows:

Section of ComReg Document Number 18/65	Topic Discussed	Consultation Question	ComReg Response & Assessment of Responses Received
Section 3.2	Issues arising at the wholesale level, in particular, interoperability, interconnection and end-to-end connectivity and access to NGNs and services	Q. 2 Do you agree with ComReg's assessment of the issues arising at the wholesale level, in particular ComReg's preliminary view that there is a problem with interoperability, interconnection and end-to-end connectivity and access to NGN numbers and services, as outlined above? Please explain the basis for your response in full and provide supporting information.	Annex 8 –Section A8.2.4 and A8.2.6.

Section of ComReg Document Number 18/65	Topic Discussed	Consultation Question	ComReg Response & Assessment of Responses Received
Section 3.2	Price Control to address WORs	Q. 3 Do you agree with ComReg's proposal that a price control would achieve the objective of addressing high WOCs and, that ComReg should consult on the form and implementation of such a price control? Please explain the basis for your response in full and provide supporting information.	Annex 8 – Sections A8.3.2

A8.4 ComReg now considers each of the above topics on a question by question basis. The approach is as follows:

(i) ComReg's preliminary view is summarised;

(ii) The relevant question is then set out;

(iii) Those Respondents who replied directly to the question are listed;

(iv) The overall response of each Respondent to the question is referenced;

(v) The main issues raised by Respondents regarding the question are identified;

(vi) For each issue, ComReg then summarises the points made by Respondents and assesses the issue and points made; and

- ComReg then concludes with its response to the issue.

A8.2 Question 2 Responses - Wholesale issue with interoperability, interconnection and end-to end connectivity and access to NGNs and services (Section 3.2 of ComReg Document Number 18/65)

A8.5 ComReg considered the wholesale harm in the provision of services for the five classes of NGN under review. ComReg remains of the view that the current relatively high WORs restrict end-users' access to services provided over the NGNs under consultation.

A8.6 Bottleneck control of origination has an impact on connectivity, and eventually end-to-end connectivity between SPs and callers is compromised. Although originators are under a general regulatory obligation to interconnect with TOs, end-to-end connectivity is challenged by the high WORs as ultimately SPs would withdraw from the NGN platform due to high costs and callers would be unable to access their services.

A8.7 This connectivity failure is particularly evident for Freephone numbers where Freephone NGNs are providing a distinctive feature that allows SPs to reach out to callers by covering the costs of the call.

A8.8 ComReg asked the following question, Question 2, in the ComReg Document Number 18/65:

> *Do you agree with ComReg's assessment of the issues arising at the wholesale level, in particular ComReg's preliminary view that there is a problem with interoperability, interconnection and end-to-end connectivity and access to NGN numbers and services, as outlined above? Please explain the basis for your response in full and provide supporting information.*

A8.9 ComReg received seven direct replies to the question.

BT	Eircom	ESBN	Revenue	Three	Verizon	Vodafone
✓	✓	✓	✓	✓	✓	✓

A8.10 BT, ESBN, Revenue and Verizon agreed with ComReg's assessment of the issues arising at a wholesale level. Vodafone also agreed (Q2, paragraph 1) that there are significant issues at the wholesale level.

A8.2.2 Issues raised regarding wholesale intervention

A8.11 Issues were raised by respondents regarding the following:

(vii) ComReg's approach to wholesale intervention; and

(viii) Timelines and the need for parallel retail and wholesale intervention.

A8.2.3 Issue raised - ComReg's approach to intervention

A8.12 Eircom (Paragraph 44) and Three (Paragraph in response to Q2) disagreed with ComReg's preliminary view that there is a problem with interoperability, interconnection and end-to-end connectivity and access to NGNs and services. Neither Eircom (paragraph 46) nor Three were of the view that ComReg had provided any evidence to support its preliminary view. Three was therefore of the view that ComReg could not use this a justification for bypassing the required procedure.

A8.13 Eircom did not agree with the manner in which ComReg has indicated that it will pursue imposing pricing remedies without the corresponding SMP designation on the basis of an evidence based and forward looking market review.

A8.14 Eircom (Paragraph 44) acknowledged that there are potential issues arising at the wholesale level, particularly in relation to the wholesale charges for the provision of 1800 services.

A8.15 ComReg does not accept Eircom and Three's position that ComReg has not provided any evidence to justify its conclusion that there is a problem with interoperability, interconnection and end-to-end connectivity and access to NGNs and services. In ComReg Document Number 18/65,[137] paragraphs 3.22 to 3.47, ComReg set out the evidence of harm in how "*Access to services, provided by SPs using* NGNs*, and the provision of end-to-end connectivity can be restricted through retail and wholesale origination charges."* This evidence was further detailed by Chapter 6 of the accompanying 2018 DotEcon Report and reinforced by the NGN Decision.

[137] Paragraph 311 "End-to-end connectivity is the mechanism through which all consumers can access services provided by all SPs, regardless of operator. For this to happen, all operators must be able to interconnect with one another, in order to provide a full service to their customers."

A8.2.4 ComReg's Issue Assessment – ComReg's approach to intervention

A8.16 ComReg remains of the view that a SMP designation and market review is not the most appropriate option to resolve the harm identified in the wholesale NGN market. ComReg Document Number 18/65, paragraphs 3.76 to 3.79 set out why an SMP Designation approach under Regulation 27 of the Framework Regulations is not necessary or appropriate for the following reasons:

a) Call-origination to NGNs is not a recommended market under the Commission Recommendation of 9 October 2014[138] on relevant product and service markets;

b) On 14 June 2017, ComReg initiated an investigation into inter-operator charges for NGNs. As a result of that investigation, the evidence presented in ComReg Document Number 18/65, the NGN Decision as well as the 2017 and 2018 DotEcon Reports was identified and considered. Having reviewed that evidence, ComReg came to the preliminary view that it may address the harm identified with Regulation 8(3) of the Access Regulations in conjunction with Regulation 6(2) of the Access Regulation and/or Regulation 23(1) of the Universal Service Regulations[139];

c) Initiating a SMP assessment when ComReg has a more efficient mechanism for addressing the harm is not proportionate as an alternative option that would likely achieve the same ends is available (i.e. is there a plausible, less restrictive, alternative measure);

d) An SMP assessment would not likely be completed in a timely manner to ensure the effective implementation in line with the proposed introduction of the Geo-linking Condition. In that regard, while such an approach may be effective, it would not be timely and the retail measures would be significantly delayed, harming end-users for longer than necessary, particularly given the availability of more timely and equally effective regulatory measures

[138] 2014/710/EU: Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/ EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services.

[139] See Case C-85/14. EU:C 2015: 610 KPN BV v ACM and Case C-397/14, ECLI:EU:C:2016:256 Polkomtel sp. z o.o. v. Prezes Urzedu Komunikacji Elektronicznej.

e) The general aim of regulation to ensure effective competition in the market for the benefit of consumers and compliance with Regulation 23(1) of the Universal Service Regulations and measures to provide for end-to-end connectivity would likely provide this objective.

A8.17 In paragraph 3.79, ComReg concluded that:

> *"…an assessment of SMP is not necessary as such an approach would not be (a) timely to ensure effective implementation in line with retail remedies or (b) proportionate with regard to other available options. ComReg will therefore proceed with a consultation to consider implementing a wholesale price control in line with Regulation 8(3) of the Access Regulations in conjunction with Regulation 6(2) of the Access Regulation and/or Regulation 23(1) of the Universal Service Regulations as such a control constitutes a necessary step to ensure end-to-end connectivity and/or to ensure that end-users are able to access numbers and services using NGNs."*

A8.2.5 Issue raised – Timelines and the need for parallel retail and wholesale intervention

A8.18 BT noted (Q2 response, paragraph 1) that, over several years, a voluntary settlement to these issues has not been achieved. BT considered that ComReg is therefore left with no option but to introduce a regulatory solution to resolve the interconnection issues.

A8.19 BT (Q2 response, paragraph 2) highlighted its concern that there is "*incentive for some parties to ensure the resolution of the wholesale issues take a considerably* longer *time to resolve.*" It pointed to the fact that it has been many years since these wholesale problems in this market were raised to ComReg and that the situation remains unresolved. BT also highlighted its concern that implementing retail solutions without the related wholesale solutions being resolved will compound the problems for retail and wholesale.

A8.20 Verizon (Paragraph 6) agreed with ComReg's assessment of the market failures in particular the issue of excessive WORs (particularly from mobile network operators). Verizon highlighted the negative effects of these excessive charges to ComReg in previous submissions over the years.

A8.21 Vodafone (Q2 response, paragraph 3, 4 and 5) also highlighted the need for parallel wholesale and retail remedies and noted the risks of a retail only remedy.

A8.2.6 ComReg's Issue Assessment – Timelines and the need for parallel retail and wholesale intervention

A8.22 In relation to respondents' concerns around the timelines and the need for parallel wholesale and retail solutions, ComReg set out the timelines for the parallel retail and wholesale measures in Section 6.4, Figure 4 of the NGN Decision. This Consultation will provide more details around the wholesale measures in Chapter 4, Chapter 5 and Chapter 6. The timelines for the parallel retail and wholesale measures are again repeated in Section 3.1 and 3.3 of ComReg Information Notice No 19/01[140].

A8.3 Question 3 Responses - Price control remedy to address high WORs (Section 3.2 of ComReg Document Number 18/65)

A8.23 ComReg noted that high WORs is the key wholesale problem to be addressed for the NGNs under review. As noted in ComReg Document Number 18/65, each OO has the potential to raise WORs above cost given the end-to-end connectivity requirements and the fact that SPs need to be accessible to all callers regardless of which network they subscribe to.

A8.24 In order to remedy the high WORs, ComReg proposed six options for wholesale intervention (which are set out in paragraphs 3.55 to 3.75 of ComReg Document Number 18/65), namely, dispute resolution, abuse of dominance, negotiated agreement, structural change, guidance and price control.

A8.25 ComReg remains of the preliminary view that a price control is justified, reasonable and proportionate for a number of reasons as set out in paragraph 3.74 of ComReg Document Number 18/65. A price control will address the existing high WORs (particularly in the case of the Freephone 1800 NGN range).

A8.26 ComReg also noted in paragraph 493 of the NGN Decision that it intended to implement a wholesale price control mechanism on NGN call origination charges, under Regulation 8(3) of the Access Regulation in conjunction with Regulation 6(2) of the Access Regulations and / or Regulation 23(1) of the Universal Service Regulations. The NGN Decision also noted in that paragraph that the wholesale price control mechanism would be the subject of a separate future decision by ComReg. This Consultation is the next step towards such a decision.

[140] Please see the NGN Information Notice at: https://www.comreg.ie/publication/implementing-the-new-ngn-platform/

A8.27 ComReg asked the following question, Question 3, in the ComReg Document Number 18/65:

> *Do you agree with ComReg's proposal that a price control would achieve the objective of addressing high WOCs[141] and, that ComReg should consult on the form and implementation of such a price control? Please explain the basis for your response in full and provide supporting information.*

A8.28 ComReg received seven direct replies to the question.

BT	Eircom	ESBN	Revenue	Three	Verizon	Vodafone
✓	✓	✓	✓	✓	✓	✓

A8.29 BT, ESBN, Revenue and Verizon agreed with ComReg's proposal that a price control would achieve the objective of addressing high WORs and that ComReg should consult on the form and implementation of such a price control.

A8.30 BT (Q3 response, paragraph 1) agreed with ComReg's conclusions on the possible wholesale approaches to resolving the issues. BT added a further approach - "*transit monopoly*". BT claimed that Eircom's current practice of charging the terminating operator for transit costs incurred by the choices of the originating network has resulted in a de facto monopoly in the provision of transit to NTCs, and this monopoly is already resulting in demonstrable market harm. The removal of price controls for Eircom transit should not have included these "*reverse charge*" services and since it does – this practice must stop or the price controls should be re-instated.

A8.31 Eircom (Paragraph 47) does not agree that a wholesale price control is required. In responding to this question, Eircom repeated its view that a complete market review is required to identify the true issues in the NGN market. Eircom states that "*If wholesale remedies are required then the appropriate process for remedying said issue is through a review of the wholesale market and a subsequent determination as to whether a wholesale remedy will also solve any identified issues at the retail level.*"

A8.32 Eircom (Paragraph 48) further reinforced its view that intervention in this market would require ComReg to conduct a market review in line with the European Regulatory Framework and stated that ComReg:

[141] WOC – wholesale origination charges. This acronym has been replaced by WOR in this Consultation.

> *"…is required to conduct a three criteria test for the purpose of identifying the NGN market in Ireland as being susceptible to ex ante regulation and subsequently follow the standard process for conducting a market review i.e. determining the product and geographic scope of the relevant market and assessing whether any firm or a number of firms hold a position of SMP in the market as defined for the purposes of the market review."*

A8.33 Eircom (Paragraph 49) argued that the 2014 EC Recommendation identifies those service markets which, the European Commission has identified as being susceptible to ex ante regulation. The wholesale NGN call origination market is not a market specifically listed by the European Commission in the 2014 EC Recommendation. However, Eircom acknowledged that the 2014 EC Recommendation recognises that there may be other markets, aside from those specifically identified, in which it is appropriate to impose ex ante regulatory obligations according to national circumstances. The 2014 EC Recommendation states: "*National regulatory authorities may identify other markets than those listed in this Recommendation and apply the three-criteria test*." It is therefore Eircom's view (Paragraph 50) that if ComReg wants to regulate wholesale NGN call origination, it must present the assessment that underlies ComReg's view that this market meets the requirements of the three-criteria test and the associated forward looking market review.

A8.34 ESBN (Q3 response) agreed that there is a need for a price control and that it would ultimately benefit consumers and SPs (in particular it made reference to the Freephone 1800 NGN range).

A8.35 Three (Q3 response and its reference to the Section 3 Retail Price Intervention – Origination vs Termination Model) specifically referenced the regulation of the price for termination of calls to 076 and 0818 (as these NGN ranges currently use what Three calls the "Termination" model which is used by geographic numbers) and highlighted that "*ComReg cannot introduce retail price control for these NGNs without also controlling the termination price*." Three is referencing ComReg's proposal to Geo-link retail prices for NGN calls which, Three states, constrains an OO's ability to set their retil price for those calls. In the case of 180, 1850 and 1890 NGN ranges the OO can recover their costs in originating those calls however, this is not the case for the 076 and 076 and 0818 at present. Three notes that the price to terminate a call to an 076 or 0818 NGN is currently unregulated and the current termination rates are higher than the price to terminate a geographic call.

A8.36 Verizon (Paragraph 10) agreed that a price control is the best option to address the harm identified at both at a retail and wholesale level. Verizon pointed to two main concerns - the cost standard and the timing.

A8.37 In terms of the cost standard, Verizon (Paragraph 11) submitted that the price control should ensure that mobile origination charges for calls to NGNs are at cost. Verizon supported ComReg's proposals that wholesale origination charges should be limited to at least the costs of origination. Verizon pointed to the example of fixed operator, where they have for many years (until recently) used a proxy for cost based on Eircom's regulated interconnection rate which is cost-based.

A8.38 Verizon (Paragraph 12) also supported DotEcon's analysis of using mobile termination rates as a proxy for determining the costs of mobile origination given that (as evidenced by consultation responses) there appears to be very little difference in the cost between termination and origination. Given that termination rates are generally set at Long Run Incremental Cost ('**LRIC**') across the European Union, as recommended by the 2009 EC recommendation, Verizon submitted that ComReg should look to implement a LRIC-based charge control for mobile call origination.

A8.39 Verizon (Paragraph 13,14) highlighted its concerns around the timelines involved in the process for introducing a price control. Verizon (Paragraph 15), in its submission, urged ComReg, in parallel and in addition to the development of a price control to seek a voluntary agreement from the mobile operators for an immediate one-off reduction or a glide path over a few months to reduce the excessive prices before the price control comes into effect in order to alleviate the harm to service providers, End Users and businesses without undue delay.

A8.40 Vodafone (Response to Q3) needs more time to consider the wholesale solution and will revert further.

A8.3.2 ComReg's Issue Assessment – Price control remedy to address high WORs (Section 3.2 of ComReg Document Number 18/65)

A8.41 ComReg noted BT's agreement with ComReg's conclusions on the wholesale approach to resolving the issues identified. BT introduced what it termed the "transit monopoly" and called for the re-instatement of the price controls for what it terms these "reverse charge" services. This has been dealt with in ComReg Document No 15/82 "*Market Review: Wholesale Fixed Voice Call Origination and Transit Market*"[142] (the **FVCO Decision**) where it was determined that Eircom did not have SMP in the transit market and this market was de-regulated.

[142] FVCO Decision https://www.comreg.ie/publication/market-review-wholesale-fixed-voice-call-origination-and-transit-markets/

A8.42 In relation to the points made by Eircom in response to this question, ComReg remains of the view that a three criteria test, SMP designation and market review are not the most appropriate options to resolve the harm identified in the wholesale NGN market. As previously highlighted above in paragraphs A8.16 to A8.17 where ComReg set out why an SMP Designation approach would not be the most appropriate option in this case.

A8.43 ComReg also notes in paragraph 493 of the NGN Decision that it intends to implement a wholesale price control mechanism on NGN call origination charges, under Regulation 8(3) of the Access Regulation in conjunction with Regulation 6(2) of the Access Regulations and / or Regulation 23(1) of the Universal Service Regulations. The NGN Decision also noted in that paragraph that the wholesale price control mechanism would be the subject of a separate future decision by ComReg. This Consultation is the next step towards such a decision.

A8.44 In relation to Three's concerns around the termination side of the 076 and 0818 NGN ranges, this has been addressed previously in paragraphs 3.111 to 3.116 as well as in Chapter 4 paragraphs 4.42 to4.119 of this Consultation

A8.45 ComReg welcomed Verizon's support of its proposal that a price control is the best option to address the harm identified at both the retail and wholesale level. ComReg noted Verizon's suggestion to introduce a regulated WOR via immediate reduction or the use of a glide path. This will be discussed further in Chapter 4 where ComReg's proposals for each of the five classes NGNs under review are set out.

A8.46 In relation to the points raised by Verizon around the cost standard to be applied to wholesale origination charges and in particular its concerns around mobile origination charges, ComReg has set out its preliminary views on the cost standard in Chapter 4, Section 4.10 of this Consultation.

A8.47 ComReg noted Verizon's concerns around the timelines for implementation. As previously stated, ComReg recognises the need for parallel wholesale and retail solutions. ComReg set out the timelines for these parallel retail and wholesale measures in Section 6.4, Figure 4 of the NGN Decision. This Consultation will provide more details around the wholesale measures.

Annex 9 Mobile Service Providers: Decision Instrument

1 STATUTORY POWERS GIVING RISE TO THIS DECISION INSTRUMENT

1.1 This Decision Instrument ("Decision Instrument") is made by the Commission for Communications Regulation ("ComReg") and relates to the regulation of wholesale charges for non-geographic numbers.

1.2 This Decision Instrument is made:

(i) Pursuant to and having had regard to Sections 10 and 12 of the Communications Regulation Act 2002 (as amended) and Regulation 16 of the Framework Regulations;

(ii) Pursuant to Regulation 6(1), 6(2), 6(3) and 6(4) of the Access Regulations;

(iii) Pursuant to Regulations 8, 9, 13 and 18 of the Access Regulations;

(iv) Pursuant to Regulations 23 and 30 of the Universal Service Regulations;

(v) Having had regard to the analysis and reasoning set out in ComReg Document No. 19/46, and having taken account of the submissions received from interested parties in response thereto following a public consultation pursuant to Regulation 12 of the Framework Regulations;

(vi) Having had regard to the analysis and reasoning set out in ComReg Decision 15/18 and associated documents,

(vii) Having notified the draft measure and the reasoning on which the measure is based to the European Commission, BEREC and the national regulatory authorities in other EU Member States pursuant to Regulation 13 and Regulation 14 of the Framework Regulations and having taken utmost account of any comments made by these parties;

(viii) Having regard to the analysis and reasoning set out in ComReg Decision [●].

1.3 The provisions of ComReg Document No. 19/46 and ComReg Decision [●], shall, where appropriate, be construed consistently with this Decision Instrument. For the avoidance of doubt, however, to the extent that there is any conflict between a decision instrument dated prior to the Effective Date (as defined in Section 2.1 of this Decision Instrument) and this Decision Instrument, this Decision Instrument shall prevail.

PART I - GENERAL PROVISIONS (SECTIONS 2 TO 5 OF THE DECISION INSTRUMENT)

2 DEFINITIONS

2.1 In this Decision Instrument, unless the context otherwise suggests:

"0818 number" shall have the same meaning as set out in the Numbering Conditions of Use;

"0818 Fixed Voice Call Origination" or "0818 MVCO" means MVCO for calls to 0818 numbers;

"0818 MVCO Rate" means the per minute charge levied for 1800 MVCO;

"**0818 Termination Rate**" means a rate associated with the provision of 0818 Termination and is a rate other than the Regulated FTR;

"1800 number" shall have the same meaning as set out in the Numbering Conditions of Use;

"1800 Fixed Voice Call Origination" or "1800 MVCO" means MVCO for calls to 1800 numbers;

"1800 MVCO Rate" means the per minute charge levied for 1800 MVCO;

"Access" shall have the same meaning as under Regulation 2 of the Access Regulations;

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011), as may be amended from time to time or replaced with equivalent effect;

"Authorisation Regulations" means the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011 (S.I. No. 335 of 2011), as may be amended from time to time or replaced with equivalent effect;

"BEREC" means the Body of European Regulators for Electronic Communications, as established pursuant to Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009;

"BU LRAIC+ MVCO Model" means a bottom-up model based on the LRAIC+ of an efficient operator and in the context of this Decision Instrument is the bottom up economic/engineering model of an efficient network used to determine the LRAIC+ associated with the supply of MVCO which is more particularly described at Chapter […] of ComReg Decision D[●];

“Communications Regulation Act 2002 (as amended)” means the Communications Regulation Act 2002 (No. 20 of 2002), as amended;

“ComReg” means the Commission for Communications Regulation, established under Section 6 of the Communications Regulation Act 2002 (as amended);

“ComReg Decision D15/18” means ComReg Document No. 18/106, entitled “[…]”, dated 03 December 2018;

“ComReg Decision D[●]” means ComReg Document No. [●], entitled “[●]”, dated [●];

“**ComReg Decision D[●]**” means ComReg Document No. [●], entitled “[●]”, dated [●];

“Decision Instrument” means this decision instrument which is made pursuant to *inter alia* Regulations 6, 8, 9, 13 and 18 of the Access Regulations and Regulation 23 and 30 of the Universal Service Regulations;

“Effective Date” means the date set out in Section 7 of this Decision Instrument;

“End User” shall have the same meaning as under Regulation 2 of the Framework Regulations, as may be amended from time to time. For the avoidance of doubt, End User(s) shall be deemed to include any natural or legal person who facilitates or intends to facilitate the provision of public communications networks or publicly available electronic communications services to other End Users and who is not acting as an Undertaking;

“0818 Termination” means the provision of a wholesale call termination service to other Undertakings by which incoming voice calls can be handed over for termination to 0818 numbers;

“Mobile Network” means a 2nd, 3rd, 4th, or 5th Generation digital wireless network, or any intermediate evolution of those, using Mobile Numbers, in which seamless handover and roaming features are provided;

“Mobile Number(s)” shall have the same meaning as set out in the Numbering Conditions of use, as may be amended from time to time;

“Mobile Network Operator” or “MNO” means an Undertaking providing End-Users with land based/terrestrial publicly available mobile voice telephony services using a Mobile Network;

“Mobile Voice Call Origination” or **“MVCO”** means a wholesale service whereby voice calls originating at a Mobile Number of an End User are conveyed and routed through any switching stages (or equivalent, regardless of underlying technology) up to a Point of Handover nominated by an Undertaking seeking access to this service;

“Framework Regulations” means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011), as may be amended from time to time or replaced with equivalent effect;

“Interconnection” shall have the same meaning as under Regulation 2 of the Access Regulations;

“Long Run Average Incremental Cost plus” or **“LRAIC+”** means the average efficiently incurred directly attributable variable and Mobile costs, plus an appropriate apportionment of joint and common costs;

“Non-geographic number” or **“NGN”** shall have the same meaning as under Regulation 2 of the Access Regulations;

“Numbering Conditions” means the set of rules under which the Irish national numbering scheme is managed and administered as set out in the document entitled *Numbering Conditions of Use and Application Process, ComReg 15/136R1,* as may be amended by ComReg from time to time or replaced with equivalent effect;

“Point of Handover” means the physical point at which two networks are interconnected to allow traffic between these networks;

“Relevant Undertaking” means an Undertaking that offers 1800 MVCO or 0818 MVCO and has the ability to set a 1800 MVCO Rate or a 0818 MVCO Rate as listed at Appendix 1 of this Decision Instrument;

“Regulated FTR” means the wholesale maximum fixed termination rate imposed pursuant to ComReg Decision D[●];

“Reference Interconnect Offer” or “RIO” means the offer of contract by a Mobile Service Provider to another Undertaking in respect of MVCO in accordance with the requirements of this Decision Instrument; and

“Terminating Operator” means an undertaking providing 0818 Termination;

“Undertaking(s)” shall have the same meaning as under Regulation 2 of the Framework Regulations.

3 SCOPE AND APPLICATION

3.1 This Decision Instrument applies to any Relevant Undertaking as listed at Appendix 1 to this Decision Instrument.

3.2 This Decision Instrument is binding on each such Relevant Undertaking in the manner now set out below and each such Relevant Undertaking shall comply with this Decision Instrument to the extent that it applies to that Relevant Undertaking. This Decision Instrument is binding on each such Undertaking in the manner now set out below and each such Undertaking shall comply with this Decision Instrument to the extent that it applies to that Undertaking.

3.3 This Decision Instrument, pursuant to Regulations 6, 8, 9, 13 and 18 of the Access Regulations and Regulation 23 and Regulation 30 of the Universal Service Regulations imposes certain obligations on Relevant Undertakings as more particularly set out in Section 4 of this Decision Instrument.

PART II - OBLIGATIONS (SECTION 4 OF THE DECISION INSTRUMENT)

4 OBLIGATIONS

4.1 ComReg is imposing certain obligations on the Relevant Undertaking in accordance with and pursuant to Regulations 6, 8, 9, 13 and 18 of the Access Regulations and Regulations 23 and 30 of the Universal Service Regulations, as detailed further in Sections 4.2 to 4.11 of this Decision Instrument.

4.2 Pursuant to Regulations 23 and 30 of the Universal Service Regulations, the Relevant Undertaking shall ensure that End-Users are able to access and use services using non-geographic numbers within the European Union, except where this is not technically or economically feasible or where a called subscriber has chosen for commercial reasons to limit access by calling parties located within specific geographical areas.

4.3 Pursuant to Regulations 8, 13 and 18 of the Access Regulations, each Relevant Undertaking is subject to a price control obligation in relation to the provision of 1800 MVCO or 0818 MVCO. Without prejudice to the foregoing, each Relevant Undertaking is subject to a cost orientation obligation in relation to the provision of 1800 MVCO.

4.4 Each Relevant Undertaking is hereby directed to ensure that its 1800 MVCO Rate(s) are set in accordance with a LRAIC+ costing methodology.

4.5 Without prejudice to the generality of section 4.4 above of this Decision Instrument, pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 13 of the Access Regulations, each Relevant Undertaking shall ensure that its 1800 MVCO Rate(s) are no more than the relevant BU LRAIC+ MVCO Rate, based on the BU LRAIC+ MVCO Model, which are set out in the table below.

Year	Maximum 1800 MVCO Rate

1 January 2020 to 31 December 2020	1.62 cent/minute
1 January 2021 to 31 December 2021	1.61cent/minute
1 January 2022 to 31 December 2022	1.60 cent/minute
1 January 2023 to 31 December 2023	1.60 cent/minute
1 January 2024 to 31 December 2024	1.59 cent/minute

4.6 Pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 13 of the Access Regulations, the Relevant Undertaking shall not impose a charge in relation to the provision of 0818 MVCO other than in the circumstances provided for in section 4.7 below.

4.7 Pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 13 of the Access Regulations, where the Relevant Undertaking is charged a 0818 Termination Rate that is in excess of the Regulated FTR, in that case the Relevant Undertaking may charge that 0818 Terminating Operator a 0818 MVCO Rate that is no greater than the difference between that 0818 Termination Rate and the Regulated FTR.

4.8 Without prejudice to the generality of section 4.3 of this Decision Instrument pursuant to Regulations 8, 13 and 18 of the Access Regulations, the Relevant Undertaking shall ensure that it recovers no more than its actually incurred costs (adjusted for efficiency) plus a reasonable rate of return associated with the provision of 1800 MVCO or 0818 MVCO. For the avoidance of doubt, where the Relevant Undertaking considers that it has not recovered such costs it may make a submission to ComReg setting out the basis for any under recovery for ComReg's assessment.

4.9 Pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 9 of the Access Regulations each Relevant Undertaking shall be subject to an obligation of transparency in respect of 1800 MVCO Rates and 0818 FVCO Rates and in particular the obligations set out in this Decision Instrument.

4.10 Without prejudice to the generality of section 4.9 above each Relevant Undertaking shall publish a RIO for 1800 MVCO or 0818 MVCO. The RIO shall include a description of any associated contractual or other terms and conditions for Access and use, including 1800 MVCO Rates or 0818 MVCO Rates and any other relevant prices or charges.

4.11 Pursuant to Regulations 9, 13 and 18 of the Access Regulations the Relevant Undertaking shall ensure that wholesale invoices shall be sufficiently disaggregated, detailed and clearly presented so that an Undertaking can reconcile invoices to the prices and charges in the Relevant Undertaking's RIO.

PART III – MAINTENANCE OF OBLIGATIONS AND EFFECTIVE DATE (SECTIONS 5 TO 6 OF THE DECISION INSTRUMENT)

5 STATUTORY POWERS NOT AFFECTED

5.1 Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it from time to time under any applicable law (in force prior to or after the Effective Date of this Decision Instrument).

6 MAINTENANCE OF OBLIGATIONS

6.1 Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in decision instruments, decision notices and directions made by ComReg applying to each Relevant Undertaking and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and each Relevant Undertaking shall comply with same.

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

7 EFFECTIVE DATE

7.1 The Effective Date of this Decision Instrument shall be the date of its publication and notification to the Relevant Undertaking and it shall remain in force until further notice by ComReg.

GARRETT BLANEY

CHAIRPERSON

THE COMMISSION FOR COMMUNICATIONS REGULATION

THE [ ] DAY OF [ ] 2019

APPENDIX 1 – RELEVANT UNDERTAKINGS

A1. This Decision Instrument applies to each of the following Relevant Undertakings individually (and not collectively) in respect of activities falling within the scope Section 4 of this Decision Instrument. Furthermore, this Decision Instrument is binding upon each such Relevant Undertaking in the manner now set out below and each such Undertaking shall comply with this Decision Instrument to the extent that it applies to that Relevant Undertaking. This list may be amended by ComReg from time to time.

(i) Lycamobile Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(ii) Meteor Mobile Communications Limited, which is the mobile arm of the Eircom Group (which includes Eircom Limited and Eircom Holdings (Ireland) Limited), trading under the business name Eircom Mobile, and for the purpose of this Decision Instrument includes its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns

(iii) Tesco Mobile Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(iv) Three Ireland (Hutchison) Limited and its subsidiaries, and any Undertaking which it owns or controls and any undertaking which owns or controls it, and its successors, affiliates and assigns, which for the avoidance of doubt includes Three Ireland Services (Hutchison) Limited;

(v) Virgin Media Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(vi) Vodafone Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns.

Annex 10 Fixed Service Providers: Decision Instrument

1 STATUTORY POWERS GIVING RISE TO THIS DECISION INSTRUMENT

1.1 This Decision Instrument ("Decision Instrument") is made by the Commission for Communications Regulation ("ComReg") and relates to the regulation of wholesale charges for non-geographic numbers.

1.2 This Decision Instrument is made:

(i) Pursuant to and having had regard to Sections 10 and 12 of the Communications Regulation Act 2002 (as amended) and Regulation 16 of the Framework Regulations;

(ii) Pursuant to Regulation 6(1), 6(2), 6(3) and 6(4) of the Access Regulations;

(iii) Pursuant to Regulations 8, 9, 13 and 18 of the Access Regulations;

(iv) Pursuant to Regulations 23 and 30 of the Universal Service Regulations;

(v) Having had regard to the analysis and reasoning set out in ComReg Document No. 19/46, and having taken account of the submissions received from interested parties in response thereto following a public consultation pursuant to Regulation 12 of the Framework Regulations;

(vi) Having had regard to the analysis and reasoning set out in ComReg Decision 15/18 and associated documents,

(vii) Having notified the draft measure and the reasoning on which the measure is based to the European Commission, BEREC and the national regulatory authorities in other EU Member States pursuant to Regulation 13 and Regulation 14 of the Framework Regulations and having taken utmost account of any comments made by these parties;

(viii) Having regard to the analysis and reasoning set out in ComReg Decision [●].

1.3 The provisions of ComReg Document No. 19/46 and ComReg Decision [●], shall, where appropriate, be construed consistently with this Decision Instrument. For the avoidance of doubt, however, to the extent that there is any conflict between a decision instrument dated prior to the Effective Date (as defined in Section 2.1 of this Decision Instrument) and this Decision Instrument, this Decision Instrument shall prevail.

PART I - GENERAL PROVISIONS (SECTIONS 2 TO 5 OF THE DECISION INSTRUMENT)

2 DEFINITIONS

2.1 In this Decision Instrument, unless the context otherwise suggests:

"0818 Fixed Voice Call Origination" or "0818 FVCO" means FVCO for calls to 0818 numbers;

"0818 FVCO Rate" means the per minute charge levied for 1800 FVCO;

"0818 number" shall have the same meaning as set out in the Numbering Conditions of Use;

"**0818 Termination Rate**" means a rate associated with the provision of 0818 Termination and is a rate other than the Regulated FTR;

"0818 Termination" means the provision of a wholesale call termination service to other Undertakings by which incoming voice calls can be handed over for termination to 0818 numbers;

"1800 Fixed Voice Call Origination" or "1800 FVCO" means FVCO for calls to 1800 numbers;

"1800 FVCO Rate" means the per minute charge levied for 1800 FVCO;

"1800 number" shall have the same meaning as set out in the Numbering Conditions of Use;

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011), as may be amended from time to time or replaced with equivalent effect;

"Access" shall have the same meaning as under Regulation 2 of the Access Regulations;

"Authorisation Regulations" means the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011 (S.I. No. 335 of 2011), as may be amended from time to time or replaced with equivalent effect;

"BEREC" means the Body of European Regulators for Electronic Communications, as established pursuant to Regulation (EC) No. 1211/2009 of the European Parliament and of the Council of 25 November 2009;

"BU LRAIC+ FVCO Model" means a bottom-up model based on the LRAIC+ of an efficient operator and in the context of this Decision Instrument is the bottom up economic/engineering model of an efficient network used to determine the

LRAIC+ associated with the supply of FVCO which is more particularly described at Chapter […] of the final decision entitled [●];

“Communications Regulation Act 2002 (as amended)” means the Communications Regulation Act 2002 (No. 20 of 2002), as amended;

“ComReg Decision D15/18” means ComReg Document No. 18/106, entitled “*Review of Non-Geographic Numbers Response to Consultation 18/65 and Decision*”, dated 03 December 2018;

“ComReg Decision D[•]” means ComReg Document No. [●], entitled “[●]”, dated [●];

“ComReg Decision D[•]” means ComReg Document No. [●], entitled “[●]”, dated [●];

“ComReg” means the Commission for Communications Regulation, established under Section 6 of the Communications Regulation Act 2002 (as amended);

“Decision Instrument” means this decision instrument which is made pursuant to *inter alia* Regulations 6, 8, 9, 13 and 18 of the Access Regulations and Regulation 23 and 30 of the Universal Service Regulations;

“Effective Date” means the date set out in Section 7 of this Decision Instrument;

“End User” shall have the same meaning as under Regulation 2 of the Framework Regulations, as may be amended from time to time. For the avoidance of doubt, End User(s) shall be deemed to include any natural or legal person who facilitates or intends to facilitate the provision of public communications networks or publicly available electronic communications services to other End Users and who is not acting as an Undertaking;

“Fixed Voice Call Origination” or **“FVCO”** means a wholesale service whereby voice calls originating at a fixed location of an End User are conveyed and routed through any switching stages (or equivalent, regardless of underlying technology) up to a Point of Handover nominated by an Undertaking seeking access to this service for onward conveyance and routing;

“Framework Regulations” means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011), as may be amended from time to time or replaced with equivalent effect;

“Interconnection” shall have the same meaning as under Regulation 2 of the Access Regulations;

"Long Run Average Incremental Cost plus" or **"LRAIC+"** means the average efficiently incurred directly attributable variable and fixed costs, plus an appropriate apportionment of joint and common costs;

"Non-geographic number" or **"NGN"** shall have the same meaning as under Regulation 2 of the Access Regulations;

"Numbering Conditions of Use" means the set of rules under which the Irish national numbering scheme is managed and administered as set out in the document entitled *Numbering Conditions of Use and Application Process, ComReg 15/136R1,* as may be amended by ComReg from time to time or replaced with equivalent effect;

"Point of Handover" means the physical point at which two networks are interconnected to allow traffic between these networks;

"Reference Interconnect Offer" or "RIO" means the offer of contract by a Fixed Service Provider to another Undertaking in respect of FVCO in accordance with the requirements of this Decision Instrument; and

"Regulated FTR" means the wholesale maximum fixed termination rate imposed pursuant to ComReg Decision D[●];

"Relevant Undertaking" means an Undertaking that offers 1800 FVCO or 0818 FVCO and has the ability to set a 1800 FVCO Rate or a 0818 FVCO Rate as listed at Appendix 1 of this Decision Instrument; and .

"Terminating Operator" means an undertaking providing 0818 Termination;

"Undertaking(s)" shall have the same meaning as under Regulation 2 of the Framework Regulations.

3 SCOPE AND APPLICATION

3.1 This Decision Instrument applies to any Relevant Undertaking as listed at Appendix 1 to this Decision Instrument.

3.2 This Decision Instrument is binding on each such Relevant Undertaking in the manner now set out below and each such Relevant Undertaking shall comply with this Decision Instrument to the extent that it applies to that Relevant Undertaking.

3.3 This Decision Instrument, pursuant to Regulations 6, 8, 9, 13 and 18 of the Access Regulations and Regulation 23 and Regulation 30 of the Universal Service Regulations imposes certain obligations on Relevant Undertakings as more particularly set out in section 4 of this Decision Instrument.

PART II - OBLIGATIONS (SECTION 4 OF THE DECISION INSTRUMENT)

4 OBLIGATIONS

4.1 ComReg is imposing certain obligations on the Relevant Undertaking in accordance with and pursuant to Regulations 6, 8, 9, 13 and 18 of the Access Regulations and Regulations 23 and 30 of the Universal Service Regulations, as detailed further in sections 4.2 to 4.11 of this Decision Instrument.

4.2 Pursuant to Regulations 23 and 30 of the Universal Service Regulations, the Relevant Undertaking shall ensure that End-Users are able to access and use services using non-geographic numbers within the European Union, except where this is not technically or economically feasible or where a called subscriber has chosen for commercial reasons to limit access by calling parties located within specific geographical areas.

4.3 Pursuant to Regulations 8, 13 and 18 13(1) of the Access Regulations, each Relevant Undertaking is subject to a price control obligation in relation to the provision of 1800 FVCO or 0818 FVCO. Without prejudice to the foregoing, each Relevant Undertaking is subject to a cost orientation obligation in relation to the provision of 1800 FVCO.

4.4 Each Relevant Undertaking is hereby directed to ensure that its 1800 FVCO Rate(s) are set in accordance with a LRAIC+ costing methodology.

4.5 Without prejudice to the generality of section 4.4 above of this Decision Instrument, pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 13 of the Access Regulations, each Relevant Undertaking shall ensure that its 1800 FVCO Rate(s) are no more than the relevant BU LRAIC+ FVCO Rate, based on the BU LRAIC+ FVCO Model, which are set out in the table below.

Year	Maximum 1800 FVCO Rate
1 January 2020 to 31 December 2020	0.829 cent/minute
1 January 2021 to 31 December 2021	0.868 cent/minute
1 January 2022 to 31 December 2022	0.906 cent/minute
1 January 2023 to 31 December 2023	0.939 cent/minute

1 January 2023 to 31 December 2024	0.976 cent/minute

4.6 Pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 13 of the Access Regulations, the Relevant Undertaking shall not impose a charge in relation to the provision of 0818 FVCO other than in the circumstances provided for in section 4.7 below.

4.7 Pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 13 of the Access Regulations, where the Relevant Undertaking is charged a 0818 Termination Rate that is in excess of the Regulated FTR, in that case the Relevant Undertaking may charge that 0818 Terminating Operator a 0818 FVCO Rate that is no greater than the difference between that 0818 Termination Rate and the Regulated FTR.

4.8 Without prejudice to the generality of section 4.3 of this Decision Instrument pursuant to Regulations 8, 13 and 18 of the Access Regulations, the Relevant Undertaking shall ensure that it recovers no more than its actually incurred costs (adjusted for efficiency) plus a reasonable rate of return associated with the provision of 1800 FVCO or 0818 FVCO. For the avoidance of doubt, where the Relevant Undertaking considers that it has not recovered such costs it may make a submission to ComReg setting out the basis for any under recovery for ComReg's assessment.

4.9 Pursuant to Regulation 18 of the Access Regulations and in accordance with Regulations 8 and 9 of the Access Regulations each Relevant Undertaking shall be subject to an obligation of transparency in respect of 1800 FVCO Rates and 0818 FVCO Rates and in particular the obligations set out in this Decision Instrument.

4.10 Without prejudice to the generality of section 4.9 above each Relevant Undertaking shall publish a RIO for 1800 FVCO or 0818 FVCO. The RIO shall include a description of any associated contractual or other terms and conditions for Access and use, including 1800 FVCO Rates or 0818 FVCO Rates and any other relevant prices or charges.

4.11 Pursuant to Regulations 9, 13 and 18 of the Access Regulations the Relevant Undertaking shall ensure that wholesale invoices shall be sufficiently disaggregated, detailed and clearly presented so that an Undertaking can reconcile invoices to the prices and charges in the Relevant Undertaking's RIO.

PART III – MAINTENANCE OF OBLIGATIONS AND EFFECTIVE DATE (SECTIONS 5 TO 6 OF THE DECISION INSTRUMENT)

5 STATUTORY POWERS NOT AFFECTED

5.1 Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it from time to time under any applicable law (in force prior to or after the Effective Date of this Decision Instrument).

6 MAINTENANCE OF OBLIGATIONS

6.1 Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in decision instruments, decision notices and directions made by ComReg applying to each Relevant Undertaking and in force immediately prior to the Effective Date of this Decision Instrument, are continued in force by this Decision Instrument and each Relevant Undertaking shall comply with same.

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

7 EFFECTIVE DATE

7.1 The Effective Date of this Decision Instrument shall be the date of its publication and notification to the Relevant Undertaking and it shall remain in force until further notice by ComReg.

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GARRETT BLANEY

CHAIRPERSON

THE COMMISSION FOR COMMUNICATIONS REGULATION

THE [ ] DAY OF [ ] 2019

APPENDIX 1 – RELEVANT UNDERTAKINGS

A1. This Decision Instrument applies to each of the following Relevant Undertakings individually (and not collectively) in respect of activities falling within the scope section 4 of this Decision Instrument. Furthermore, this Decision Instrument is binding upon each such Relevant Undertaking in the manner now set out below and each such Undertaking shall comply with this Decision Instrument to the extent that it applies to that Relevant Undertaking. This list may be amended by ComReg from time to time.

(i) Airspeed Communications Unlimited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(ii) Blue Face Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(iii) Colt Technology Services Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(iv) Dialoga Servicios Interactivos SA and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(v) Eircom Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(vi) Equant Network Services International Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(vii) Finarea SA and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors,

(viii) Imagine Communications Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(ix) Intellicom Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(x) In2com Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xi) Internet Protocol Telecom Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xii) Magnet Networks Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xiii) Magrathea Telecommunications (Ireland) Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xiv) Modeva Networks Unlimited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xv) PlanNet 21 Communications Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns, which for the avoidance of doubt includes 3Play Plus Limited;

(xvi) Telcom Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns, which for the avoidance of doubt includes Agility Communications Limited;

(xvii) Verizon Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xviii) Viatel Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xix) Virgin Media Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xx) Vodafone Ireland Limited and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;

(xxi) Voxbone SA and its subsidiaries, and any Undertaking which it owns or controls and any Undertaking which owns or controls it, and its successors, affiliates and assigns;