An Coimisiún um Rialáil Cumarsáide
Commission for Communications Regulation

Regulated Wholesale Fixed Access Charges

Review of the Access Network Model and Specification of the Price Control for Public Switched Telephone Network Wholesale Line Rental

Consultation and Draft Decision

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Additional Information

In light of the current remote working arrangements, ComReg requests that any responses to this consultation be submitted to ComReg by **email only**, to arrive on or before 5.30pm, on **4 December** 2020. All responses to this consultation should be clearly marked "*Response to ComReg Document No 20/101*" and submitted to **wholesaleconsult@comreg.ie**

Any interested parties who wish to submit a response to consultation other than via email are requested to contact ComReg[1] in advance of such submission.

Please also see Section 11 on Submitting Comments.

Redacted information

Please note that this is a non-confidential version of the Consultation. Certain information within this document has been redacted for reasons of confidentiality and commercial sensitivity, with such redactions indicated by the symbol ✂ and the symbol [is used to indicate the start of confidential information and the symbol] indicates where that confidential information ends.

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Content

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Annexes

Section **Page**

Table of Tables

Section Page

Table of Figures

Section Page

1 Introduction

1.1 ComReg is the national regulatory authority ('**NRA**') for the electronic communications sector in Ireland. As the NRA, ComReg is tasked under the European regulatory framework for electronic communications with reviewing electronic communications markets and, where ComReg finds that relevant markets are not competitive, with imposing obligations on operators found to have significant market power ('**SMP**'). Obligations which ComReg may impose include price controls, including obligations to charge cost-oriented prices.

1.2 ComReg's objectives, in line with Section 12 of the Communications Regulation Act 2002, as amended (the '**Act**') and Regulation 16 of the Framework Regulations[2], are to promote competition, to encourage efficient investment and innovation, contribute to the development of the internal market and to promote the interests of users by encouraging access to the internet at a reasonable cost to end-users. According to Regulation 16 of the Framework Regulations, in pursuing its objectives, ComReg must apply objective, transparent, non-discriminatory and proportionate regulatory principles by, among other things, promoting regulatory predictability, promoting efficient investment, and taking due account of the variety of conditions relating to competition and consumers that exist in various geographic areas.

1.3 In ComReg Decision D10/18[3] (the '**2018 WLA/WCA Market Review Decision**'), ComReg found that Eircom had SMP in the market for Wholesale Local Access (**'WLA**') and in the market for Wholesale Central Access at a fixed location for mass market products in regional areas (the '**Regional WCA Market**') and imposed obligations of cost-orientation in respect of the following services:

a) In the WLA Market, obligations of cost orientation were imposed on Local Loop Unbundling ('**LLU**'), Sub Loop Unbundling ('**SLU**'), Line Share, access to Civil Engineering Infrastructure ('**CEI**') and Dark Fibre, as well as the provision of Fibre to the Cabinet/EVDSL-based Virtual Unbundled Access ('**FTTC-based VUA'**);

b) In the Regional WCA Market, obligations of cost-orientation were imposed in respect of Current Generation Standalone Broadband ('**CG SABB**'), both Current Generation Bitstream Managed Backhaul and Bitstream IP (together, '**CG Bitstream**'), and FTTC-based Bitstream.

1.4 For the purpose of setting cost-oriented prices for LLU, SLU, Line Share, CEI, Dark Fibre and CG SABB, ComReg relied on ComReg Decision D03/16[4] ('**2016**

[2] European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011) (the 'Framework Regulations').
[3] ComReg Document No 18/94, Decision D10/18, Market Review: Wholesale Local Access (WLA) provided at a Fixed Location, Wholesale Central Access (WCA) provided at a Fixed Location for Mass Market Products. Response to Consultation and Decision; dated 19 November 2018.
[4] ComReg Document No. 16/39, ComReg Decision D03/16, "Pricing of Eir's Wholesale Fixed Access Services: Response to Consultation Document 15/67 and Final Decision", dated 18 May 2016.

Access Pricing Decision') which had determined cost-oriented prices by developing a copper access network cost model known as the Revised Copper Access Model ('**Revised CAM**'). The cost-orientation obligation for FTTC-based services was further specified in ComReg Decision D11/18[5] (the '**2018 Pricing Decision**'). The 2018 Pricing Decision relied on two cost models, the NGA Cost Model and the NGN Core Model, which used network cost inputs from the Revised CAM to derive cost-oriented prices for FTTC-based prices.

1.5 The European Commission ('**EC**') in response to ComReg's notification of the draft measures contained in the 2018 WLA/WCA Market Review Decision,[6] called on ComReg to revisit the access prices derived from the Revised CAM and at least update the results of the Revised CAM with more recent data, and notify the resulting prices without undue delay. The EC in response to ComReg's notification of ComReg Decision D10/20[7] (the '**2020 WACC Decision**') on the Weighted Average Cost of Capital ('**WACC**'), also stated that having regard to the significant decrease in the WACC, ComReg should update relevant pricing decisions as soon as possible, to ensure that prices in the Irish wholesale markets reflect current market conditions.

1.6 This Consultation (the '**Consultation**') considers the review and update of the Revised CAM. The updated model is referred to as the Access Network Model ('**ANM**'). Given the changes that have occurred in the Irish market since the Revised CAM was finalised, such as full fibre services having been launched, and plans on further rollout of fibre services having become clearer, ComReg found that a refresh of the data for the Revised CAM was not sufficient; instead a more comprehensive exercise was undertaken through the development of the ANM.

1.7 Unlike the Revised CAM which looks at the costs associated with the provision of a copper-based access network only, the ANM includes the relevant costs associated with both copper and fibre-based access services. The ANM also models costs in different footprints by reference to relevant regulated geographic markets (by reference to exchanges) and/or premises within exchanges according to the technical solutions that are adopted to serve the premises.

1.8 The Consultation also includes proposals on updated prices derived from the ANM for LLU, SLU, Line Share, Dark Fibre and CG SABB. Revised prices for CEI (ducts and poles) have been proposed in a separate consultation document, Consultation Document 20/81[8] (the '**2020 CEI Pricing Consultation**'). ComReg has taken account of the proposals set out in the 2020 CEI Pricing Consultation with respect to pole and duct access pricing in the work undertaken in this

[5] ComReg Document No 18/95: Pricing of wholesale broadband services, Wholesale Local Access (WLA) market and the Wholesale Central Access (WCA) markets, Response to Consultation Document 17/26 and Final Decision, dated 19 November 2018.
[6] Please see Appendix 2 of the 2018 WLA/WCA Market Review Decision.
[7] ComReg Document No 20/96: Review of Weighted Average Cost of Capital (WACC) – Response to Consultation and Final Decision. Dated 14 October 2020.
[8] ComReg Document No 20/81, "Pricing of Eircom's Civil Engineering Infrastructure ('CEI') CEI access in the context of the National Broadband Plan ('NBP')". Dated 9 September 2020.

Consultation and will give due consideration to the inter-related nature of these consultations as they progress to decisions. This is necessary as the service demand modelling from the ANM affects the volumes and therefore prices of CEI, and these CEI prices in turn affect the outputted prices of the ANM access services.

1.9 Although FTTC-based prices are not derived directly from the Revised CAM or ANM, following the adoption by ComReg of the 2020 WACC Decision, ComReg has assessed the combined impact of updating the inputs issued from the ANM into the NGA Cost Model and NGN Core Model and the new WACC rate on FTTC prices. As set out in this Consultation, in light of the material impact on FTTC prices, ComReg proposes to amend the prices set in the 2018 Pricing Decision. To ensure consistent build/buy signals, ComReg is also proposing to update the prices for Current Generation Bitstream modelled through the NGN Core Model with the new WACC rate.

1.10 This Consultation also assesses the level of costs associated with Fibre to the Home ('**FTTH**') connections and migrations. ComReg is also seeking views from industry (by way of a call for input) on the market impact of the existing FTTH connection and migration prices as discussed further in Section 8.

1.11 Finally, the ANM provides draft rental prices for Public Switched Telephone Network Wholesale Line Rental ('**PSTN WLR**'), in the Regional Low-Level Fixed Access Call Origination Market (the '**Regional Low-Level FACO Market**') as proposed in Consultation Document 20/46[9] (the '**2020 FACO Consultation**'). This Consultation also proposes updated supplemental charges for POTS based FTTC services in the Regional Low-Level FACO Market.

1.12 In the 2020 FACO Consultation ComReg set out its preliminary view that there is a need for continued ex-ante regulation in the Regional FACO Markets[10]. To address the competition concerns that may arise in the absence of regulation, ComReg has proposed to impose several obligations on Eircom as the operator provisionally identified as having SMP in the Regional FACO Markets, including a price control obligation. In this Consultation and Draft Decision, ComReg proposes the further specification of the form of price control that should apply in relation to PSTN WLR in the Regional Low-Level FACO Market, having regard to Regulation 8(6) of the Access Regulations which requires that any obligations imposed on an operator with SMP are based on the nature of the problem identified, proportionate and justified and only be imposed following a consultation process, and Regulation 13 of the Access Regulations. Regulation 13(2) in particular requires that to encourage investments by the SMP operator,

[9] ComReg Document No 20/46, "Market Reviews Retail Access to the Public Telephone Network at a Fixed Location for Residential and Non-Residential Customers Wholesale Fixed Access and Call Origination". Dated 17 June 2020.

[10] The proposed Regional FACO Markets is the collective name for the 744 exchanges that comprise the Regional Low-Level FACO Market and the Regional High-Level FACO Market. ComReg proposed in the 2020 FACO Consultation to define two separate relevant product markets – the Regional Low-Level Market and the Regional High-Level Market. The Regional Low-Level FACO Market is the product market of interest for this Consultation.

ComReg take into account the investments made by the operator and allow the operator a reasonable rate of return on adequate capital employed.

1.13 In making these proposals, ComReg has also had regard to the two recommendations published by the EC in relation to NGA networks, namely a recommendation on access to NGA in 2010[11] (the '**2010 EC Recommendation**') and a recommendation on non-discrimination and costing methodologies in 2013[12] (the '**2013 EC Recommendation**').

1.14 The aim of the 2010 EC Recommendation is to develop the single market by promoting investment, competition and innovation in the market for broadband services. The 2010 EC Recommendation looks at, amongst other things, common principles for the pricing of NGA services, pricing of access to CEI, as well as access to fibre (FTTH), criteria for setting a risk premium (considering the investment risk associated with NGA services (FTTC and FTTH)) while also assessing equivalence of access to CEI of the SMP operator for the purposes of rolling out NGA networks.

1.15 ComReg has also ensured that the proposals contained in this Consultation are aligned with the provisions of the European Electronic Communications Code ('**EECC**') (Directive EU 2018/1972), which amends and replaces the current EU regulatory framework for electronic communications[13] and must be transposed in Irish law by 21 December 2020.

1.16 ComReg was assisted by its expert consultants Cartesian ('**Cartesian**') with regards to the proposed review and development of the ANM, as set out in this paper.[14] Cartesian has prepared a non-confidential version of the ANM, as well as associated documentation, which is available to interested parties likely to be affected by the decision that ComReg may take as a result of this Consultation and is available upon request to ComReg[15]. TERA Consultants assisted with the assessment of the impact of the ANM cost inputs review and updated WACC on FTTC prices and CG Bitstream prices as further discussed in the Consultation.

1.17 This document is structured as follows:

a) *Section 2*: provides a summary of the main preliminary conclusions;

[11] European Commission's Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA) (2010/572/EU).
[12] European Commission's Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (2013/466/EU).
[13] Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, 7 March 2002 (as amended) (**Access Directive**); Directive 2002/20/EC on the authorisation of electronic communications networks and services, 7 March 2002 (as amended) (**Authorisation Directive**); Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services, 7 March 2002 (as amended) (**Framework Directive**); Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, 7 March 2002 (as amended) (**Universal Service Directive**).
[14] For information purposes only, the draft Cartesian ANM Specification Document is available upon request to ComReg. The views expressed by Cartesian are not necessarily the views of ComReg.
[15] See footnote 66 in Section 5.

b) *Section 3*: considers the price controls concerned by the ANM review;

c) *Section 4*: considers the price control and cost methodology for PSTN WLR in the Regional Low-Level FACO Market, and Supplemental POTS based FTTC services;

d) *Section 5*: sets out the proposed cost modelling approach for the wholesale access network services in the ANM;

e) *Section 6*: sets out the proposed pricing approach for the wholesale access network services;

f) *Section 7*: sets out the draft wholesale access network prices from the ANM and the revised prices following from the updates to the NGA Cost Model and NGN Core Model;

g) *Section 8*: sets out the Call for Input on FTTH connections;

h) *Section 9*: sets out other regulatory measures; and

i) *Section 10*: sets out the Regulatory Impact Assessment ('**RIA**') insofar as ComReg's proposals for the price control for PSTN WLR in the Regional Low-Level FACO Market are concerned.

2 Executive Summary

Background and objectives:

2.1 In ComReg Decision D10/18[16] (the '**2018 WLA/WCA Market Review Decision**'), ComReg found that Eircom had SMP in the market for Wholesale Local Access (**'WLA**') and in market for Wholesale Central Access at a fixed location for mass market products in regional areas (the '**Regional WCA Market**') and imposed obligations of cost-orientation in respect of the following services:

a) In the WLA Market, obligations of cost orientation were imposed on Local Loop Unbundling ('**LLU**'), Sub Loop Unbundling ('**SLU**'), Line Share, access to Civil Engineering Infrastructure ('**CEI**') and Dark Fibre, as well as the provision of Fibre to the Cabinet/EVDSL-based Virtual Unbundled Access ('**FTTC-based VUA'**);

b) In the Regional WCA Market, obligations of cost-orientation were imposed in respect of Current Generation Bitstream products including Current Generation Standalone Broadband ('**CG SABB**'), both Bitstream Managed Backhaul and Bitstream IP (together, '**CG Bitstream**') and FTTC-based Bitstream.

2.2 For the purpose of setting cost-oriented prices for LLU, SLU, Line Share, CEI, Dark Fibre and CG SABB, ComReg relied on ComReg Decision D03/16[17] ('**2016 Access Pricing Decision**') which had determined cost-oriented prices by developing a copper access network cost model known as the Revised Copper Access Model ('**Revised CAM**'). The cost-orientation obligation for FTTC-based services was further specified in ComReg Decision D11/18[18] (the '**2018 Pricing Decision**'). The 2018 Pricing Decision relied on two cost models, the NGA Cost Model and the NGN Core Model, which used network cost inputs from the Revised CAM to derive cost-oriented prices for FTTC-based prices.

2.3 The European Commission ('**EC**') in response to ComReg's notification of the draft measures contained in the 2018 WLA/WCA Market Review Decision,[19] called on ComReg to revisit the access prices derived from the Revised CAM and at least update the results of the Revised CAM with more recent data, and notify the resulting prices without undue delay. The EC in response to ComReg's

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[17] ComReg Document No. 16/39, ComReg Decision D03/16, "Pricing of Eir's Wholesale Fixed Access Services: Response to Consultation Document 15/67 and Final Decision", dated 18 May 2016.
[18] ComReg Document No 18/95: Pricing of wholesale broadband services, Wholesale Local Access (WLA) market and the Wholesale Central Access (WCA) markets, Response to Consultation Document 17/26 and Final Decision, dated 19 November 2018.
[19] Please see Appendix 2 of the 2018 WLA/WCA Market Review Decision.

notification of ComReg Decision D10/20[20] on the Weighted Average Cost of Capital ('**WACC**') (the '**2020 WACC Decision**'), also stated that having regard to the significant decrease in the WACC, ComReg should update relevant pricing decisions as soon as possible, to ensure that prices in the Irish wholesale markets reflect current market conditions.

2.4 This Consultation considers the review and update of the Revised CAM. The updated model is referred to as the Access Network Model ('**ANM**'). Given the changes that have occurred in the Irish market since the Revised CAM was finalised, such as full fibre services having been launched, and plans on further rollout of fibre services having become clearer, ComReg found that a refresh of the data for the Revised CAM was not sufficient; instead a more comprehensive exercise was undertaken through the development of the ANM.

2.5 Unlike the Revised CAM which looks at the costs associated with the provision of a copper-based access network only, the ANM includes the relevant costs associated with both copper and fibre-based access services, relying on updated data from operators (for example, actual and expected demand volumes, and financial data including the new WACC rate based on the 2020 WACC Decision). The ANM also models costs according to geographic footprints including by reference to the active lines in exchanges making up regulated markets (e.g., the Regional WCA Market or the Regional Low-Level FACO Market) as well as by reference to the technical solutions used by operators to pass premises.

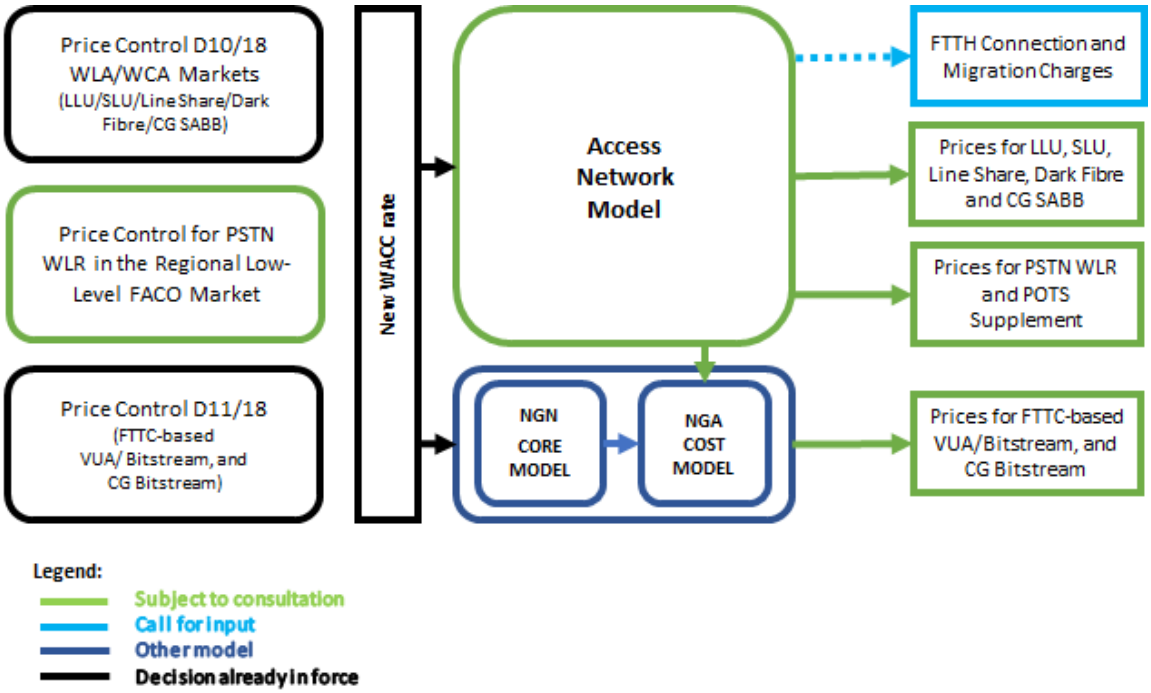
2.6 In that regard, the ANM borrows from the Department of the Environment Climate and Communications' ('**DECC**')[21] mapping exercise for the National Broadband Plan ('**NBP**') to generate "commercial" and "non-commercial" footprints. The non-commercial footprint is based on those premises that are included in the DECC's area known as the intervention area for the NBP ('**NBP IA**'). The commercial areas include the Rural Commercial Area comprising the premises served by Eircom's recently deployed rural 300k FTTH network and the Urban Commercial footprint which include those premises which can be served with a viable FTTC based service (including EVDSL).

2.7 Finally, ComReg is issuing a call for input from stakeholders in relation to FTTH connection/migration costs and seeks views on the appropriate factors that interested parties consider to be of relevance.

[20] ComReg Document No 20/96: Review of Weighted Average Cost of Capital (WACC) – Response to Consultation and Final Decision. Dated 14 October 2020.
[21] Formerly known as the "Department of Communications, Climate Action and Environment".

2.8 Figure 1 provides a high-level overview of how this Consultation fits together, e.g. the relevant price controls that determine the costing methodology which are then applied in the models to ultimately output the monthly charges for the wholesale access services.

Figure 1: Diagram of scope of this Consultation



Price controls under the WLA/WCA Market Review Decision – updated ANM prices

2.9 ComReg is not consulting on the form of the price control obligations that are in place in respect of the wholesale access services in the 2018 WLA/WCA Market Review Decision or the 2018 Pricing Decision. The nature of these controls remains unchanged. Rather, the Consultation proposes to update applicable prices for LLU, SLU, Line Share, Dark Fibre and CG SABB with prices derived from the ANM, on the basis of the existing cost-orientation obligations. This includes the use of a combination of TD-HCA and BU-LRAIC+ cost methodologies according to whether the assets concerned are reusable or not for the purpose of providing NGA services, taking into account the costs reflecting the likely geographic footprint of the services concerned. In this Consultation, these principles are maintained and implemented in the ANM as follows:

a) For LLU, costs are calculated by reference to the Urban Commercial Area footprint rather than the 'distance dependent approach' used in the Revised CAM, in order to better align with the line base that is capable of supporting a viable FTTC based service;

b) For SLU, the same footprint – the Urban Commercial Area – is used to derive

SLU prices in order to better align with the line base that is capable of supporting a viable FTTC based service. The national base used in the Revised CAM is no longer appropriate as SLU will not be used for the purpose of the NBP;

c) For Dark Fibre, the price is derived from the costs of the access network supporting leased line services better reflecting potential demand for this service, removing the geographical cost differentiation between Dublin and Provincial areas used before;

d) For Line Share, which is determined on an incremental cost basis, no adjustments were necessary to the modelling approach; and

e) For CG SABB, prices are set with reference to the exchanges that comprise the Regional WCA Market.

2.10 ComReg also proposes that the prices for LLU and SLU are maximum prices (as is already the case for Line Share and Dark Fibre), rather than point prices, in order to avoid requiring Eircom to increase prices for LLU and SLU, given the small number of lines concerned.

2.11 Table 1 sets out the proposed maximum monthly rental prices for LLU, SLU, Line Share and Dark Fibre services in the WLA Market.

Table 1: Proposed monthly prices for LLU, SLU, Line Share and Dark Fibre

Service	Current price	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023	1 July 2023 - 30 June 2024
LLU*	11.52*	12.72*	12.72*	12.79*	13.44*
SLU	6.12	10.43	10.39	10.39	10.82
Line Share**	0.77**	0.62**	0.62**	0.62**	0.62**
Dark Fibre	0.28 (Dublin), 0.15 (Provincial)	0.11	0.11	0.11	0.11

* Excludes monthly fault repair and monthly connection/provisioning – see Section 7 for more details.
** Excludes monthly fault repair and monthly connection/provisioning charges – see Section 7 for more details.

2.12 Table 2 sets out the proposed monthly rental prices for CG SABB in the Regional WCA Market. The current price for CG SABB is not directly comparable[22] to those shown in Table 2.

[22] The current price for CG SABB is a maximum price of €23.15, Eircom offer a 24Mbps service at €23.17 and an 8Mbps service at €22.17. See Section 6.5 for more details.

Table 2: Proposed monthly prices for CG SABB

Service	CG SABB - €			
	1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
CG SABB: National handover				
Per Port	*21.56**	*21.31**	*21.05**	*21.09**
Per Mbps	*0.54*	*0.44*	*0.37*	*0.33*
CG SABB: Regional handover				
Per Port	*19.97**	*19.71**	*19.45**	*19.49**
Per Mbps	*0.23*	*0.19*	*0.16*	*0.14*

* Includes rental costs, fault repair costs and connection / provisioning costs

FTTC Prices and CG Bitstream Prices

2.13 FTTC-based prices are not derived directly from the Revised CAM[23] or ANM but ANM outputs, in particular LLU and SLU, are important cost inputs for FTTC-based services. FTTC-based prices are calculated based on the NGA Cost Model and the NGN Core Model using ANM outputs.

2.14 In the 2018 Pricing Decision, ComReg sets prices for FTTC-based services until June 2022. ComReg, however, reserved the right to require prices to be updated depending on the outcome of ComReg's then forthcoming consultation and decision on the applicable WACC. In the 2020 WACC Decision, mindful that regulatory certainty, including the predictability of pricing, is an important aspect of creating the right environment for all operators to make investment decisions, ComReg reiterated the principle, for the purpose of implementing the new WACC rate, that where prices have been set for a price control period, ComReg will not intervene during that price control period unless circumstances are materially different from those envisaged at the time of the pricing decision or exceptional circumstances have otherwise arisen. Applying that principle, and having signalled at the time of the 2018 Pricing Decision that prices may be amended following its decision on WACC, ComReg in this Consultation proposes to amend the prices set in the 2018 Pricing Decision in light of the material combined impact of updated ANM inputs and the new WACC. As such, ComReg proposes to update applicable prices, as set out in Table 3 below.

2.15 As a result, ComReg also proposes to review CG Bitstream prices in order to ensure that build/buy signals for CG Bitstream and FTTC services remain consistent. Prices for CG Bitstream are set using the NGN Core Model based on BU-LRAIC+ costs which should allow Eircom to recover its costs while incentivising OAOs to migrate to fibre-based services where efficient to do so.

[23] The price of FTTC based services includes as relevant the following output prices from the Revised CAM - LLU, SLU, and NGA links.

Table 4 sets out the proposed monthly prices for CG Bitstream (BMB and Bitstream IP) services in the Regional WCA Market. (CG Bitstream services are only available as add-ons to WLR and the prices below are in addition to the price for wholesale line rental.)

Table 3: Proposed monthly prices for FTTC based services

Service	FTTC based services - €				
	Current Price	*1 July 2020 - 30 June 2021*	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
FTTC based VUA[24]	*20.10**	*18.67 **	*18.62**	*18.62**	*19.08**
FTTC based Bitstream: National Handover					
Per Port	*24.94**	*22.45**	*22.47**	*22.59**	*23.22**
Per Mbps	*0.37*	*0.34*	*0.29*	*0.27*	*0.27*
FTTC based Bitstream: Regional Handover					
Per Port	*21.84**	*20.50**	*20.47**	*20.51**	*21.05**
Per Mbps	*0.20*	*0.13*	*0.11*	*0.11*	*0.11*
Assumed 90/10 mix for Regional / National Handover					
Per Port	*22.65**	*20.69**	*20.67**	*20.72**	*21.26**
Per Mbps	*0.24*	*0.15*	*0.13*	*0.13*	*0.13*

* Including fault repair and provisioning costs

[24] This includes the average costs for Remote VUA, Local VUA and EVDSL.

Table 4: Proposed monthly prices for CG Bitstream

Service[25]	CG Bitstream - €				
	Current price	*1 July 2020 - 30 June 2021*	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
BMB: National handover					
Per Port	*8.70**	*7.74**	*7.89**	*8.07**	*8.30**
Per Mbps	*0.57*	*0.54*	*0.44*	*0.37*	*0.33*
BMB: Regional handover					
Per Port	*6.94**	*6.33**	*6.35**	*6.41**	*6.52**
Per Mbps	*0.25*	*0.23*	*0.19*	*0.16*	*0.14*
Bitstream IP: National Handover					
Bitstream IP[26]	*9.14**	*8.16**	*8.23**	*8.36**	*8.55**
Bitstream IP: Regional Handover					
Bitstream IP[27]	*7.13**	*6.51**	*6.50**	*6.53**	*6.63**

* Including line share and fault repair

PSTN WLR Prices and Supplemental charge for POTS based FTTC

2.16 In the 2020 FACO Consultation, ComReg has proposed that a price control obligation should be imposed on Eircom in relation to PSTN WLR in the Regional Low-Level FACO Market, in order to address Eircom's ability and incentive to potentially engage in a range of anti-competitive pricing behaviours to the detriment of competition and end users. In this Consultation, ComReg considers the appropriate form of the price control for PSTN WLR in the Regional Low-Level FACO Market and proposes to impose a cost-orientation obligation.

2.17 ComReg proposes that the cost-oriented price for PSTN WLR in the Regional Low-Level FACO Market is calculated by the ANM using a top down fully allocated cost ('**TD FAC**') approach based on Eircom's regulated Historic Cost Accounts ('**HCAs**') for the copper loop component and a BU-LRAIC+ approach for the active equipment. ComReg proposes to set prices for the duration of the market review period, namely five years. ComReg does not currently envisage the need for a price review of PSTN WLR and POTS based FTTC during these five years given the expectation that volumes will continue to decline. ComReg proposes, however, to monitor cost recovery by Eircom and will intervene where necessary where circumstances are materially different from those envisaged at the time of the ultimate decision on this paper or exceptional circumstances have

[25] These costs / prices are incremental to the cost / price for PSTN WLR / POTS.
[26] Bitstream IP prices are based on a combination of the costs of the port and traffic usage. The prices listed here are based on a weighted average assumption of traffic use by the Bitstream IP user for each year.
[27] Ibid footnote 26.

otherwise arisen to ensure the continued cost orientation of prices over the price control period.

2.18 Table 5 sets out the proposed monthly rental prices for PSTN WLR in the Regional Low-Level FACO Market and the Supplemental charge for POTS based FTTC services.

Table 5: Proposed monthly prices for PSTN WLR and the Supplemental Charge for POTS based FTTC services

Service	Current price	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023	1 July 2023 - 30 June 2024	1 July 2024 - 30 June 2025	1 July 2025 - 30 June 2026
PSTN WLR	16.59	16.07	15.77	15.41	15.35	14.80	15.67
Supplemental charge for POTS based FTTC services*	2.91	2.48	2.39	2.31	2.24	2.18	2.09

* Supplemental charge to be added to FTTC based services' prices in Table 17.

FTTH Connections and Migrations Prices

2.19 This Consultation also assesses the level of costs associated with Fibre to the Home ('**FTTH**') connections and migrations. ComReg is also seeking views from industry (by way of a call for inputs) on the market impact of the existing FTTH connection and migration prices as discussed further in Section 8.

Next steps:

2.20 ComReg welcomes views of interested parties regarding the proposals set out in this Consultation document. Responses to this consultation must arrive at ComReg by 5:30pm, 4 December 2020. See Section 11 for further information on submitting comments to this Consultation.

2.21 ComReg, in making its final decision and as appropriate, will consider all the views of Respondents to this Consultation. ComReg will also take utmost account of any comments from the EC in deciding on the pricing approach for the wholesale access services being updated by this Consultation, and for the costing methodology and the form of price control obligation being proposed for on Eircom for PSTN WLR in the Regional Low-Level FACO Market.

3 Price Controls relevant to the ANM

3.1 Overview

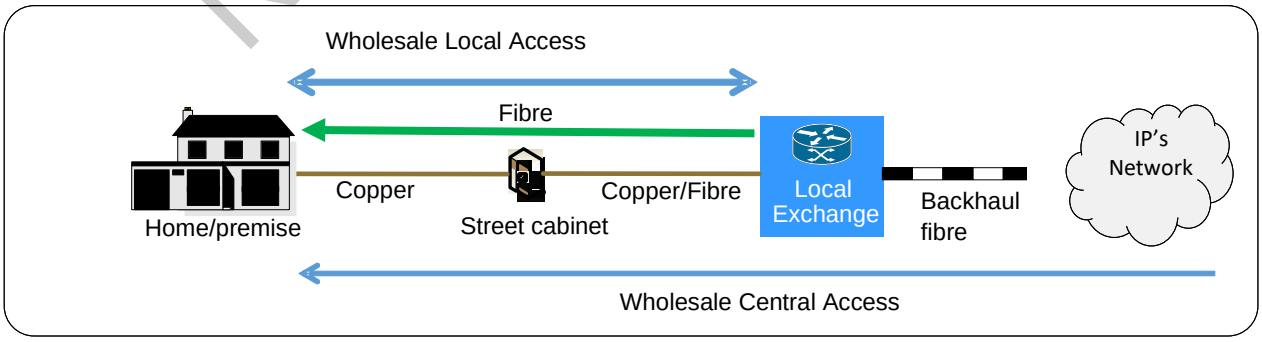
3.1 In order to assist readers of this Consultation, this section recalls which wholesale fixed access services are regulated in the WLA and WCA Markets and in the FACO Markets. Insofar as the WLA and WCA Markets are concerned, this section provides an overview of the existing regulatory price controls for regulated services in the WLA and WCA Markets as implemented by the Revised CAM; it discusses relevant market developments including the NBP and their potential impact on the price controls.

3.2 Insofar as the Regional Low-Level FACO Market is concerned, this section set outs proposals in terms of the price control to apply to PSTN WLR in the Regional Low-Level FACO Market taking into account the competition problems identified in the 2020 FACO Consultation and the objectives sought to be achieved by the price controls along with points to be considered when setting wholesale access prices.

3.2 Wholesale fixed network access services

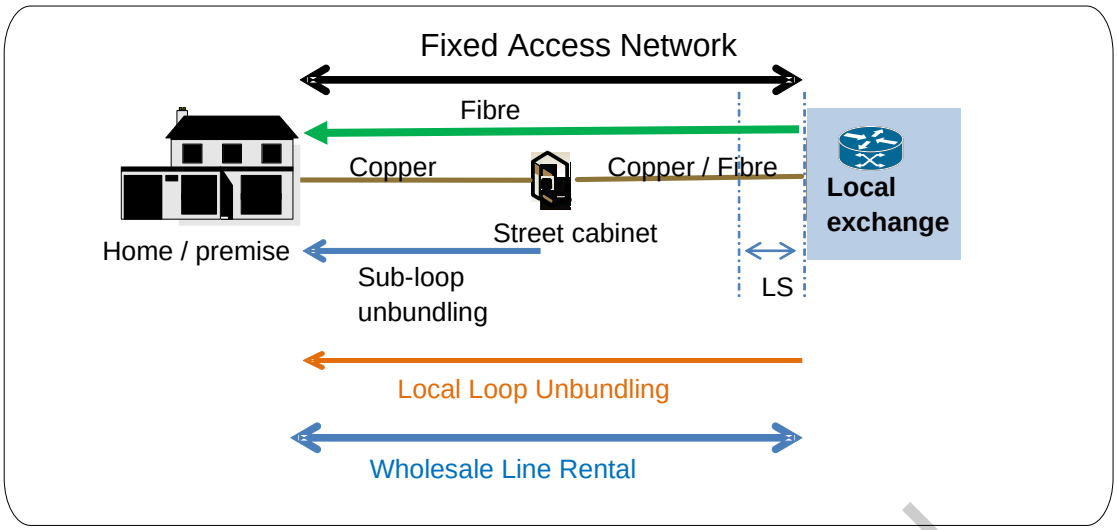
3.3 The market for Wholesale Local Access at a fixed location (the '**WLA Market**') comprises the connection between the local exchange and the end user's premises, while the market for Wholesale Central Access of mass market products (the '**WCA Market**') relates to the full connection from an Other Authorised Operators ('**OAOs**') network to the end user's premises. This is illustrated in Figure 2.

Figure 2: Provision of WLA and WCA services



3.4 Figure 3 below illustrates the extent of Eircom's access services across the fixed access network.

Figure 3: Provision of access services across the fixed access network



3.5 The wholesale fixed access services, which are the subject of the ANM review, are described below under the relevant regulated markets.

3.6 The following WLA services are subject to the ANM review:

a) **Local Loop Unbundling** ('**LLU**') is a service where an OAO rents access to the local loop (that part of the access network between the exchange and the end user) ;

b) **Sub-Loop Unbundling** ('**SLU'**) allows access to the sub-loop (namely, the portion of the local loop between the cabinet and the end user, excluding the portion of the local loop between the exchange and street cabinet), and including the provision of access to a tie cable or other connection and appropriate handover for the purposes of making use of the sub-loop from an adjacent cabinet;

c) **Line Share** or Shared Access to the local loop is a service allowing OAOs access to the high frequency capacity of the line;

d) **Dark fibre** is optical fibre that is currently installed in the local access network but is not in use. Dark Fibre means unlit Eircom fibre in Eircom's access network;

e) Fibre to the Cabinet based Virtual Unbundled Access ('**FTTC based VUA'**)[28] allows an OAO to gain virtual control of the access path to the customer premises, with a level of control similar to that obtained with LLU. Eircom offers a number of variants, including Local VUA, Remote VUA and Exchange

[28] ComReg uses the term "FTTC based VUA" to cover all Very-high-bit-rate Digital Subscriber Line ('**VDSL**') services, which includes Exchange Launched Very-high-bit-rate Digital Subscriber Line ('**EVDSL**'). The same applies to "FTTC based Bitstream".

launched VUA. In Local VUA, the Main Distribution Frame ('**MDF**') and / or Optical Distribution Frame ('**ODF**') and the customer traffic handover point (serving the aggregation node) are co-located in the same Exchange. In Remote VUA, the MDF or the ODF and the customer traffic handover point (serving the aggregation node) are not co-located in the same Exchange. In Exchange launched VUA, the active equipment that is required to provide VUA is housed in an Eircom Exchange building or equivalent.

f) **FTTH (connection)** means a connection to an access network architecture where fibre optic cable is used to connect the End User premises to the ODF in an Exchange.

3.7 Civil Engineering Infrastructure ('**CEI**') is part of the cost stack of fixed access network services, in particular LLU and SLU, which are then modelled as inputs to FTTC-based VUA.

3.8 The WCA Market includes the following services:

a) **Current generation standalone broadband** ('**CG SABB**') is a WCA broadband service offered or provided exclusively over Eircom's copper access network infrastructure and its associated facilities (excluding Exchange launched Bitstream) and delivered without a Public Switched Telephone Network ('**PSTN**') voice telephony service; and

b) **FTTC based Bitstream** is a WCA broadband service offered or provided over Eircom's FTTC and it also includes 'Exchange launched Bitstream'[29].

3.9 The Fixed Access and Call Origination ('**FACO**') market comprises two key components, wholesale line rental ('**WLR**'), and fixed voice call origination. WLR is the fixed access part that is rented by an operator; this access line is rented from Eircom and provides the physical connection from an end-user's premises to the public telephone network. Single-billing WLR ('**SB-WLR**') is a term used to denote that end-users availing of this service can make and receive calls at their premises. SB-WLR is comprised of two elements - the first being the fixed access part, which is an infrastructure element that physically enables calls to be conveyed from a premise to the exchange for onward transfer, in other words the fixed access component (e.g. WLR), and the other part is related to the ability to make calls over this infrastructure. WLR can be delivered over four fixed network access infrastructures: PSTN, ISDN[30] BRA[31], ISDN FRA[32], and ISDN PRA[33]. This Consultation is concerned with the price control obligation that should apply

[29] See footnote 28.
[30] Integrated Services Digital Network ('ISDN')
[31] Basic Rate Access.
[32] Fractional Rate Access.
[33] Primary Rate Access.

to the PSTN infrastructure. Pricing proposals for ISDN are included as part of the 2020 FACO Consultation. Hence, in this Consultation ComReg focuses solely on the PSTN fixed access component ('**PSTN WLR**').

3.3 Existing regulatory price controls: WLA and WCA Markets

3.10 Prices for LLU, SLU, Line Share, CEI, Dark Fibre, CG SABB and FTTC-based VUA and Bitstream are regulated under the 2018 WLA/WCA Market Review Decision which imposed a cost orientation obligation for each of these services. The 2018 WLA/WCA Market Review Decision maintained the form of price controls that had been determined in the 2016 Access Pricing Decision for LLU, SLU, Line Share, CEI and Dark Fibre, including in terms of costing methodology and price levels. The price controls were implemented using the Revised CAM.

3.11 Prices for FTTC based VUA and FTTC based Bitstream services, including EVDSL, and POTS based FTTC were further specified in the 2018 Pricing Decision. These prices are set using the NGA Cost Model and the NGN Core Model which in turn rely on costs for LLU and SLU derived from the Revised CAM.

Approach to cost orientation obligations in the WLA and WCA Markets in the existing price controls

3.12 The cost orientation price control obligations in the WLA and WCA markets are designed to address Eircom's ability to apply excessive prices and/or margin squeezes as a result of its SMP. The obligations are further designed in this context to give appropriate build/buy signals to operators while ensuring adequate cost recovery for Eircom.

3.13 In the Consultation which led to the adoption of the 2018 WLA/WCA Market Review Decision,[34] in imposing an obligation of cost-orientation for LLU, SLU, Line Share, CEI and Dark Fibre, ComReg noted that the local loop remains a bottleneck in terms of developing effective competition and full LLU, SLU and Line Share are important cost inputs for the wholesale services bought by Service Providers as they try to compete with Eircom. ComReg considered for this reason that it was important that operators and investors have certainty with regard to the prices of these services, and that the prices incentivise efficient behaviour. This is particularly relevant in the WLA Market where products have a high capital cost component that requires a significant level of investment which

[34] See in particular paragraph 8.587 in ComReg Document 16/96 (the "2016 WLA/WCA Market Review Consultation"). Please also see the justification for the current costing methodology for LLU and SLU in Chapter 6 (subsection 6.2 on LLU and subsection 6.3 on SLU) of the 2016 Access Pricing Decision. Paragraph 8.616 of the 2016 WLA/WCA Market Review Consultation and paragraph 7.1229 of the 2018 WLA/WCA Market Review Decision relied on the justification provided in the 2016 Access Pricing Decision for maintaining the current costing methodologies for LLU and SLU.

is recovered over a prolonged period of time. It is also particularly relevant where there is a possibility of efficient network deployment by alternative operators.

3.14 In addition to preventing excessive prices for wholesale inputs, a cost orientation obligation in that context ensures that wholesale prices correctly inform the investment decisions of both the incumbent and competitors thereby promoting efficient infrastructure investment and encouraging operators to climb the ladder of investment.

3.15 In order to ensure that adequate cost recovery and that the efficient build/buy signals were built into cost-oriented prices, ComReg used a combination of cost standards, cost methodologies and geographic cost bases.

3.16 On the appropriate cost standard, in the 2016 Access Pricing Decision, ComReg took the view that an approach based on long run average incremental cost plus a contribution towards common corporate costs (**'LRAIC+'**) was appropriate to encourage efficient investment decisions in the access network while ensuring that the access network operator is capable of recovering (but not over-recovering) all of its costs. Current costs were selected as most appropriate to encourage efficient investment and innovation in new and enhanced infrastructures, particularly in more competitive areas.

3.17 By contrast ComReg found that where there was no prospect of a competitor replicating the service in question, historical costs were more appropriate. In particular, historic cost accounting (**'HCA'**) using the SMP operator's [Eircom's] costs, reduces the chance of over recovery of costs (subject to ensuring that fully depreciated assets that are still in use are adequately treated). ComReg also took the view that a top down (**'TD'**) model was to be used where the asset(s) concerned are non-replicable and where the objective is to ensure that there is no over-or-under recovery of costs, while a bottom up (**'BU'**) model should be used where there is a need to send a build-or-buy signal where assets may be replicated by alternative operators and the objective is to encourage the deployment of alternative infrastructure. A scorched node approach was applied in the Revised CAM so that the geographic coordinates of Eircom's MDFs and cabinets were used.

3.18 For the purpose of applying each of the two methodologies (TD-HCA or BU-LRAIC+), ComReg identified three main groups of assets:

a) Reusable passive civil engineering assets i.e., assets which can be reused for NGA including ducts, trenches, chambers and poles (referred to as **'Reusable Assets'**);

b) Other passive local loop assets and non-reusable civil engineering assets: i.e., assets including the network termination unit ('**NTU**'), final drops, D-side

cables, E-side cables, cabinets, and main distribution frames ('**MDFs**') as well as passive civil engineering assets which cannot be reused for NGA (**'Non-reusable Assets'**); and

c) **'Active assets'**, i.e., electronic equipment such as voice and digital subscriber line ('**DSL**') cards and backhaul used for PSTN WLR and SABB services.

3.19 In respect of Reusable Assets, no infrastructure-based competition was expected to develop; cost recovery was the key objective. Reusable Assets were accordingly valued based on the net book value (**'NBV'**) in Eircom's accounts and depreciated over the remaining lifetime of the asset by applying a tilted annuity formula using the asset price index as a parameter (**'the Eircom Indexed RAB approach'**). For Non-reusable Assets (or replicable assets) where the objective is to encourage the deployment of alternative infrastructure, a BU-LRAIC+ methodology was applied. A BU-LRAIC+ methodology was also chosen for active assets (line card, backhaul, etc.) applied with an adjustment for economies of scale. Where a proportion of assets was found to be Non-Reusable, such as ducts and poles, a combination of Eircom's Indexed RAB and BU-LRAIC+ costs was used, and reuse and replacement factors determined.

3.20 This approach was used for each of LLU, SLU, CEI and Dark Fibre and the BU-LRAIC+ and TD-HCA methodologies used both to reflect the part of Reusable, Non-Reusable Assets.[35] It was also applied to CG-SABB and FTTC prices, as set out below.

LLU[36] and SLU

3.21 In order that LLU prices send the appropriate 'build or buy' signals, an additional assumption was made that only lines in urban areas are likely to be unbundled, and therefore only the costs of those lines should be taken into account. The appropriate footprint was defined as a set of 237 exchanges known as the Modified Larger Exchange Area or '**Modified LEA',** excluding the cost of LLU lines longer than 5km.

3.22 As for SLU, lines greater than 1.5km were found unlikely to be technically capable of supporting the required standard of broadband services and were therefore excluded from the SLU price calculation. A national cost base was otherwise used on the basis that this was necessary to send the appropriate

[35] In particular, pole access prices were based on Eircom's Indexed RAB on the basis of 92% reuse of Eircom's pole base (absent NGA roll-out) using projected TD costs, and 8% for pole replacement due to NGA deployment based on BU-LRAIC+ costs. Duct access prices were based on Eircom's Indexed RAB on the basis of 95% reuse of Eircom's duct base (absent NGA roll-out) using projected TD costs, and 5% for duct replacement due to NGA deployment based on BU-LRAIC+ costs. Also, to note ComReg treat active assets as non-reusable.

[36] Eircom's ARO refers to Unbundled Local Metallic Path (ULMP) rather than LLU. However, LLU is used here for consistency with previous ComReg decisions and the ANM documentation.

'build or buy' signals given that there could be a demand for SLU lines nationally including in rural areas in order to deliver broadband services as part of the NBP. This was also considered to be appropriate given that SLU was a direct input into Eircom's regulated VUA price (relevant for urban areas).

Dark Fibre[37]

3.23 Under the 2018 WLA/WCA Market Review Decision Eircom is required to provide access to Dark Fibre only in those circumstances where access to civil engineering infrastructure (ducts and poles) is not available for economic, technical or capacity reasons and where Dark Fibre is available. The regulated price for Dark Fibre also only applies in those circumstances. In the 2016 Access Pricing Decision the price was set by metre of fibre in respect of two geographic areas, being Dublin, and Provincial areas, and designed to recover the cost of access to fibre optic cables deployed mainly in urban areas including a share of the cost of duct and pole access that is used to support the deployment of those fibre cables based on the relative capacity of that infrastructure (mainly ducts) occupied by the fibre cables. BU-LRAIC+ methodology is used to calculate costs for Non-reusable Assets, and TD HCA for Reusable Assets.

Line Share

3.24 The cost-oriented price for Line Share reflects the fact that Line Share is only available where a narrowband service is availed of in respect of the same line, and that other service allows Eircom to recover the costs of the local loop. The price for Line Share is accordingly determined by reference to the incremental costs of providing the Line Share service, that is, the incremental cost (excluding fault clearance) of supporting broadband services on a line that is also used to support narrowband services, which was found to be limited to (a) the remedial costs associated with pair gain removal[38]; and (b) carrier administration and billing costs.

CG SABB

3.25 The 2018 WLA/WCA Market Review Decision re-imposed an obligation of cost orientation for CG SABB in respect of the Regional WCA Market. The cost-oriented price is derived from TD HCA costing methodology except for Active Assets where the costs are calculated using a BU-LRAIC+ methodology. This

[37] Please see Section 8.4 of the 2016 Access Pricing Decision, paragraph 8.616 of the 2016 WLA/WCA Market Review Consultation and paragraph 7.1229 of the 2018 WLA/WCA Market Review Decision.

[38] Pair gain systems (sometimes called carrier systems) can transmit multiple narrowband signals over the same copper loop to allow the sharing of that copper loop between end users for narrowband voice. However, pair gain systems have to be removed if the line is to be used for broadband and the costs of removal were treated as capital cost.

allows Eircom to recover its costs while incentivising OAOs to migrate to fibre-based services where efficient to do so.[39]

3.4 Impact of the ANM Review on existing price controls

3.26 ComReg does not propose to amend its approach to the costing of LLU, SLU or Dark Fibre which will continue to be set on the basis for a combination of BU-LRAIC+ and TD-HCA. ComReg in particular does not consider that a review of the methodologies underpinning the pricing for LLU and SLU is required in the context of the update of the Revised CAM and development of the ANM. Although take-up of these services is presently less than 2,500 LLU, and 0 for SLU, and expected to remain low, LLU and SLU are essential components of the "cost stack" for FTTC-based services and accordingly, the underlying rationale for the choice of methodologies continues to apply. ComReg also does not propose to review the costing approach to Line Share. ComReg notes that take-up of this service is expected to remain low and is presently less than 20,000 subscribers.

3.27 There are, however, a number of changes which ComReg proposes to make to the existing price controls with the view to reflecting in the prices derived from the Revised CAM/ANM the market and regulatory developments recalled below.

National Broadband Plan

3.28 The National Broadband Plan ('**NBP**') is the Government's initiative to provide high speed broadband in geographic areas not served by commercial operators. The NBP aims to ensure that all citizens across Ireland have access to high speed broadband infrastructure capable of supporting download speeds of at least 30 Mbps by 2026. It is the responsibility of the Department of the Environment Climate and Communications ('**DECC**') (formerly the Department of Communications, Climate Action and Environment).

3.29 National Broadband Ireland ('**NBI**') has been awarded the NBP contract by the DECC and it has committed to a seven-year plan to deploy its fibre network. NBI expects to make extensive use of Eircom's CEI (ducts and poles). NBI is expected to become the main provider of wholesale fibre broadband services in the NBP Intervention Area ('**NBP IA**') after it completes the full deployment of its network. NBI will require widespread and long-term access to Eircom's CEI.

3.30 In the NBP IA customers on Eircom's existing legacy copper network are likely to transition to NBI's fibre network as it becomes available but in the interim,

[39] Please see 2016 WLA/WCA Market Review Consultation, Section 13, paragraph 13.300; and 2018 WLA/WCA Market Review Decision, Section 12, paragraph 12.353(d). The justification for the current methodology for CG SABB is set out in Chapter 7 of the 2016 Access Pricing Decision, specifically paragraph 7.21.

Eircom will continue to supply copper based services to customers in areas where NBI has yet to deploy and offer its fibre broadband services.

3.31 Separately, Eircom has rolled out FTTH to over 300,000 premises in those rural commercial parts of the Country, based on a commitment agreement (from April 2017) between the DECC and Eircom. During 2018, Eircom announced plans to rollout FTTH to circa 1.4m urban addresses over the next five years[40]. The FTTH network has been overlaid on Eircom's existing network of duct and poles (including buildings) and it is anticipated that customers on copper-based services will migrate to fibre.

3.32 There are accordingly three distinct footprints which may be identified, as set out in the Interactive Map developed by DECC (the '**High Speed Broadband Map**').[41] These footprints are:

a) Urban Commercial, corresponding to the footprint where commercial operators are delivering or have indicated plans to deliver high speed broadband services. It is also the footprint where Eircom has deployed FTTC. This footprint is identified in the DECC High Speed Broadband Map as the Blue area and covers approximately 1.5m premises. This footprint is referred to throughout this document as the '**Urban Commercial Area**';

b) Rural Commercial, corresponding to the footprint where Eircom committed to roll out high speed broadband to 300,000 premises, based on a commitment agreement entered into in April 2017 between the DECC and Eircom.[42] This footprint was originally identified in the DECC High Speed Broadband Map as the Light Blue area and this includes circa 300,000 premises.[43] This footprint is referred to throughout this document as the '**Rural Commercial Area**'; and

c) The NBP Intervention Area, corresponding to the target areas for State intervention under the NBP, as defined by the DECC.[44] It is also referred to by the DECC as the non-commercial 'Intervention Area', where there is no existing or planned commercial high speed broadband services available. This area includes circa 537,000 premises (delivery points) and is identified in the DECC High Speed Broadband Map as the Amber area.[45] It is referred to

[40] https://www.eir.ie/pressroom/eir-announce-first-quarter-FY19-results-to-30-September-2018/
[41] https://www.dccae.gov.ie/en-ie/communications/topics/Broadband/national-broadband-plan/high-speed-broadband-map/Pages/Interactive-Map.aspx
[42] Agreement between the Minister for Communications, Climate Action and Environment and Eircom Limited in relation to National broadband plan – commercial deployment commitment; https://www.dccae.gov.ie/documents/Commitment%20Agreement.pdf
[43] This is based on the NBP Map published in April 2017. Premises to be covered by the 300k were initially designated as "Light Blue" in April 2017 but would have transitioned to "Blue" as they were passed by Eircom's FTTH.
[44] In the EC State Aid Decision, the area requiring intervention is called the "white" NGA areas.
[45] https://www.dccae.gov.ie/en-ie/communications/topics/Broadband/national-broadband-plan/state-intervention/Pages/Connecting-Communities.aspx

throughout this document as the '**NBP IA**'.

d) The Rural Commercial Area and the Urban Commercial Area are collectively referred to throughout this Consultation as the '**Commercial Areas**'.

3.33 In light of these market developments, there are a number of adjustments to the cost bases used to derive cost-oriented prices which ComReg believes are appropriate, discussed in further detail in Section 6, as follows:

a) Insofar as LLU is concerned, the costs should be those of the lines in the Urban Commercial Area;

b) Insofar as SLU is concerned, following the award of the NBP contract to NBI, it has become apparent that SLU will not be availed of for the NBP and that NBI instead will rely on CEI access. It is appropriate, therefore, that the cost-oriented price for SLU is calculated by reference to the same footprint as LLU, namely the Urban Commercial Area;

c) In so far as Dark Fibre is concerned, there does not appear to have been significant demand to date. It is assumed that NBI will not avail of Dark Fibre so that any demand for Dark Fibre will most likely arise in the same areas as existing Leased Line demand. Also, both Dark Fibre and Leased Lines are point to point services. Consequently, the pricing of Dark Fibre has been based on the fibre costs associated with Leased Line access.

The 2018 Pricing Decision

3.34 In the 2018 WLA/WCA Market Review Decision, ComReg imposed an obligation of cost orientation for FTTC prices which is further specified in the 2018 Pricing Decision. Under the 2018 Pricing Decision, FTTC prices are not calculated by the Revised CAM; they are therefore not directly impacted by the review of the ANM. Rather they are derived from two other models, the NGA Cost Model and the NGN Core Model and based on a weighted average of the costs of providing cabinet and exchange launched VDSL services:

a) The NGA Cost Model primarily models the costs of FTTC/EVDSL specific infrastructure (e.g. FTTC cabinets and DSLAMs); and

b) The NGN Core Model is used to derive certain core network cost inputs that are relevant to the provision of FTTC based NGA services (e.g. inter-aggregation link[46] costs for Bitstream and the link costs from the aggregation node to the exchange for VUA).

3.35 For the purpose of deriving cost-oriented prices for FTTC, ComReg assessed the recovery of access network costs across the various access services. Price controls generally allow Eircom to recover access network costs across all

[46] This includes the link between Local VUA and Remote VUA.

lines/services with reference to the nationally averaged cost of a copper line. In the 2018 Pricing Decision ComReg found that use of national average cost for FTTC based VUA/Bitstream services would not be appropriate because those services are not available to the entire national customer base (by contrast to PSTN WLR) but instead serve an urban footprint of shorter lines than the average. The FTTC VUA charges should be set with reference to the geographic limits of the access network required to pass and serve FTTC customers and should not be expected to make the same contribution to access cost recovery as those services provided nationally.

3.36 This geographic limit was applied to the costs for SLU and LLU which are key inputs to the NGA Cost Model[47]. In particular, the SLU and LLU cost inputs were adjusted based on the considerations in the 2018 Pricing Decision to reflect the shorter line lengths and higher line densities typical of FTTC and EVDSL services to better inform the build/buy decisions of all network operators providing NGA services in commercial areas.

3.37 The 2018 Pricing Decision also modified the approach generally used in price controls for the allocation of common costs (referred to below in Section 4 as '**common corporate costs**'). The Revised CAM attributes common corporate costs on an Equi-Proportionate Mark Up (**'EPMU'**) basis, where the direct costs are marked up by an equal percentage. In the 2018 Pricing Decision, ComReg decided for the purpose of FTTC pricing[48] that the EPMU approach was not appropriate. Instead, FTTC prices should be set to recover common corporate costs from the commercial line base where FTTC services may be offered, and common corporate costs should be allocated on a cost per service basis. This means that the SLU and LLU cost inputs into the NGA Cost Model are calculated to recover the same level of access network common and shared costs from both services.

3.38 As explained in further detail in Sections 5 and 6, the reasons for the approach followed in the 2018 Pricing Decision applies equally in respect of prices derived in the ANM. The ANM accordingly updates the Revised CAM to reflect this approach.

The 2020 WACC Decision

3.39 The 2020 WACC Decision sets a new WACC rate of 5.61% in respect of fixed line telecommunications. Under the Decision, ComReg is to use the most up-to-date WACC rate in its pricing decisions. In addition, in respect of existing price controls, ComReg may intervene following on the adoption or publication of a

[47] Please see the details in Chapter 6 of the 2018 Pricing Decision.
[48] See para 6.226 of the 2018 Pricing Decision for further details.

new WACC rate in exceptional circumstances or where there is a material impact on prices.

3.40 In the light of this, amendments to the Revised CAM include updating for the new WACC rate of 5.61%. In addition, following ComReg's indication in the 2018 Pricing Decision that FTTC prices may be updated for the WACC, ComReg has reviewed the impact of both the change to the WACC and updated cost inputs from the ANM Model on the NGA Cost Model and NGN Core Model. As set out in Section 6 below, in light of the material impact on FTTC prices, ComReg proposes to update applicable prices.

3.41 As a result, ComReg proposes also to review CGA Bitstream prices in order to ensure that build/buy signals for CGA and NGA remain consistent. Prices for CG Bitstream are set based on Eircom's BU-LRAIC+ costs in order to allow Eircom to recover its costs while incentivising OAOs to migrate to fibre-based services where efficient to do so.[49]

3.5 FTTH connections/migrations charges

3.42 Finally, the 2018 Pricing Decision also sets out a pricing mechanism for FTTH connections / migrations. In summary, Eircom is obliged to ensure that:

a) The charges for new connections and migrations to another service provider should be the same; and

b) The combination of a new connection charge and a charge for migration to another service provider should not exceed the level that would allow Eircom to recover its customer specific connection related investment over the lifetime of the underlying assets, given the same assumptions about customer churn as are used in the margin squeeze tests.

3.43 Following on from the 2018 Pricing Decision Eircom set the price for FTTH connections / migrations at €170 (please see ComReg Information Notice 18/101[50]). From 1 July 2020, Eircom reduced the charge for FTTH connections / migrations to €100.

3.44 In a settlement of legal proceedings brought by Sky against ComReg's 2018 WLA/WCA Market Review Decision and 2018 Pricing Decision, ComReg indicated that in at the same time as consulting on the ANM, ComReg would consider the level of FTTH connection costs and issue a call for inputs on the

[49] ComReg Consultation 17/26 in Section 9, paragraphs 9.25 to 9.34 and confirmed in Section 9, paragraph 9.83 of the 2018 Pricing Decision. The justification for the current methodology applying to CG Bitstream and BMB ultimately relied on that contained in in Chapter 9 of the 2018 Pricing Decision, specifically paragraph 9.49.

[50] https://www.comreg.ie/publication-download/ftth-connection-migration-charges

market impact of the pricing of FTTH connection and migration charges. This is dealt with in Section 8.

3.6 The 2020 FACO Consultation

3.45 In the 2016 Access Pricing Decision ComReg imposed an obligation of cost orientation on PSTN WLR, the fixed access part of SB-WLR.[51] In that Decision, ComReg also further specified the cost orientation obligation such that the monthly rental price for PSTN WLR should be based on the higher of:

a) Eircom's actual costs adjusted for efficiencies for the provision of SB-WLR nationally with the BU-LRAIC+ costs applied to the active equipment; or

b) The BU-LRAIC+ costs for non-reusable assets and active equipment and Eircom's indexed regulatory asset base for reusable assets for the provision of SB-WLR in the Modified LEA.

3.46 The current price for PSTN WLR is a price point generated by the methodology prescribed at part (a) above, as derived under the Revised CAM. This price includes the rental costs, fault repair costs, connection/provisioning costs, and a reasonable return for investments undertaken by Eircom.

3.47 In the 2020 FACO Consultation (Section 10) ComReg has proposed that a price control obligation should be imposed on Eircom in relation to PSTN WLR in the Regional Low-Level FACO Market, in order to address the competition problems identified in Section 9 of the 2020 FACO Consultation, namely, Eircom's ability and incentive to potentially engage in a range of anti-competitive pricing behaviours to the detriment of competition and end users. These include the risk that Eircom could, in the Regional FACO Markets[52], charge excessive prices for FACO products, services and facilities, or that Eircom might impose a margin squeeze in order to leverage its SMP position into adjacent or downstream markets. In light of this, ComReg considers that the imposition of obligations of price control and cost accounting on Eircom is justified and proportionate, and particularly so for PSTN WLR given that it is essential for the provision of voice telephony services in the Regional Low-Level FACO Market.

3.48 In this Consultation ComReg assesses the various forms of price control that may apply to PSTN WLR. In addition, ComReg proposes to specify the preferred form of price control as well as the proposed costing methodology (i.e., cost base and cost model) that should apply, having regard to its statutory objectives set

[51] SB-WLR is comprised of two elements, fixed access and the ability to make and receive calls. The fixed access element is provided over wholesale line rental, such as over PSTN or ISDN.
[52] See footnote 10.

out in Section 12 of the Act, Regulation 16 of the Framework Regulations, and Regulation 6(1), 8(6), and 13 of the Access Regulations.

3.49 Section 10 (on the RIA) explicitly addresses how ComReg's statutory obligations have been factored into the proposed price control and costing methodology for PSTN WLR. The proposed price control and cost methodology for PSTN WLR in the Regional Low-Level FACO Market is discussed in Section 4.

3.7 Points to consider when setting wholesale access prices

3.50 Each of the services listed above in paragraphs 3.10, 3.11 and 3.45 is subject to a price control obligation of cost orientation. ComReg considers below the implications, if any, that the update of the ANM together with the recent WACC decision, have on the price controls.

3.51 ComReg is aware that, since the 2016 Access Pricing Decision was finalised, Eircom's HCAs have continued to report returns for narrowband services in excess of the then regulated WACC of 8.18%. This is despite the fact that the 2016 Access Pricing Decision had set the price for PSTN WLR (which is the predominant narrowband service) on the basis of the national TD costs (including a BU cost for the line card) and the expected demand for copper based services as modelled in the Revised CAM.

3.52 When prices are set using a BU approach, the modelling is based on the costs of a Hypothetical Efficient Operator ('**HEO**') building a new network, whereas TD models are based on the operator's (Eircom's) accounting information and reflect the actual costs incurred in operating (and building) the existing network. Consequently, returns based on cost-oriented prices that are set using a TD approach are more likely to align with the regulated WACC than would be the case if a BU costing approach is used to inform prices.

3.53 When setting cost prices in the 2016 Access Pricing Decision, ComReg adopted a TD approach to cost the copper access network but made allowances for the fact that once-off events, such as an atypical level of storm activity in a year, can mean that reported costs in any given year are higher or lower than expected. As a result, the level of reported returns in the accounts will not necessarily align with the regulated WACC. However, ComReg still expects that the average return over the price control period should, on average, tend towards the regulated WACC when cost oriented rates are predominantly set with reference to Eircom's TD costs. The fact that this has not been the case has prompted ComReg to undertake an analysis of Eircom's recent HCAs to gain a fuller understanding of the underlying reasons for the higher level of returns recorded against narrowband services in the accounts.

3.54 The focus of this analysis has been on the "Wholesale Fixed Narrowband & Unbundled Access" statement within Eircom's HCAs where the costs and revenues associated with narrowband services such as PSTN WLR are recorded. The "Statement of Average Cost and Revenue by Service" on page 14 of the published HCA Statements lists the service that are included in this statement, and PSTN WLR accounts for most of these revenues (€207M / €245M in FY 2018/19), with the SB WLR ISDN services accounting for most of the remaining revenues (€36M / €245M) as per the extract from the accounts for the financial year ended in 30 June 2019 included in the following table:

Table 6: Extract from Eircom's HCAs[53]

Statement of Average Cost and Revenue by Service

Wholesale Fixed Narrowband & Unbundled Access
For the year ended 30 June 2019

Market summary

	External revenue	Internal revenue	**Total revenue**	Total operating costs	**Return**	*Return on Turnover*	**Mean capital employed**	*ROCE*
	€'000	€'000	€'000	€'000	€'000		€'000	
Jun-19	53,189	191,435	**244,624**	151,959	**92,665**	*37.88%*	**642,702**	*14.42%*

Service	External revenue	Internal revenue	**Total revenue**	Volume	Unit	**Average revenue**	**FAC average cost**	*Average revenue / cost*
	€'000	€'000	€'000	000's		€	€	
SB WLR PSTN Rental & Connections	46,738	160,306	**207,044**	1,043	Lines	**16.55**	**14.92**	*111%*
SB WLR ISDN BRA Rental & Connections	2,624	15,256	**17,880**	50	Lines	**29.61**	**13.98**	*212%*
SB WLR ISDN FRA/PRA Rental & Connections	1,916	15,838	**17,755**	5	Lines	**276.44**	**113.11**	*244%*
LLU & Line Share Connections	23	-	**23**		n.m			
LLU Rental	547	-	**547**	3	Lines	**13.42**	**18.03**	*74%*
Line Share Rental	303	-	**303**	28	Lines	**0.8921**	**0.125**	*715%*
Physical Co-location	1,037	35	**1,072**		n.m			

	External revenue	Internal revenue	**Total revenue**	Total operating costs	**Return**	*Return on Turnover*	**Mean capital employed**	*ROCE*
	€'000	€'000	€'000	€'000	€'000		€'000	
Jun-18 Restated	61,811	193,544	**255,355**	170,587	**84,768**	*33.20%*	**664,840**	*12.75%*

Service	External revenue	Internal revenue	**Total revenue**	Volume	Unit	**Average revenue**	**FAC average cost**	*Average revenue / cost*
	€'000	€'000	€'000	000's		€	€	
SB WLR PSTN Rental & Connections	54,284	159,814	**214,098**	1,088	Lines	**16.39**	**15.18**	*108%*
SB WLR ISDN BRA Rental & Connections	2,911	16,235	**19,146**	54	Lines	**29.68**	**17.50**	*170%*
SB WLR ISDN FRA/PRA Rental & Connections	2,079	17,480	**19,559**	6	Lines	**275.53**	**108.77**	*253%*
LLU & Line Share Connections	50	-	**50**		n.m			
LLU Rental	924	-	**924**	6	Lines	**13.07**	**21.63**	*60%*
Line Share Rental	494	-	**494**	39	Lines	**1.07**	**0.202**	*529%*
Physical Co-location	1,068	15	**1,083**		n.m			

Average revenue and costs are monthly averages.
Rental volumes are average volumes.

Source: Eircom's published HCAs, FY 2018/19, page 15

[53] https://www.eir.ie/opencms/export/sites/default/.content/pdf/regulatoryinformation/hca_fy_1819.pdf

3.55 The table above contains a comparison of the average revenue and average costs for each of the main services. The average costs information includes a Return on Capital Employed ('**ROCE**') based on the regulated WACC of 8.18% so that the ratio of "Average revenue / cost" provides a basis for assessing the extent that each service is generating a return either over or below the regulated WACC. For example, the ISDN services generated the most significant returns, with the ratio of "Average revenue / cost" for both ISDN services in excess of 200% in the financial year ending 30 June 2019. However, the vast majority of ISDN demand is in the Urban FACO Markets, which ComReg is proposing to deregulate; it is also reasonable to assume that ISDN services can increasingly be replaced by new IP based solutions such as SIP Trunking. Consequently, ISDN service volumes should continue to decline and ComReg did not propose any changes to the pricing of ISDN services in the 2020 FACO Consultation.

3.56 The "Average revenue / cost" for LLU is reported as 74%, indicating that LLU is not making its regulated WACC on an HCA basis. However, demand for LLU is shown as 3k, and the level of averaging in the network studies that Eircom uses to inform the cost allocations may not give a true reflection of actual returns for such a small line base, as a small change in a study parameter can have a material impact on cost allocations for a service with demand that is such a small proportion of the overall demand.

3.57 The "Average revenue / cost" for PSTN WLR was 111% in FY 2018/19, up from 108% in FY 2017/18. In the Explanatory Report to the HCAs, Eircom noted that the increase in average revenue followed a price increase at the start of the year and the main reason given for the reduction in reported costs is that the level of storm activity was more severe in FY 2017/18 than in FY 2018/19 with the result that operating costs decreased by 11%[54].

3.58 Nonetheless, the "Average revenue / cost" ratio over the two years for PSTN WLR would still exceed 100%. Part of the reason for these reported excess returns is that the line card component of the PSTN WLR price is set with reference to the BU-LRAIC+ costs of the active equipment, while the actual costs in the accounts reflect the fact that almost all of the assets specific to the line card have been fully depreciated; hence, reported costs are lower that the modelled BU-LRAIC+ costs. It is also a fact that, when deriving the PSTN WLR rates, the Revised CAM assumed that copper line volumes would decrease faster than Eircom has actually experienced in the early years of the price control, with the result that the unit costs in the Revised CAM are modelled to be slightly higher than the unit costs recorded in the accounts[55]. However, despite these

[54] See page 29 of Eircom's HCAs, for year ended 30 June 2019.
[55] Before finalising the 2018 Pricing Decision, the line volumes were adjusted to reflect actual trends when the Revised CAM was used to derive the LLU and SLU cost inputs to the NGA Cost Model that calculates the NGA VUA prices.

factors ComReg would still expect the "Average revenue / cost" ratio to be closer to 100% on average over a number of years.

3.59 Another factor to consider when assessing the reported returns in FY 2018/19 is the impact that the price reductions on the POTS based FTTC charges that were implemented in the 2018 Pricing Decision should have on average PSTN WLR revenues. Eircom bills for POTS based FTTC as a combination of two charges: a Supplemental POTS rental charge and an NGA VUA POTS based rental charge, with Supplemental POTS rental effectively treated as the anchor product.

3.60 Prior to the 2018 Pricing Decision Eircom had priced the POTS based FTTC service on the basis that it should recover the same copper loop costs as the PSTN WLR service. However, in the 2018 Pricing Decision ComReg recognised that FTTC services are delivered using shorter copper lines on average than PSTN WLR services and therefore set the associated prices by capping the line lengths of the POTS based FTTC service at 3km for the LLU component. This reduced the level of copper related costs that Eircom could recover from a POTS based FTTC service.

3.61 Consequently, all of the 2018 Pricing Decision reductions applied to the PSTN WLR element of the POTS based FTTC charge, as this generated the revenue to recover the costs of the copper loop. ComReg expected that the price reduction would be implemented as a price reduction for the PSTN WLR component, which would lead to lower PSTN WLR service revenues being reported in the "Wholesale Fixed Narrowband & Unbundled Access" statement. However, when Eircom implemented the 2018 Pricing Decision reductions from 1 March 2019, it did so by continuing to charge €16.41 for PSTN WLR rental and applying all of the required price reduction to the NGA VUA POTS based service[56]. The HCAs also reported the revenues in this way, with the result that the impact of the price reduction only affected the reported revenues in the "Wholesale Broadband Access" statement.

Table 7: Price comparisons

Services	2018 Pricing Decision Prices €	Eircom's Reference offer prices €
FTTC based VUA	19.54	
PSTN WLR		16.41
POTS based FTTC	2.64	5.77
Total POTS based FTTC	**22.18**	**22.18**

[56] ComReg understands that this was due to operational issues that restricted Eircom's ability to implement the directed prices in its wholesale billing system.

3.62 While it may not be unreasonable to base the reporting of revenues in the HCAs on the prices listed in the wholesale reference offers, it is still ComReg's view that the 2018 Pricing Decision reduced the charges for the PSTN WLR element of the POTS based VUA charge and, if the price reductions determined in the 2018 Pricing Decision were reported as modelled in the NGA Cost Model, it should lead to a reduction in the revenues reported in the "Wholesale Fixed Access Narrowband and Unbundled Access" statement.

Table 8: Comparison of copper recovery

Services	2018 Pricing Decision Prices €	Eircom's Reference offer prices €
Copper	11.02	15.07
Other	8.52	1.34
Anchor price	*19.54*	*16.41*
Copper	1.30	-
Other	1.34	5.77
Supplement	*2.64*	*5.77*
Total POTS Based	**22.18**	**22.18**
Total Copper Recovery	12.32	15.07

3.63 Consequently, when compared with the structure of prices determined in the 2018 Pricing Decision, the returns and average revenue for the PSTN WLR service in the "Wholesale Fixed Narrowband & Unbundled Access" statement are overstated and the returns for NGA Rental "Wholesale Fixed Broadband" statement are understated.

3.64 For example, based on the FY 2019 price of €16.41 for standalone PSTN WLR and the total charge of €22.18 for POTS based VUA which applied for the last quarter of FY 2018/19, there is an effective reduction of €2.75 (€15.07 - €12.32 in Table 8) in the PSTN WLR element of the FTTC POTS based VUA service due to the lower allowance for copper cost recovery when the line is used for the FTTC POTS based VUA service. ComReg estimates that applying this reduction for the last quarter of FY 2018/19 would result in a transfer in the region of €4m in reported revenues out of PSTN WLR and into NGA Rental. The equivalent PSTN WLR impact in FY2019/20 is a €2.54 decrease in average price, which could give rise to circa €13m reduction in reported revenues when applied for the full financial year. This, in turn, should result in the ratio of reported "Average revenue / cost" for PSTN WLR moving towards 100% and help address the issue of excess cost recovery that existed prior to the implementation of the 2018 Pricing Decision.

3.65 Considered in this way, in determining the price reductions for FTTC services in the 2018 Pricing Decision, ComReg addressed the issue of excess returns for

copper access services that had existed prior to that decision. Indeed, when making the 2018 Pricing Decision ComReg acknowledged the fact that copper cost recovery allowed for in the FTTC prices was below the national average that informs the PSTN WLR prices and it could result in Eircom not being able to recover its access network costs in the future.[57] However, to date, there is no evidence that the regulated prices have prevented Eircom from recovering its efficiently incurred costs, plus a return on capital at the regulated WACC of 8.18%. Consequently, one focus of this Consultation is to consider the implications that the costs (including a lower WACC) might have on future regulated prices for PSTN WLR in the Regional Low-Level FACO Market, as the 2020 FACO Consultation has proposed confining regulation of PSTN WLR to the Regional Low-Level FACO Markets only.

[57] See the 2018 Pricing Decision, paragraphs, 6.232 to 6.233.

4 Price Control and cost methodologies for PSTN WLR in the Regional Low-Level FACO Market

4.1 The 2020 FACO Consultation

4.1 In June 2020, ComReg completed its market analysis of the FACO market and published its Draft Decision for consultation.

4.2 In the 2020 FACO Consultation ComReg identifies two relevant geographic markets (in respect of two product markets), including the Urban FACO Markets of 459 exchanges covering in or around 1.6 million premises; and the Regional FACO Markets[58] of 744 exchanges covering in or around 0.6 million premises. ComReg proposes to find that the Urban FACO Markets no longer meets the criteria for ex ante regulation, and therefore to remove existing regulation subject to a notice, or sunset period. ComReg proposes also to find that Eircom should continue to be regulated in the Regional Low-Level and High-Level FACO Markets – i.e. at a sub-national level. The Regional Low-Level and High-Level FACO Markets, as explained in paragraphs 1.11, and 1.12 of the 2020 FACO Consultation, are generally comprised of exchanges in more rural settings and are characterised by a lack of alternative competing infrastructure especially fibre broadband. This lack of fibre broadband means that OAOs cannot provide voice services to end-users through more modern technology such as voice over broadband and therefore there is no competitive constraint on Eircom.

4.3 At paragraph 7.186 of the 2020 FACO Consultation ComReg found that due to, among other things, "…*insufficient observable trends towards effective competition, the lack of potential entry, and limited technological developments*…", Eircom continues to have SMP in the Regional Low-Level and High-Level FACO Markets. In other words, OAOs continue to depend on Eircom's wholesale infrastructure and inputs in the Regional Low-Level and High-Level FACO Markets to enable them to serve customers. To remedy this SMP, ComReg has proposed to impose various obligations on Eircom including obligations of access, non-discrimination, transparency and a price control in relation to the Regional Low-Level and High-Level FACO Markets (see Chapter 10 of the 2020 FACO Consultation). In effect, Eircom will have to offer its wholesale input products services and facilities to access seekers in that area.

4.4 In Section 9 of the 2020 FACO Consultation, ComReg's competition concerns are outlined. In particular, in the absence of regulation in the Regional Low-Level

[58] See footnote 10.

and High-Level FACO Markets, ComReg considers that Eircom would have the ability and incentive to engage in a number of conducts to the detriment of competitors, consumers, and, ultimately, end users. These conducts include:

a) Exclusionary practices: where an incumbent acts in a manner which could prevent potential competitors from entering the market, restrain actual competitors from further growth in the market, or induce them to exit the market – such as refusing to supply access to a competitor;

b) Leveraging: where a vertically-integrated service provider with SMP in one market leverages its SMP in order to exert undue influence in other adjacent markets, either at the same level (horizontal leveraging), or at a different level (vertical leveraging) in the distribution chain – such as delaying tactics, unwarranted withdrawal of access already granted, or a margin squeeze; and

c) Exploitative practices: where a service provider with SMP engages in exploitative behaviours, such as excessive pricing or practices leading to inefficiency/inertia, to the detriment of both competition and end users.

4.5 In the 2020 FACO Consultation (Section 10) ComReg has proposed that a price control obligation should be imposed on Eircom in relation to PSTN WLR in the Regional Low-Level FACO Market, in order to address these competition problems. ComReg considered in particular that the imposition of obligations of price control and cost accounting on Eircom is justified and proportionate, and particularly so for PSTN WLR given that it is essential for the provision of voice telephony services in the Regional Low-Level FACO Market.

4.6 A range of price control options are available to ComReg, including, benchmarking, retail minus, margin squeeze test and cost orientation, and ComReg's preferred option is to be guided by the specific objectives being pursued by the price control.

4.7 Insofar as PSTN WLR in the Regional Low-Level FACO Market is concerned, ComReg's objective is to address the risk of Eircom charging an excessive price as its position of SMP allows, while also ensuring that prices do not deter migration from legacy copper-based services to fibre services. In particular, too low a price for PSTN WLR may undermine prospective investments in fibre, deter migration to more modern technologies and inefficiently prolong the copper network. Too high a price would impact on the availability and affordability of the voice service for end-users.

4.8 In identifying the most appropriate price control, ComReg is required to have regard to its statutory objectives set out in Section 12 of the Act and Regulation 16 of the Framework Regulations and in accordance with Regulation 8 of the Access Regulations, ComReg must ensure that the proposed obligation is based

on the nature of the problem identified, and proportionate and justified in light of ComReg's statutory objectives. Regulation 13 of the Access Regulations provides for the imposition of price control obligations where the operator concerned may sustain prices at an excessively high level or may apply a price squeeze to the detriment of end-users. Regulation 13(2) requires that to encourage investments by the SMP operator, ComReg, when considering a price control, takes into account the investments made by the operator and allow the operator a reasonable rate of return on adequate capital employed.

4.9 For the reasons set out below, ComReg believes that an obligation of cost-orientation for PSTN WLR in the Regional Low-Level FACO Market is the most appropriate form of price control to achieve these objectives:

Benchmarking

4.10 Benchmarking, whereby the regulated price is set with reference to the prices of comparable services (which can include prices in other countries) may be used by a Regulator in the absence of sufficient cost data to allow the Regulator to arrive at a suitably informed price for the local market. Such an approach is not warranted here as ComReg has modelled the costs and network data relating to the copper access network in Ireland.

Retail-minus

4.11 A retail-minus price control determines the margin between the wholesale charge and the related downstream retail prices by considering what proportion of retail and other downstream costs would need to be deducted from the retail price in order to be left with appropriate wholesale prices at which Access Seekers, reliant on the upstream (wholesale) input, can effectively replicate the retail offer of the incumbent. This means that there is no control on the actual level of prices, only on the margin between the two. ComReg does not believe that this is appropriate where there is limited network competition as is the case for the Regional Low-Level FACO Market.

4.12 It is important to point out that up until 2016, PSTN WLR was subject to a retail minus price control i.e., the WLR price was based on the retail line rental price minus at least 14%. In the 2016 Access Pricing Decision ComReg decided to amend the price control for PSTN WLR from a retail minus to a cost orientation obligation. Please see Chapter 4 of ComReg Consultation 15/67[59] and Chapter 4 of the 2016 Access Pricing Decision for the reasons for changing from a retail minus to a cost orientation obligation for PSTN WLR.

[59] ComReg Document No. 15/67: Eircom's Wholesale Access Services: Further specification and amendment of price control obligations in Market 4 and Market 5 and further specification of price control obligation in Market 2. Dated 03/07/2015

Margin squeeze test

4.13 A margin squeeze prevents Access Seekers relying on the incumbent's upstream inputs to replicate profitably the incumbent's downstream offers, and hence they may exit the market, to the ultimate detriment of end users. Margin squeeze tests ('**MSTs**') whereby a minimum margin is set may help promote entry and support sustainable competition. However, at the same time, they can influence the intensity of competition and preserve inefficient competitors. The drawbacks of MSTs are in many respects similar to that of retail minus price controls, as there is no control on the actual level of prices, only the margin. ComReg does not believe that an MST would be appropriate or sufficient where there is limited network competition as is the case for the Regional Low-Level FACO Market.

Cost orientation

4.14 By contrast, an obligation of cost orientation ensures that the price is neither too low – thereby undermining prospective investments in fibre, deterring migration to more modern technologies and prolonging the copper network inefficiently, nor too high – impacting on the availability and affordability of the voice service for end-users. Cost orientation also helps ensure greater predictability of access price levels for OAOs, thereby allowing them to make investment decisions and develop business plans with a greater degree of confidence. A cost orientation obligation does not suffer from the drawbacks of retail minus and MSTs whereby it is possible that retail prices are unconstrained and wholesale prices can, therefore, be set at an excessive level. Hence, if the access price is set too high, service-based competition may not develop and efficient investment decisions may be impaired due to the wholesale price misrepresenting the build/buy signal.

4.15 Given the discussions above relating to the various forms of price control options, ComReg considers that a cost orientation price control obligation for PSTN WLR is justified and proportionate in this instance.

4.16 Cost orientation price controls can be designed to identify the correct level of access prices ensuring an adequate rate of return to the incumbent. In this regard, ComReg's objective in the case of Eircom's provision of PSTN WLR in the Regional Low-Level FACO Market is not necessarily to encourage entry given the limited prospect for rival operators to deploy infrastructure in this area. Rather PSTN WLR prices should be set to ensure efficient use of Eircom's existing assets while also allowing Eircom to recover any efficient costs that it incurs to maintain its network, taking into account expected migration of copper services off Eircom's copper access network over the next few years, either onto Eircom's FTTH network or onto the NBP network with potential increase in unit costs as copper volumes decline.

4.17 ComReg recognises that the prospect of copper switch-off will be likely to arise once FTTH has been deployed[60] across the exchanges in the Regional Low-Level FACO Market, and that the migration of copper onto fibre could be impeded if the retail prices for copper services were too low compared to the fibre alternatives. However, cost oriented wholesale prices for the line base in the Regional Low-Level FACO Market is not expected to give rise to significant reduction in retail prices, which tend to be set nationally.

4.18 Furthermore, it is not expected that copper switch-off will be achieved in the Regional Low-Level FACO Market during the proposed price control period. In any event, the presence of fixed costs in the copper network should mean that, in the period after FTTH is deployed in the Regional Low-Level FACO Market, the transition of demand of copper onto fibre is likely to put upward pressure on the unit costs of copper services.

4.19 Consequently, ComReg is of the preliminary view that imposing cost-oriented prices for PSTN WLR in the Regional Low-Level FACO Market for the proposed price control period should not impede the future migration of copper onto FTTH.

4.20 The costing methodology to be used to set the cost-oriented price for Eircom's PSTN WLR service is discussed more particularly below.

ComReg's preliminary views:

4.21 A cost orientation price control should apply in relation to Eircom's PSTN WLR service in the Regional Low-Level FACO Market.

Q. 1 Do you agree with ComReg's preliminary view that the price control obligation for PSTN WLR in the Regional Low-Level FACO Market should be based on cost orientation? Please provide reasons for your response.

4.2 Costing methodologies

4.22 The costing methodology determines which costs are included in the relevant cost model and how this is transformed into a unit price for Eircom's PSTN WLR service. The following questions are relevant in determining the appropriate costing methodology to adopt:

a) What cost items should be included?

b) How should costs be assessed?

c) What model should be used to arrive at unit cost?

[60] The FTTH deployment will need to be undertaken by both Eircom and NBI, as the exchanges in the Regional Low-Level FACO Markets comprise both commercial and Intervention Area premises.

4.23 When choosing the appropriate costing methodology in order to determine the relevant costs of regulated services, ComReg must balance several objectives including: the promotion of competition; incentivising infrastructure investment; ensuring the appropriate cost recovery for Eircom; while ensuring the interests of end-users. Regulation 13 of the Access Regulations also provides that the regulator should consider the investment made by the operator and allow the operator a reasonable rate of return on adequate capital employed.

4.24 In the case of Eircom's provision of PSTN WLR in the Regional Low-Level FACO Market the objective is not necessarily to encourage entry given the limited prospect for rival operators to deploy infrastructure in this area, so wholesale prices such as PSTN WLR should be set to ensure efficient use of Eircom's existing assets while also allowing Eircom to recover any efficient costs that it incurs to maintain its network. Therefore, the focus of the modelling has to be on those assets that are used to provide PSTN WLR services in the Regional Low-Level FACO Market as distinct from the average national cost approach to modelling PSTN WLR costs that was adopted in the 2016 Access Pricing Decision and reapplied in the 2018 Pricing Decision.

4.25 The fact that Eircom's Fixed Asset Register ('**FAR**') records the costs of access assets such as copper cables, ducts and poles at an exchange level facilitates this type of geographic analysis, as it means that the ANM can categorise each exchange as being in either the Regional Low-Level FACO Market or the Urban Low-Level FACO Market and analyse the costs accordingly. Similarly, the fact that Eircom records service demand at the individual exchange level allows the ANM to isolate the level of demand in both markets.

4.26 Another important factor in the context of deriving a price for PSTN WLR in the Regional Low-Level FACO Market is the impact of migration of copper services off Eircom's copper access network over the next few years, either onto Eircom's FTTH network or onto the NBP network. Consequently, the cost modelling has to consider the extent that unit costs in the future might increase as copper volumes decline and the implications this might have for Eircom's ability to recover the efficiently incurred investments it has made in its copper network in the Regional Low-Level FACO Market.

4.27 In particular, the asset lives of copper cables range from 15 to 20 years and not all recent investment in these assets may have been depreciated by the time Eircom retires its copper network. As a result, any assessment of cost recovery in the TD model has to take a long term view and recognise the extent that excess recovery in periods when demand is high on the network can offset the losses incurred when demand is low or residual asset values are written-off as the copper network is retired.

4.28 The remainder of this section is discussed under the following headings:

a) Cost standards;

b) Cost bases; and

c) Cost models.

Cost standards

4.29 The use of cost standards is the means by which costs are allocated to services with the purpose of allowing the operator (in this case Eircom) to recover all the efficiently incurred costs associated with its network.

4.30 Certain assets and resources are dedicated to specific services and, therefore, direct costs can be recovered solely from those services. However, where assets and resources are used to deliver numerous services (a common occurrence in telecommunications), rules are needed to inform the allocation of the related costs to the particular services that the assets and resources support:

a) Joint costs are costs incurred by some but not all services (e.g. DSLAMs can provide voice and internet services, but are not compatible with high speed leased lines);

b) Common (or shared) network costs are costs used by all services (e.g. common network costs of ducts and trenching are consumed to various degrees by all fixed line services); and

c) Common corporate overhead costs[61] (referred to below as '**common corporate costs**') are costs that cannot be allocated to services using a specific allocation method (e.g. the costs of the Chief Executive's office which cannot be associated with one single service or a single set of services would be allocated to all services).

4.31 Table 9 below outlines some of the cost standards options considered by ComReg in the context of PSTN WLR and a brief description of each:

[61] Common corporate costs generally relate to general overheads which typically include general IT system costs, office accommodation and transport management as well as corporate costs such as finance, legal, HR and senior management

Table 9: Cost Standard Descriptions

Concept	Description
(Pure) Long Run Incremental Cost ('LRIC')	LRIC includes the direct fixed and variable costs relevant to the increment of providing the service over the long-run (or often referred to as '**Pure LRIC**'). As a result, this 'Pure LRIC' approach does not include recovery of common (or shared) network costs or corporate overhead costs, from other divisions of the operator's business.
Long Run Average Incremental Cost ('LRAIC')	LRAIC includes all of the average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned over the long-run. The main difference between LRAIC and LRIC, is that the increment that is considered under LRAIC tends to cover a wider range of services compared to the LRIC approach, e.g. LRAIC could consider all voice services while LRIC would focus on a sub-set of voice services such as wholesale call termination. LRAIC also includes an attribution of common (shared) network costs.
Long Run Average Incremental Cost plus an allocation for corporate overhead costs ('LRAIC+')	LRAIC+ is calculated in the same way as LRAIC, except LRAIC+ includes a mark-up to allow for the recovery of common corporate costs typically using an equi-proportionate mark-up ('**EPMU**'). Hence, LRAIC+ includes all of the average efficiently incurred variable and fixed costs that are directly attributable to the activity concerned over the long-run, plus a mark-up for common corporate costs.
Fully Allocated Cost ('FAC')	FAC includes all of the costs efficiently incurred by the regulated operator, including sunk costs, which are typically allocated to products following allocation rules determined by the direct or indirect causality of costs with products. This approach includes all fixed costs, common (shared) network costs and common corporate costs. The FAC approach results in a price signal which has the advantage of being relatively consistent with the recorded investments incurred by the SMP operator. The FAC approach is similar to LRAIC+ to the extent that it attributes common costs between the various services offered by the operator. However, the LRAIC+ and FAC outcomes can differ due to the different efficiency levels that are inherent to both approaches. The concept of LRAIC+ cost is generally applied in the context of an efficient operator building a modern network, whereas the FAC concept is usually applied to an existing operator and so runs the risk of including legacy inefficiencies.

4.32 ComReg considers that applying either a LRAIC+ or a FAC approach to cost PSTN WLR is consistent with ensuring the appropriate cost recovery for Eircom, as all relevant costs, including a reasonable attribution of common (shared) network costs and corporate overhead costs, are considered in the calculations. A LRAIC+ approach is generally used in a BU model while a FAC based approach is the preferred option when modelling TD costs.

Cost bases

4.33 The next consideration is how costs should be assessed. There are two options in terms of considering the appropriate cost base to adopt:

a) Current cost; or

b) Historical cost.

4.34 The current cost base approach values assets at the current market value and reflects evolving changes in asset prices. This approach reflects the costs that a hypothetical entrant would incur when investing at any point in a Modern Equivalent Asset ('**MEA**'). Therefore, where technology is changing rapidly, the price set for the use of a particular asset may not reflect the actual costs incurred. Hence, there is less of a direct relationship between the prices charged and the actual investments made.

4.35 The economic rationale for the use of a current cost approach, as through a bottom-up model (see paragraphs 4.43-4.46), is that by linking the value of the assets to a newly deployed network, it promotes efficient investment incentives. The current cost approach also ensures that the incumbent recovers its future costs, thereby encouraging efficient infrastructure investments.

4.36 Alternatively, the historic cost base approach uses Historical Cost Accounting ('**HCA**'), which reflects the incumbent's costs. This approach reduces the chance of over- or under-recovery of costs, as the value is linked to the actual investment made, as opposed to the MEA. Some of the incumbent's assets may be fully depreciated but still in use, and the HCA approach should ensure that Eircom is not over-recovering costs for these assets.

4.37 A key criterion in asset valuation, in the context of the current cost base approach is the principle of asset replicability. The concept of asset replicability means that if there is actual investment, the incumbent will recover the efficiently incurred cost of the asset. However, if there is no investment and assets are 'sweated' to get the maximum value from them, then the incumbent will not be compensated over and above the initial gross book value of the asset. In other words, if there is no prospect of a competitor replicating the service in question (or bypassing the bottleneck with an alternative platform), it is reasonable to base the regulatory pricing on historical costs. Therefore, this creates the appropriate investment signals for the incumbent. This is also recognised by the 2013 EC Recommendation on non-discrimination and costing methodologies[62] which considers that reusable civil engineering assets e.g., ducts and poles, should be valued on the basis of the regulatory asset base derived from the incumbent's accounts. This has been considered in the 2020 CEI Pricing Consultation at Section 5.

4.38 ComReg considers that a HCA approach is best placed to ensure the appropriate cost recovery for Eircom, as it considers costs that have actually been incurred.

[62] Commission Recommendation dated 11 September 2013 on 'Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment'.

Cost models

4.39 ComReg must consider what type of model is appropriate to determine the costs of provision of the access services. ComReg considers that two model options are relevant:

a) Top-Down ('**TD**'); or

b) Bottom-Up ('**BU**').

4.40 A TD cost model, can, in principle, use a historic or current cost base, as outlined above. However, TD cost models generally use a historic cost base, whereas BU cost models generally use a current cost base approach.

4.41 A TD cost model, using the historic cost base, can, as a starting point, use the current financial information of the incumbent (e.g. Eircom), as an input to determine unit costs. The information required can be obtained from financial statements (e.g. the incumbent's income statement, balance sheet). TD cost models are generally used when the primary concern is ensuring cost recovery.

4.42 The TD approach has an advantage through linking the cost recovery to the actual costs incurred by the incumbent and can be less time-consuming to implement. However, a TD approach carries a number of disadvantages:

a) The accounting information may include inefficient costs incurred by the incumbent;

b) The process relies on the requirement for the incumbent to provide significant amounts of accurate and robust data; and

c) The data provided cannot easily be converted into a forward-looking approach and can provide the wrong 'build or buy' signal to industry.

4.43 A BU cost model does not rely on historical financial data. Instead, it reflects the choices of a hypothetical, forward-looking efficient operator from both a technical and an operational point of view. A BU model is a data intensive process of dimensioning the network assets to meet an assumed level of demand, as if the network were being built (either as it stands, or with improvements to the topology).

4.44 The BU modelling approach is associated with models that are aimed at promoting efficient entry, since such a cost model can consider how a network would be built today using modern technology by a reasonably efficient entrant.

4.45 BU models have a number of advantages including sending appropriate build-or-buy signals to alternative operators who may want to replicate the asset, or when networks need to be renewed (e.g. as is the case with the deployment of

fibre networks). It is also more efficient to make forward-looking estimations based on expected levels of demand, rather than relying on historical data. Furthermore, BU modelling avoids the risk of including inefficient costs, and also avoids the inability of TD cost data to be sufficiently granular to be applied in a cost model. Therefore, a BU cost model also lends itself to the use of a LRAIC+ cost approach. Similar benefits would not be realised using a TD cost model.

4.46 BU models have a number of disadvantages too. For example, modelling a network can be a time-consuming and expensive process. It can also be difficult to achieve the hypothetical efficiency level constructed in such modelling, and modelling operating expenditures requires in-depth knowledge of network operations.

Costing approach for PSTN WLR

4.47 The PSTN WLR service requires two network components: a copper loop component, which uses a copper loop to provide the connectivity from the exchange to the customer premises, and the line card or port component, which is the active equipment in the exchange required to provide the voice service.

4.48 In the Revised CAM ComReg determined that the prices for provision of PSTN WLR nationally should be set on the basis of Eircom's actual costs adjusted for efficiencies for the copper loop component, with BU-LRAIC+ costs applied to the active equipment as this was considered necessary to ensure that Eircom could recover its efficiently incurred costs.

4.49 ComReg proposes to maintain this costing approach to determine the cost-oriented prices for PSTN WLR in the Regional Low-Level FACO Market for this price control period. The fact that ComReg is proposing to confine the cost orientation of PSTN WLR to the Regional Low-Level FACO Market, where the prospect for commercial network competition to emerge has provisionally been found to be limited, indicates that the need to inform build or buy decisions is not a primary concern for the copper loop component in this part of the access network.

4.50 While the 2013 EC Recommendation is not specifically relevant to FACO (PSTN WLR), ComReg considers that the objective of the 2013 EC Recommendation remains important in the context of PSTN WLR, i.e. to ensure that "*operators can cover costs that are efficiently incurred and receive an appropriate return on invested Capital*"[63]. This indicates that the pricing for PSTN WLR should allow recovery of the efficiently incurred costs of the copper loop in the Regional Low-Level FACO Market. In the case of the copper loop ComReg is of the preliminary view that these costs are best modelled using a TD FAC approach based on Eircom's Historic Cost Accounts ('**HCAs**'). This is because ComReg expects

[63] Subsection (26) of the 2013 EC Recommendation.

Eircom's investments in its copper access network to continue to decline as its focus switches to upgrading its access network with FTTH.

4.51 ComReg is also aware that Eircom still relies on the legacy PSTN network to deliver voice services, and that this legacy equipment is now almost fully depreciated and due for replacement. Consequently, the annualised costs, as reported in Eircom's recent HCAs, do not recognise the potential level of future investment needed to support the provision of voice services over the price control period. Therefore, ComReg is of the preliminary view that a BU-LRAIC+ valuation of the active assets associated with voice services provides a better estimate of the relevant cost base.

4.52 The movement from a national to a sub-national market for the regulation of PSTN WLR removes the majority of PSTN WLR lines from being subject to the obligation of cost orientation of Eircom's PSTN WLR prices. Consequently, the cost modelling to support the cost oriented PSTN WLR prices has been confined to those exchanges where regulation is proposed to continue, i.e. the exchanges that make up the Regional Low-Level FACO Market, which account for less than 200,000 active PSTN WLR lines.

4.53 As PSTN WLR services are available in all footprints (Urban Commercial Area, Rural Commercial Area and NBP IA), ComReg proposes to base the PSTN WLR price on the costs modelled for all PSTN WLR active lines in the exchanges classified as being part of the Regional Low-Level FACO Market, which straddle all 3 footprints (including the NBP IA footprint). Prior to adopting its final decision on the price control for PSTN WLR including prices ComReg will update the ANM as necessary in order that the list of exchanges included in the ANM in respect of the Regional Low-Level FACO Market reflects the final market definition as adopted in ComReg's final decision following the 2020 FACO Consultation, so that any cost-oriented prices for PSTN WLR that are mandated by ComReg may differ from the draft prices set out in this consultation.

4.54 Consequently, ComReg is of the preliminary view that that the PSTN WLR monthly rental price should continue to be set based on the TD FAC approach based on Eircom's HCAs in the Regional Low-Level FACO Market for the copper loop while a BU-LRAIC+ cost approach should be applied for the active equipment associated with voice services. The prices are presented in Section 7, Table 18.

ComReg's preliminary view:

4.55 ComReg's preliminary view is that the costs of PSTN WLR in the Regional Low-Level FACO Market should be modelled using a TD FAC approach based on Eircom's HCAs for the copper loop component and a BU-LRAIC+ approach for the active equipment.

Q. 2 Do you agree with ComReg's preliminary view that the monthly charge for PSTN WLR in the Regional Low-Level FACO Market should be set using the TD FAC approach based on Eircom's HCAs for the copper loop component and a BU-LRAIC+ approach for the active equipment? Please provide reasons for your response.

4.3 Supplemental Charge for POTS based FTTC

4.56 In the 2018 Pricing Decision, ComReg derived a supplemental charge to be applied for POTS based FTTC services, i.e. when a voice service is provided in addition to an FTTC based service such as FTTC / EVDSL based VUA or Bitstream service. In addition to the cost of the active equipment that is required to support the voice service, the 2018 Pricing Decision also included the incremental copper loop cost associated with the copper feeder cable between the exchange and the cabinet (E-side copper) that Eircom incurs when a voice service is provided on an FTTC service[64].

4.57 As ComReg is now proposing that voice services will only be regulated in the Regional Low-Level FACO Market, ComReg is of the preliminary view that the cost of the active equipment and the incremental copper loop cost that are included the POTS based FTTC supplemental charge should be derived using the same approach as used for PSTN WLR. This means that the cost of the active equipment will continue to be derived using a BU approach, but the incremental copper loop cost will now be derived using a TD FAC approach based on Eircom HCAs.

4.58 As with PSTN WLR, using a TD approach to cost the incremental cost of the copper loop recognises that there is little prospect of market entry in the Regional Low-Level FACO Market by commercial operators, while using a BU approach to cost the active equipment recognises that operators who do purchase FTTC based VUA or FTTC Based Bitstream will also need to invest in active equipment if they are to provide their own voice service. The proposed prices for the POTS based FTTC service sold in the Regional Low-Level FACO Market can be found in Section 7, Table 18.

ComReg's Preliminary View:

4.59 ComReg is of the preliminary view that the supplemental charge for POTS based FTTC, which is charged when a voice service is provided in addition to an FTTC based VUA or Bitstream service, should be based on a TD costing approach for the incremental copper access component and a BU approach for the active

[64] This is because Eircom continue to use the full copper loop when providing a POTS based FTTC service, whereas an FTTC VUA or Bitstream service only requires the SLU loop between the cabinet and the customer premises if a POTS based service is not being provided

voice equipment.

Q. 3	Do you agree with ComReg's preliminary view that the monthly supplemental charge for POTS based FTTC in the Regional Low-Level FACO Market should be set using the TD FAC approach based on Eircom's HCAs for the incremental copper access component and a BU-LRAIC+ approach for the active equipment? Please provide reasons for your response.

5 Cost Modelling Approach: Access Network Model

5.1 Overview

5.1 In this section ComReg discusses the background to the ANM as well as the proposed cost modelling inputs and parameters used in the model. This section provides a high-level overview of the modelling approach undertaken and the assumptions that ComReg considers are of relevance for stakeholders to understand.

5.2 Cartesian has assisted ComReg in developing the ANM. Access to a non-confidential version[65] of the draft ANM, along with the associated Cartesian ANM Specification Document, (the '**Specification Document**'), is available to interested parties likely to be affected by the outcome of the decision that ComReg may take as a result of this Consultation, upon request to ComReg. For access to the non-confidential draft ANM and associated Specification Document, please contact ComReg's Pricing team.[66]

5.3 The rest of this section is discussed under the following:

a) Background to the existing Revised CAM;

b) Background on development of ANM;

c) Service Demand module;

d) Geospatial module;

e) PAM / DAM modules;

f) Operating cost ('**Opex**') module;

g) Capital cost ('**Capex**') module; and

h) Assessment of FTTH connection costs.

[65] The non-confidential versions of the ANM excludes information considered to be confidential by Eircom or other operators and assessed in line with ComReg's confidentiality guidelines in ComReg Document 05/24. Any confidential values in the Draft ANM have been randomised.

[66] Email Pedro.Fontes@comreg.ie and Karl.Hurley@comreg.ie with the subject matter of the email stating "*Access to Draft ANM*".

5.2 Background on existing Revised CAM

5.4 In the 2016 Access Pricing Decision, ComReg used the Revised CAM to set prices for Eircom's regulated fixed wholesale access products.

5.5 The Revised CAM determined the prices for LLU, SLU, Line Share, CEI, Dark Fibre, PSTN WLR, and CG SABB. These prices were set for the price control period 1 July 2016 to 30 June 2019, and it also contained indicative prices for the first two years beyond the price control period (i.e. until 30 June 2021).

5.6 Briefly, the modelling approach undertaken in the Revised CAM in 2016 dimensioned the access network needed to serve a national demand, which at that time consisted predominately of copper-based services. This network was then valued using the costing information available at that point in time, with prices for different services finally determined based on usage of the network.

5.7 As part of ComReg's notification to the EC of the draft measures contained in the 2018 WLA/WCA Market Review Decision, the EC in its comments letter[67] to ComReg, called on ComReg to revisit the access prices and at least to update the results of the Revised CAM with more recent data. Furthermore, the EC requested ComReg to notify the resulting prices without undue delay.

5.8 Mindful of the EC's comments, and taking into account that there are key limitations to the Revised CAM in setting forward-looking prices – namely, the fact that it is effectively only catering for a copper-based demand and its modelled period is coming to an end - ComReg considers that an updated cost model for Eircom's regulated fixed wholesale access products is timely. Hence, this update is not only looking to provide a refresh of the Revised CAM but is also looking to take account of the key market developments in the Irish telecommunications market. The next section discusses these developments in more detail.

5.3 Background and overview of ANM

5.9 As outlined above, the ANM is intended to replace the Revised CAM. ComReg considered that in developing the ANM to replace the Revised CAM there were a number of key aspects to take account of:

a) The period modelled in the Revised CAM is coming to an end, so there was a practical need to extend the modelling beyond the period covered by the Revised CAM (the ANM covers the period of 1 July 2018 to 30 June 2030) to allow forward-looking prices to be set;

[67] Please see Appendix 2 of the 2018 WLA/WCA Market Review Decision.

b) Eircom is presently providing copper and fibre (FTTC and FTTH) over its access network, so there was a need to consider the cost impact on copper-based services (including FTTC) from an expected migration of customers to full fibre. Moreover, as noted in paragraph 5.22, Eircom is also expected to over-build FTTH in its FTTC footprint over the next few years;

c) NBI will be rolling out FTTH in the NBP Intervention Area and Eircom will, as a result, be expected to become a significant provider of CEI Access to NBI. Consequently, there was a need to also consider the possible implications that any recovery of duct and poles costs from CEI access charges might have for the cost-oriented prices for those copper-based services that use the same infrastructure;

d) There was a need to reflect the broader market developments which have taken place since the Revised CAM was last updated, and in particular the impact that the development of alternative (to Eircom) fixed-line network platforms (such as SIRO or NBI as noted above) might have on the demand for services carried on Eircom's network;

e) Finally, there was a general concern to take account of the richer data environment available to ComReg, particularly with regards to geo-marketing data.

5.10 As noted above the ANM covers the period from 1 July 2018 to 30 June 2030. The time periods in the ANM analysis are based on Eircom's financial years, and Cartesian models the services in scope in the ANM from 2019 until 2030[68].

5.11 To develop the ANM, ComReg considered and used a variety of datasets and sources. The draft ANM includes information gathered from Eircom, pursuant to ComReg's information gathering powers in line with Section 13D(1) of the Act, in September 2019 – information provided to ComReg as part the ComReg Quarterly Key Data Report process and information provided voluntarily by operators including Eircom. ComReg also obtained from the DECC data on premises based on a "GeoDirectory" dataset.

5.12 The financial / costing information obtained from Eircom is largely based on its financial year ending 30 June 2019. Eircom also provided volumes of active lines by service and exchange as of Q2 2019. Separately, ComReg has also obtained on a voluntary basis information from Eircom on its rollout plans.

5.13 Active lines from other operators (i.e. NBI, SIRO, Virgin Media, and Imagine) were provided to ComReg as part the ComReg Quarterly Key Data Report process. This information was made available by Eircode. These operators also

[68] For example, the ANM model year 2020 refers to Eircom's financial year from 1 July 2019 to 30 June 2020.

provided on a voluntary basis information concerning their rollout plans.

5.14 In terms of modelling approaches, the ANM models the cost of access network services under two approaches, a BU approach and a TD approach, which are both described in Section 4.

5.15 As discussed in Section 4, the BU approach uses engineering rules to model a hypothetical efficient network operator operating a recently deployed network, which is then valued at current costs. This approach is used to derive the access network costs for LLU, SLU, Dark Fibre and the cost inputs (LLU, SLU, and the NGA Link between the local exchange and the FTTC cabinet) relevant to FTTC services.

5.16 The TD approach is intended to reflect the costs that a hypothetical efficient operator would incur operating and maintaining Eircom's legacy network. Hence, it uses Eircom's historical accounting data to inform access network costs, while the distribution of service demand is modelled to more closely align with the distribution of customers across Eircom's local exchanges. The TD approach is mainly used to derive the TD costs for the PSTN-WLR service.

5.17 Additionally, the ANM uses a modified scorched node approach to dimension the access network. The ANM builds the network based on existing Eircom cabinets and exchanges, but re-assigns premises to the nearest cabinet/exchange as relevant. Consequently, the network dimensioned in the ANM will have a more efficient network architecture than is evident in Eircom's existing access network, due to the iterative nature of network deployment in a legacy network. For example, where Eircom would have recently added Remote Switching Units ('**RSU**') as part of its FTTC programme, the ANM assumes that all premises that are near the new RSU will be served from that RSU. However, most premises in that area may still be served from the original exchange even if it is no longer the nearest node to those premises. Therefore, the hypothetically efficient network operator that is modelled in the ANM reflects Eircom's scale and network presence but does not have the same distribution of customers across the nodes.

5.18 The ANM is comprised of six modules. These include a Service Demand module, Geospatial module, DAM (Duct Access Model) module, PAM (Pole Access Model) module, Opex module and Capex module.

5.19 These modules are discussed in detail in each subsection below, but a brief description of each is provided here (and diagrammatically in Figure 4):

a) Service Demand module: calculates the volumes for copper and fibre services in each footprint for the time period of the ANM;

b) Geospatial module: calculates the inventory of assets needed to serve all relevant premises in Ireland with copper and fibre services;

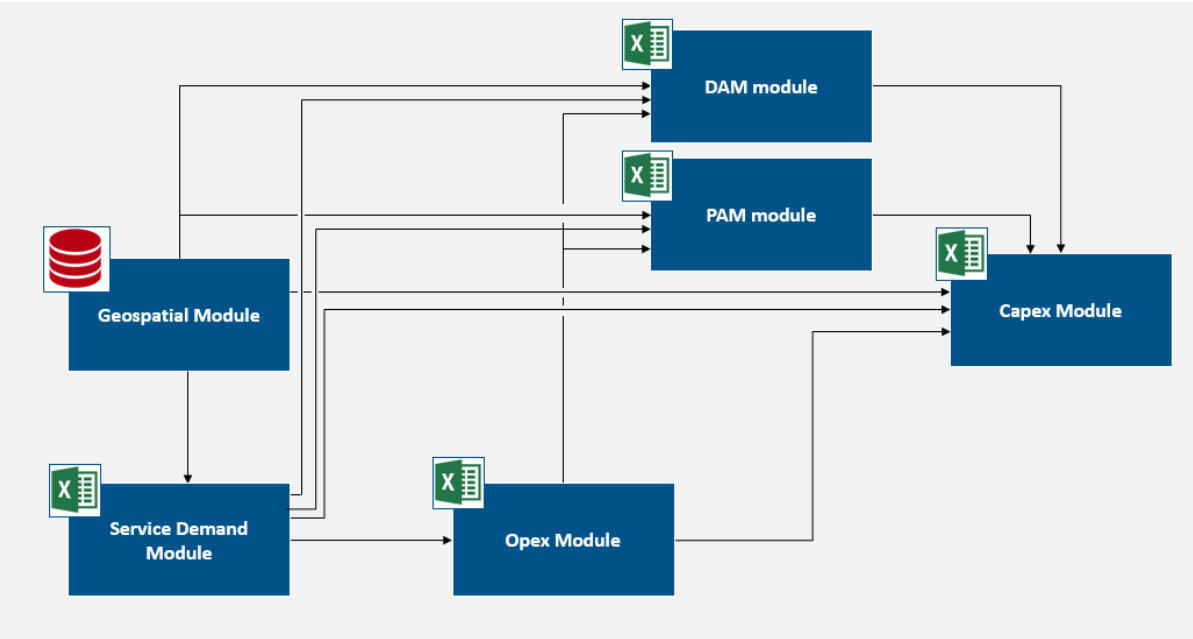
c) DAM module: calculates the costs of Eircom's underground civil engineering infrastructure (e.g. trenches, ducts, chambers);

d) PAM module: calculates the costs of Eircom's overhead civil engineering infrastructure (e.g. poles);

e) Opex module: determines the operational expenditure expected to be incurred by Eircom in operating the network based on a TD approach and a BU approach;

f) Capex module: makes use of the data outputs from the other modules to derive the overall ANM costs, as well as the costs of services under review.

Figure 4 - Overview of the ANM



Source: Cartesian

5.20 The ANM models costs across 1,148[69] local exchange areas and in three separate geographic footprints or areas. Hence, the ANM attributes service demand volumes and costs to each in 3,444 (1,148 exchange areas multiplied by three footprints) footprints, henceforth referred to as "**exchange-footprints**".

5.21 As discussed in Section 3, the combined three footprints represent the total national premises in Ireland and are broadly aligned with the Interactive Map

[69] ComReg's Market Analysis currently identify 1,203 exchange areas. However, many of these would have been created in recent years, with the result that reliable HCA data is not available for all these exchanges. Consequently, the ANM retained the 1,148 exchange areas previously used in the Revised CAM and integrated all the available data for newer exchanges to these 1,148 exchange areas.

developed by DECC (the '**High Speed Broadband Map**').[70] These footprints are:

a) Urban Commercial, corresponding to the footprint where commercial operators are delivering or have indicated plans to deliver high speed broadband services. It also includes the premises where Eircom has deployed its FTTC/EVDSL network. This footprint was identified in the DECC High Speed Broadband Map as the Blue area and covers approximately 1.5m premises. This footprint is referred to throughout this document as the '**Urban Commercial Area'**;

b) Rural Commercial, corresponding to the footprint where Eircom committed to roll out high speed broadband to 300,000 premises, based on a commitment agreement entered into in April 2017 between the DECC and Eircom.[71] This footprint was originally identified in the DECC High Speed Broadband Map as the Light Blue area and includes circa 300,000 premises.[72] This footprint is referred to throughout this document as the '**Rural Commercial Area**'"; and

c) The NBP Intervention Area, corresponding to the target areas for State intervention under the NBP, as defined by the DECC.[73] It is also referred to by the DECC as the non-commercial 'Intervention Area', where there is no existing or planned commercial high speed broadband services available. This area includes circa 537,000 premises (delivery points) and is identified in the DECC High Speed Broadband Map as the Amber area.[74] It is referred to throughout this document as the '**NBP IA**'.

d) The Rural Commercial Area and the Urban Commercial Area are collectively referred to throughout this Consultation as the '**Commercial Areas**'.

5.22 As noted, in Commercial Areas, Eircom has rolled out its FTTC network in the Urban Commercial Area and is expected to overbuild FTTH over the next few years, while in the Rural Commercial Area Eircom completed its 300k FTTH Rural Network programme. In the NBP IA, NBI will deploy its fibre network over the next years, where Eircom is expected to become a significant provider of CEI to NBI. Hence, as ComReg outlined in the 2020 CEI Pricing Consultation, there are likely to be prospective differences in CEI costs between the costs in the

[70] https://www.dccae.gov.ie/en-ie/communications/topics/Broadband/national-broadband-plan/high-speed-broadband-map/Pages/Interactive-Map.aspx
[71] Agreement between the Minister for Communications, Climate Action and Environment and Eircom Limited in relation to National broadband plan – commercial deployment commitment; https://www.dccae.gov.ie/documents/Commitment%20Agreement.pdf
[72] This is based on the NBP Map published in April 2017. Premises to be covered by the 300k would have been initially designated as "Light Blue" in April 2017 but would have transitioned to "Blue" as they were passed by Eircom's FTTH network.
[73] In the EC State Aid Decision, the area requiring intervention is called the "white" NGA areas.
[74] https://www.dccae.gov.ie/en-ie/communications/topics/Broadband/national-broadband-plan/state-intervention/Pages/Connecting-Communities.aspx

NBP IA (for the purposes of NBI) and outside the NBP IA.

5.23 Furthermore, unlike the other two footprints, which are characterised by lower line densities and longer line lengths, the density of the Urban Commercial Area gives rise to sufficient network economies to an extent that makes rival network competition viable and, to date, the network deployments by rival operators such as Virgin Media and SIRO tends to be in the commercial footprints (Urban Commercial Area and Rural Commercial Area). Therefore, the ability to determine prices that can inform the build or buy decisions for network operators is a primary concern when costing services offered in the commercial footprints, whereas in the NBP IA, the limited prospects for viable network competition without the aid of a state subsidy, means that the primary consideration when setting prices is the need to ensure cost recovery.

5.24 ComReg is of the view that the above observations are relevant when considering the costing of access network services, including copper-based NGA services. In particular, the Urban Commercial Area comprises premises that are close enough to the local exchange to receive a viable NGA service over copper based VDSL technologies such as FTTC and EVDSL. Previously, the SLU and LLU cost inputs that are used to cost FTTC and EVDSL services were derived in the Revised CAM by assuming a maximum line length of 3km for LLU and 1.5km for SLU. However, these cost inputs can now be derived in the ANM using the Urban Commercial area as it corresponds to the footprint that Eircom is currently serving with FTTC and EVDSL services. In both the Rural Commercial Area and the NBP IA the typical line lengths are longer than in the Urban Commercial Area, such that an FTTH solution is required to provide an NGA service as a VDSL solution is not capable of delivering the required speeds.

5.25 The geographical differentiation by local exchange area, which is retained from the Revised CAM, also allows the ANM to specifically consider the costs of services, where appropriate, with reference to the costs and service volumes in the subset of exchanges where these services are and will continue to be regulated. This is further discussed in Section 6.

5.26 As noted above in this sub-section, ComReg is aware of the potential impact that a migration of customers from copper to fibre may have on Eircom's copper costs and its possible implications with respect – for example – to the timing of an eventual copper switch-off. In the Revised CAM, service demand was modelled on a national basis and the forecast was then applied to all exchanges in the base year of the Revised CAM. This was considered a reasonable approach because the Revised CAM primarily modelled copper services and, by 2016 Eircom had yet to deploy any significant volume of FTTH. However, ComReg considers (in the next subsection the "Service Demand module") that retaining a national approach to demand modelling is no longer appropriate. Hence, the ANM models both copper and FTTH services and also recognises the extent that

different operators are deploying FTTH in different areas. For example, the demand forecasts in the ANM allow for both the timing of FTTH deployment in each footprint (e.g. FTTH has already been deployed in the Rural Commercial but has yet to be deployed in the NBP IA and in the Urban Commercial) and for the timing of Eircom's (eventual) copper-switch off. It also models the level of network competition over time (e.g. Virgin Media and SIRO are already present in the Urban Commercial but are not expected to have material deployments in other footprints, while NBI is in year 1 of a seven year plan to deploy in the NBP IA).[75] The potential impact of service demand assumptions on Eircom's copper costs, in particular for PSTN WLR (given the hypothetical nature of the cost models underpinning copper-based NGA services), has been the subject of consideration and sensitivity analysis by ComReg.

5.27 Finally, the ANM reflects the pricing proposals contained in the 2020 CEI Pricing Consultation for NBI's Major Infrastructure Programme ('**MIP**')[76] and in particular the proposed cost sharing / pricing methodologies for CEI access services[77] and how these proposals inform the recovery of the costs of access network services in scope for this Consultation.

5.28 In the subsections below ComReg describes in greater detail each of the ANM modules, its main features and the key assumptions of the modelling.

5.4 Service Demand module

5.29 In this subsection ComReg provides an outline of the Service Demand module of the ANM[78].

5.30 The Service Demand module of the ANM calculates the demand for copper and fibre services on a Hypothetical Efficient Operator's ('**HEO**') network over the period of the ANM (2019 through to 2030). The HEO is assumed to have Eircom's network footprint and market share so that demand at the national level should be equivalent to Eircom's overall demand. Copper and fibre volumes are then used as inputs to the BU calculations in the Capex, Opex, PAM and DAM modules.

[75] Consequently, if demand for copper-based services such as PSTN WLR and FTTC was assumed to fall by 1% a year, the base year demand for all copper-based services was reduced by 1% in every exchange

[76] See paragraph 12 of the 2020 CEI Pricing Consultation, where "ComReg refers to NBI's broadband network rollout for the purposes of the NBP as "**NBI's MIP**".

[77] See Section 2 of the 2020 CEI Pricing Consultation (20/81) to view these prices for the period 1 July 2020 to 30 June 2025. For the remaining ANM modelled years (i.e. 1 July 2025 to 30 June 2030), ComReg has set NBI's prices from the PAM/DAM modules on the same proposed cost sharing / pricing methodologies.

[78] Further information on the Service Demand module is contained Section 3 of the Cartesian ANM Specification document.

5.31 At a high-level, the ANM Service Demand module calculates the volumes of fixed-line copper and fibre services and connections across the entire Eircom fixed access network by forecasting:

a) The number of premises;

b) The availability of Fixed Wireless Access ('**FWA**'), cable, copper and fibre services; and

c) The uptake of these services.

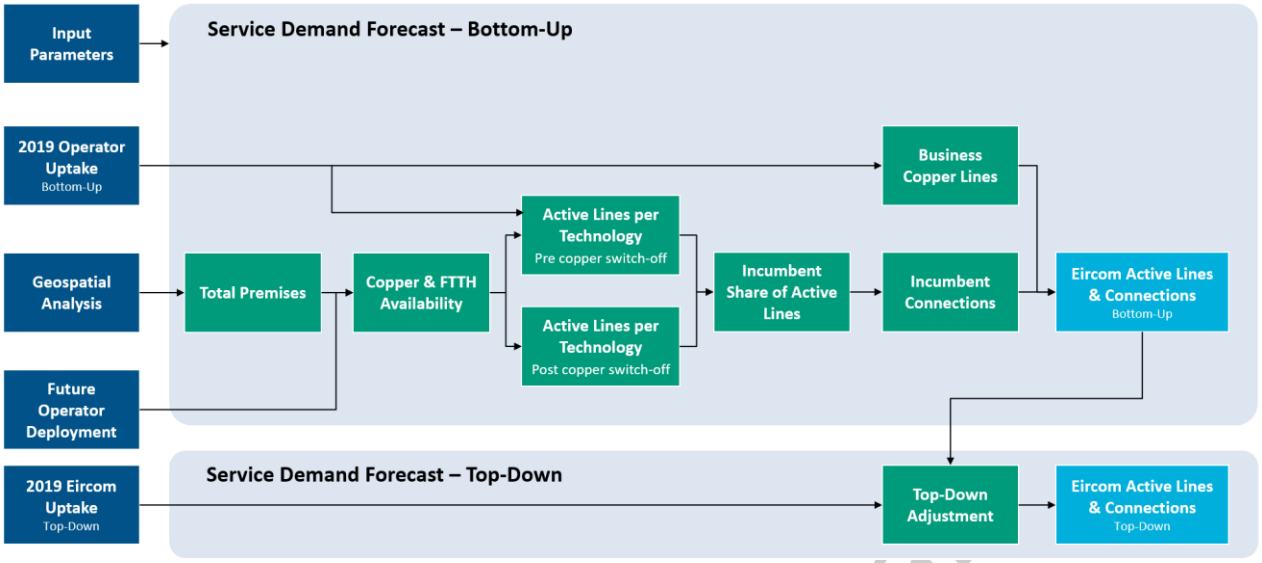
5.32 The Service Demand module of the ANM models both copper and FTTH services across the local exchange areas and in the three geographic footprints; Urban Commercial Area, Rural Commercial Area and NBP IA (as outlined above in paragraph 5.21). The ANM has 1,148 exchanges. Hence, the Service Demand module forecasts demand in 3,444 exchange footprints.

5.33 The Service Demand module derives a BU forecast by exchange-footprint based on the number of premises per exchange-footprint as determined in the Geospatial module. The ANM uses a modified scorched node approach, whereby the mapping of premises to exchanges in the ANM is different from the actual indexing of premises to Eircom's exchanges. Hence, in the BU approach the national demand for the different services (FTTC, FTTH, WLR, etc.) were attributed across the exchange-footprints based on the number of premises and on demand factors such as market share (presence of rival platforms) and technology assumptions (FTTC in Urban Commercial Area, FTTH in Rural Commercial Area, copper only in NBP IA). For example, Eircom Active FTTC lines have been apportioned evenly between the premises in the Urban Commercial footprint but only to those premises that do not have an active competitor line.[79]

5.34 In addition to a BU forecast, a TD forecast is also undertaken, using actual service volume data from 2019 by exchange and scaled to future years taking into account service availability and uptake trends captured in the BU forecast. This forecast is performed at the total exchange level (i.e. not at the exchange-footprint level), with the sole purpose of estimating the TD PSTN-WLR costs in the Capex module, which are also modelled at the total exchange. Figure 5 provides an overview of the Service Demand module.

[79] Further information on the allocation of active services to footprints and exchanges is contained in Section 3 of the Cartesian ANM Specification Document.

Figure 5 - Service Demand module overview



Source: Cartesian

Premises

5.35 Premises per exchange-footprint are derived in the Geospatial module (the next subsection) at 30 June 2019 (Q2 2019) and consist of residential and business premises identified by unique Eircodes. As noted above, premises per exchange-footprint are based in the ANM on a modified scorched node approach, with Eircodes assigned to the closest exchange, and to one of the three footprints, to allow a count of premises per exchange-footprint to be calculated. The count of premises is scaled to future years using a premises growth parameter of 0.7% sourced from SNL Kagan projection covering Ireland from 2019-2027.[80]

Service availability

5.36 Service availability refers to copper or fibre services being available to a given premises at any given year.

5.37 To determine where copper, FTTC, FTTH, cable and FWA services are currently available ComReg used information on active lines provided by Eircom (by exchange area) at Q2 2019 and from ComReg's Market Intelligence database for the same period, which was provided by SIRO, Virgin Media, and Imagine. Current service availability in the Service Demand module was determined by ComReg as follows:

a) Eircom ADSL[81] and copper-based voice only services are assumed to be available in all exchange-footprints;

[80] S&P Global Market Intelligence – Global Forecast Table for Ireland, 10-year projection, 2019.
[81] Asymmetric Digital Subscriber Line

b) FTTC is assumed to be available in all Urban Commercial Area exchange-footprints and FTTH is assumed to be available in all Rural Commercial Area exchange-footprints;

c) SIRO FTTH availability at an exchange-footprint was assumed if at least one SIRO FTTH line was active at that exchange-footprint in 2019 or if there was at least a 50% coverage of the premises in that exchange-footprint; and

d) Cable services and FWA availability were assumed constant based on the uptake of these services at Q2 2019 in each of the exchange-footprints. If an exchange-footprint had no current cable or FWA active services in Q2 2019, then ComReg assumed these services are not available in that exchange-footprint.

5.38 Eircom total active lines are apportioned to exchange-footprints based on the total count of premises in each-exchange footprint after considering whether competing services were active at these premises. For example, ADSL active lines have been apportioned evenly between premises in exchange-footprints but only to premises without an active competitor service or an active Eircom FTTC/FTTH service. For FTTC and FTTH, the apportionment to premises is also done in this way, but only to exchange-footprints in the Urban Commercial Area and Rural Commercial Area footprints respectively. However, copper-based services such as voice-only and ADSL are assumed to be available in all exchange-footprints at 2019. For competitor active lines, the information gathered by ComReg contained in the vast majority of cases the associated premises' Eircode which allowed for a direct apportionment to exchange-footprints.

5.39 To determine when and where fibre services become available in the future, ComReg has gathered information on FTTH deployment plans from Eircom, NBI and SIRO and mapped these plans to the exchange-footprints. Eircom deployment plans are mapped to all exchange-footprints in the Urban Commercial Area footprint (for the Rural Commercial Area footprint it is assumed that FTTH is available in all exchanges). NBI deployment plans are mapped to exchange-footprints in the NBP IA. If a fibre service is available in a given exchange-footprint, the Service Demand module assumes that all premises in that exchange-footprint can avail of fibre services.

5.40 With regards to Eircom's copper-based services it is expected that copper services will eventually be retired and cease to be available. ComReg therefore assumed that copper switch-off will commence from 2025 and will be no earlier than 5 years after an exchange-footprint becomes fibre-enabled (either by Eircom or by NBI). The timing of copper switch-off is, as noted, an assumption of the Service Demand module, as Eircom did not indicate specific timelines with regards to copper retirement. By way of comparison, the Spanish regulator

directed a 5-year period for copper services to be maintained after fibre is deployed.[82] ComReg is interested in stakeholder views on this timeframe.

5.41 The deployment plans for FWA operators showed an increase in coverage in the Urban Commercial areas and this is modelled by increasing the FWA growth parameters to +2.5% for 2020 to 2023. For cable services, ComReg considered that the deployment plans shared by cable operators (Virgin Media) were not sufficiently material to be included in the model.

Service take-up

5.42 The take-up of fixed line copper and fibre services (including cable and FWA) has as a starting point the actual take-up as at Q2 2019. The availability of fibre services, as a result of Eircom's FTTH rural network and NBI's planned FTTH deployment in the NBP IA, means that the penetration of fixed lines (FTTH) in these areas in the future will likely increase. The ANM has considered this by trending, over an assumed period of four years, the penetration of fixed line services in both the Rural Commercial Area and NBP IA to the level observed presently in the Urban Commercial Area. ComReg has in the modelling assumed that there was supressed demand, as a result of fibre fixed line services not being available, and therefore this suppressed demand is likely to be eliminated in the years ahead once fibre services become available.

5.43 Voice-only services are presently provided over copper and ComReg has assumed that this shall continue to be the case until such time as Eircom switches off copper, and thereafter voice-only services will be delivered as VOIP using FTTH. ComReg has assumed that as a result of fibre availability in the Rural Commercial Area and the NBP IA, the take-up of voice-only services will tend to the lower take-up level observed in the Urban Commercial Area in 2019. The modelling also assumes no future growth in voice-only customers.

5.44 FTTH broadband penetration is calculated using a take-up curve. The take-up curve indicates the percentage of customers taking up the FTTH service in any given year. The take-up curve is set using information provided by NBI and by assuming that the FTTH share reaches 100% after 15 years, following FTTH deployment. ComReg has used the NBI's information to model the migration to FTTH services outside the NBP IA.

5.45 Once an exchange-footprint becomes FTTH-enabled by any operator (including Eircom), the FTTH take-curve is applied to the share of fixed-line services. Overall demand for broadband is assumed to increase over time for two reasons – future household growth and the alleviation of suppressed demand. Furthermore, cables share (not count of lines) of broadband lines is assumed to

[82] Source: Spanish National Regulatory Agency, CNMC, informing of Telefonica's decommission of 140 copper exchanges in 2018 (in Spanish) https://blog.cnmc.es/2018/12/28/adios-al-cobre-140-centrales-han-cerrado-en-2018/

remain constant, and the share for FWA is forecast to increase by 2.5% for each of the first 4 years and then remain constant. As a result, migration to FTTH is achieved through a decline in copper-based fixed line services. Five years after the launch of FTTH in an exchange-footprint it is assumed that copper switch-off has occurred with the result that all remaining copper-based FTTC and ADSL are force-migrated to FTTH in the Service Demand module (and therefore the other modules in the ANM that use the Service Demand module's outputs).

5.46 ComReg has assumed that the cable penetration rate will remain unchanged in the Service Demand module. As outlined above, Virgin Media's deployment plans indicate that its presence is likely to continue to be concentrated in the Urban Commercial Area footprint, where its currently constrained by Eircom's competing FTTC. ComReg has assumed that Eircom's FTTH overbuild in this footprint will be accompanied by Virgin Media's cable network upgrade to support bandwidths equivalent to those of FTTH, so ComReg has assumed that cable penetration will not be materially impacted by Eircom's FTTH. With regards to FWA penetration, as noted above, ComReg did not explicitly model additional FWA service availability, instead Imagine's deployment plans have been considered by assuming an increase of 2.5% per year over the first four years of the ANM.

5.47 Eircom's projected share of FTTH active lines is calculated with reference to the number of competing operators providing FTTH services. In exchange-footprints where there are no competing FTTH operators (such as in general the Rural Commercial Area) Eircom's share is assumed to be 100%. In exchange-footprints where Eircom and SIRO are both present, Eircom's share of FTTH lines is assumed to converge to a "steady-state" share. ComReg has assumed that the steady-state share can be proxied by Eircom's share of active total fixed-line broadband lines in the Urban Commercial Area footprint, where Eircom's competition with Virgin Media is well established. In addition, convergence to the steady-state is assumed to be driven by customer churn based on a customer life of 42 months. Therefore, where SIRO deploys FTTH in an exchange-footprint, churn from Eircom to SIRO decreases Eircom's share of FTTH active lines (and increases SIRO's share), until it equals the steady-state share. In addition to this, the number of premises taking up a FTTH service for the first time is calculated every year, based on a combination of factors, including new build or changes in the FTTH uptake curve. Eircom's share of these new FTTH additions is calculated based on Eircom's steady-state share of FTTH active lines.

FTTH connections

5.48 Section 8 of this document seeks further information (by means of a call for input) relating to FTTH connection costs. In the draft ANM, the costs for new FTTH connections are set as an average of standard and non-standard connections.

Hence, the Service Demand module calculates the total volumes of both connection types.

5.49 Eircom's FTTH connections are calculated in the Service Demand module per exchange-footprint based on the customer churn to Eircom's FTTH service, and the count of premises that have/have not previously connected to Eircom's FTTH network. Figure 6 below further provides a high-level view of the associated flows.

5.50 Premises are categorised based on Q2 2019 data into three categories:

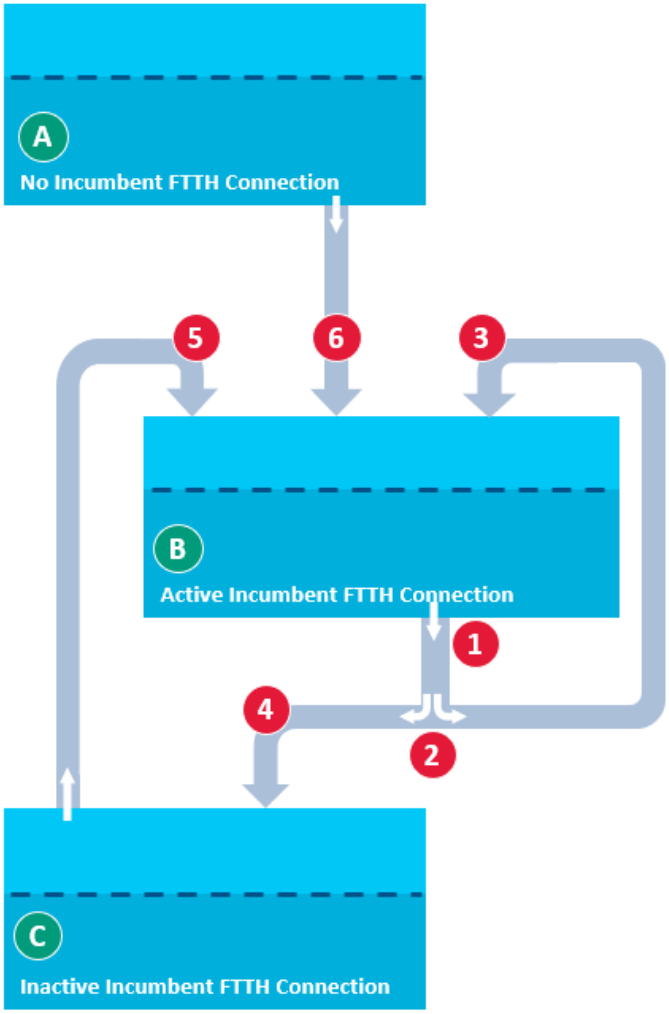
a) Those that were never connected to the Eircom FTTH network (therefore requiring a new fibre final drop), this category may also include those previously served by another FTTH network ((A) in Figure 6);

b) those subscribed to an FTTH service using the Eircom FTTH network ((B) in Figure 6); and

c) those premises with a ceased Eircom FTTH service (where the FTTH final drop is *in situ*). They may be subscribed to a FTTH service of another network ((C) in Figure 6).

5.51 Churn on Eircom's FTTH network is calculated based on the average customer life ((1) in Figure 6). Some ceases are modelled to result in re-connections of customers to the Eircom FTTH network and this is calculated with reference to the Eircom steady-state share of FTTH lines ((3) in Figure 6). The remaining ceases move to an alternative service (or no service) that does not use the Eircom FTTH network ((4) in Figure 6). Some premises with an Eircom FTTH connection are modelled also to re-subscribe to the Eircom FTTH network ((5) in Figure 6). In addition, new connections (i.e. requiring a new fibre final drop) to the Eircom FTTH network from premises with an alternative service (or no service), including forced migrations from copper to FTTH, are also calculated ((6) in Figure 6). In any given year the volume of new connections is set such that the total active Eircom FTTH lines in the following year is as calculated as above (i.e. by setting Eircom's share of FTTH active lines to converge to its steady-state), after all other activities that change the categorisation of premises have been taken into account.

Figure 6 - High-level FTTH Connections Flow



Source: Cartesian

5.52 New FTTH connections are then split between standard and non-standard connections, based on the fact that some connections may require the installation of additional poles or an underground road-crossing when a premises is on the opposite side of the road from the main access cable routes. In the Rural Commercial Area footprint ComReg set the volume of non-standard connections to be 10% of the total FTTH connections, based on the information provided by Eircom. In the Urban Commercial footprint all new FTTH connections have been assumed to be standard connections.

ComReg's Preliminary View:

5.53 ComReg is of the preliminary view that the approach to modelling demand in the Service Demand module is appropriate, on the basis that:

a) The approach to modelling demand in the BU scenario (based on Eircom service demand data at the national level and using information on premises locations, market shares, service availability and service take-up to forecast

and distribute and demand across exchanges) is appropriate for modelling the demand relevant to FTTC based services.

b) The approach to modelling demand in the TD scenario (based on Eircom service demand data at the exchange level) is appropriate for modelling the demand relevant to PSTN WLR in the Regional Low-Level FACO market and CG broadband services in the Regional WCA markets.

c) The approach to modelling FTTH demand on Eircom's network (previous connections, churn data and rural/urban classification) is appropriate for modelling the costs associated with standard and non-standard FTTH connections and migrations.

5.54 Based on this, ComReg is also of the preliminary view the Service Demand module provides an appropriate basis for the relevant inputs into the Capex, Opex, PAM and DAM modules.

Q. 4 Do you agree with that the assumptions and approaches used to model demand in the Service Demand module? Please provide reasons for your response.

5.5 Geospatial module

5.55 In this subsection ComReg provides an outline of the Geospatial module of the ANM.[83]

5.56 The purpose of the Geospatial and Passive Dimensioning module ('**Geospatial module**') is to determine the passive network elements required for 100% coverage of premises nationally using a BU approach.[84]

5.57 When a BU cost model is being developed to cost the access network of a hypothetical existing operator it can be approached on either a "scorched-earth" basis or a "scorched-node" basis.

5.58 A scorched-earth approach is one which assumes that the required equipment quantities can be deployed at node locations optimal to the overall network design, as if the network was being designed on a green-field site. The methodology makes no reference to existing network layouts and so applies no constraints on the number, location or configuration of nodes to be dimensioned. As such, the results are driven purely by the defined dimensioning rule set and the area to be covered. The resulting dimensioning would imply the most theoretically efficient network design to an extent that it may not closely resemble

[83] Further information on the Geospatial module is contained Section 4 of the Cartesian ANM Specification Document.

[84] Top Down models use data from the operators accounts and so do not require Geospatial analysis to dimension the network as the network costs are already recorded in the accounts. Nevertheless, the ANM can use the bottom-up analysis to allocate the Top down costs to NEs (e.g. attribute the capital costs of underground infrastructure to underground ("UG") NEs such as cabinets, chambers, trenches, ducts, sub-ducts, etc.).

the actual network layout that even an efficient operator would be practically capable of deploying. Therefore, a scorched-earth deployment runs the risk of modelling a network with an unrealistic level of efficiency.

5.59 Conversely, a scorched-node approach is one that recognises the historical evolution of the access network that has been deployed by the existing operator. This method uses the historic location of Eircom's network nodes but allows the geospatial analysis to determine the appropriate network configuration to make efficient use of those node locations.

5.60 As an operator develops a fixed access network, the location of network nodes will be dictated mainly by factors such as the location of the buildings that are being passed by the network and forecasts of demand for the services to be carried on the network. However, over time, with population movements and the development of new estates and business parks, new nodes are integrated into the existing network to serve the changing customer base. Consequently, the existing node that is being used to serve a building may no longer be the closest node to that building, with the result that the existing network layout cannot be considered truly optimal for the current or anticipated conditions in the market.

5.61 Therefore, while the scorched node approach that is applied to cost the BU network in the ANM uses Eircom's existing cabinet and exchange locations, it does not replicate the existing connections between premises and node locations but instead uses a shortest path algorithm to determine the most efficient network layout – for example, a housing estate may have been connected to its closest exchange when it was first developed, but over time a new exchange/cabinet, closer to that housing estate, may have been deployed to service the growing demand in the area.

5.62 ComReg is of the preliminary view that applying a scorched node approach in this way ensures that the network layout that is modelled in the BU scenario of the ANM avoids many of the inefficiencies that are inherent in Eircom's existing network layout and is a better approximation of the network layout that would be adopted by a hypothetically efficient network operator deploying a fixed access network in Ireland today.

5.63 The Geospatial module achieves its purpose by using data analytics to dimension the passive components of the network to meet the required coverage. The access network is comprised of cables on poles and ducts deployed along public roads. There are essentially three sets of cable paths that need to be considered when dimensioning an access network that can connect all premises to the nearest local exchange:

a) Final drops - The set of paths linking each premises to the nearest road

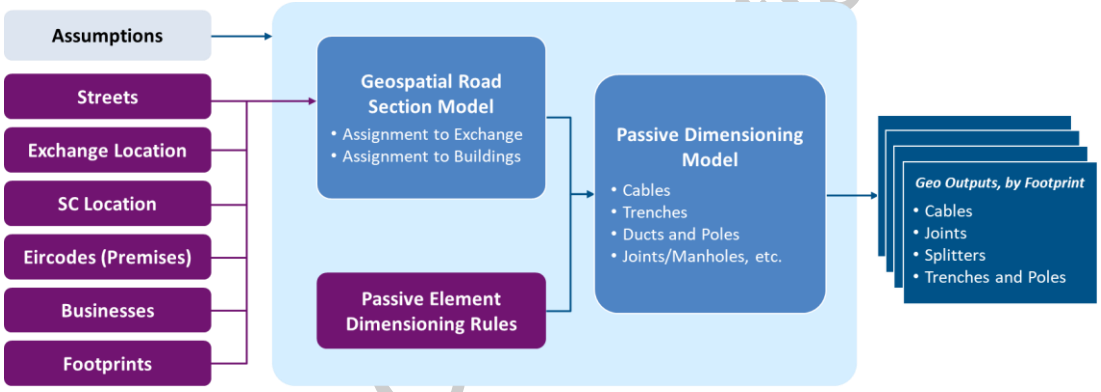
section;[85]

b) Distribution side (D-side) - The set of paths linking each road section to its nearest cabinet;

c) Exchange side (E-side) - The set of paths linking each cabinet to its nearest local exchange.

5.64 There are two strands to the analysis undertaken in the Geospatial module, the first being the "Geospatial Road Section Model" which determines geospatial parameters for each road section, and the second, the "Passive Dimensioning Model" which estimates the passive components required to connect premises on the road sections (e.g. quantity of poles, size of cable, lengths of trenches, etc.). Figure 7 shows the relationship between the inputs, both models, and the Geospatial outputs, which are used as inputs by the ANM Capex module.

Figure 7 - Geospatial analysis – high level approach



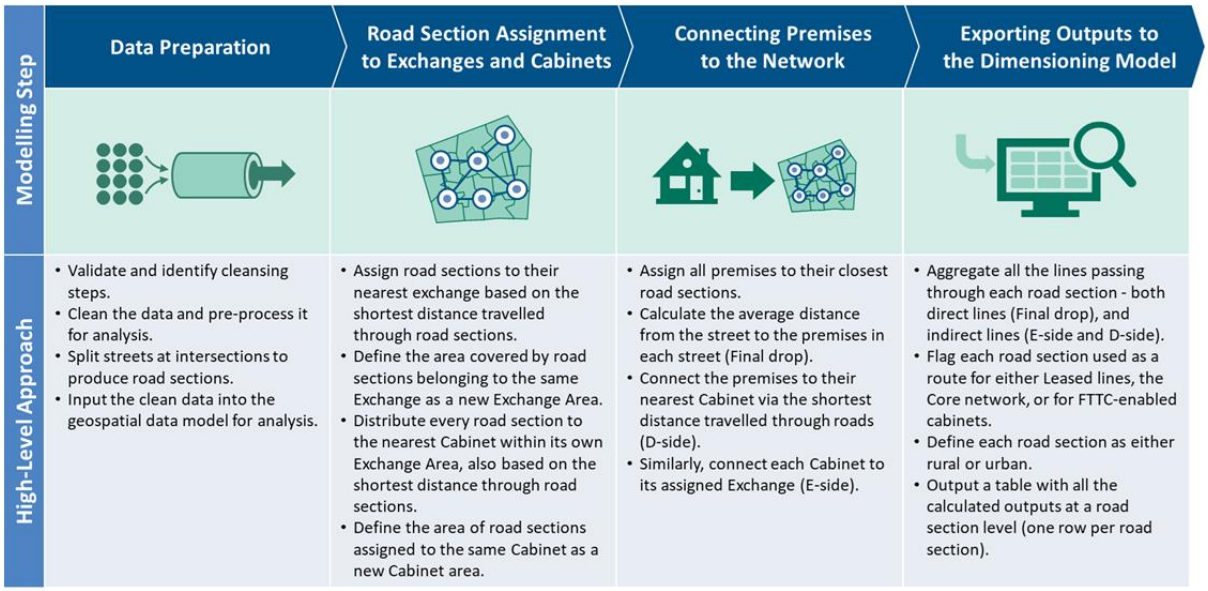
Source: Cartesian

The Geospatial Road Section Model

5.65 The Geospatial Road Section model follows four stages: data preparation; assigning road sections to cabinets/exchanges; connecting premises to the road sections; and exporting outputs to the dimensioning model. Cartesian's overall approach is summarised in Figure 8.

[85] All streets and roads are segmented at intersections to form "road sections".

Figure 8 - Geospatial road section modelling approach



Source: Cartesian

5.66 The first part centres on data preparation and cleansing. Data for this model was sourced from "OpenStreetMap" (as at 4 July 2019). The clean dataset excluded roads in Northern Ireland and the roads that were unlikely to be used for network deployments such as motorways. Streets/roads were then sub-divided into "*road sections*".

5.67 2016 population density data from the Central Statistics Office ("CSO") was also used to classify road sections as being either rural or urban: CSO data is provided in square kilometres and the classification between Urban and Rural is based on the population in each square kilometre. If the population within a square kilometre is greater than or equal to 750 then the *square* is classified as Urban, otherwise it is classified as Rural. Road sections that transition between rural and urban squares were classified as rural.

5.68 This classification informs the network dimensioning rules in the ANM, as for urban road sections all cables are deployed underground, while rural routes are usually overhead. However, additional dimensioning rules can also mean that sections of rural routes will be underground, e.g. all E-side and core routes are underground and if the D-side cable capacity required on the road section is in excess of 200 pairs then the D-side cable is underground.

5.69 The ANM uses unique Eircodes to determine the physical location of premises, based on "GeoDirectory" data provided by DECC. Similarly, Eircode data has been used to identify the location of circa 10k business premises, which then inform the dimensioning of network assets for business specific services that use the access network, such as leased lines. The use of Eircode data gives a slightly lower premises count overall when compared with the delivery point data used

by the DECC to specify the requirements of the National Broadband Plan (2,391k Delivery Points, whereas Eircodes totals to 2,204k) as an Eircode can account for more than one delivery point. However, industry data shared with ComReg also uses Eircodes and, as Eircodes can be associated with every building in the country, ComReg considers that they are an appropriate basis for estimating network deployment costs.

5.70 For the first stage, each Eircode has been assigned to one of three geographic footprints of the ANM based on data provided by the DECC and Eircom. Road sections were assigned to each footprint based on a combination of the designation of the majority of premises on a road section and, in instances where there are no premises, the road section is assigned to the footprint that covers the greatest part of the road section.

5.71 For the second stage, all road sections are assigned to the nearest local exchange based on the shortest distance travelled through road sections, to form new local exchange areas, based on location data for its exchanges (provided by Eircom)[86].Once a local exchange area is defined, the road sections within the local exchange area are distributed to the nearest cabinet to define new cabinet areas, creating in effect the basis for the scorched node approach used throughout the ANM.

5.72 In the final stage, all premises in the local exchange area are assigned to the nearest road section with distribution points (DPs) placed on road sections that have premises – if there are no premises on the road section then no DP is dimensioned.

5.73 Final drops[87] can then be deployed to connect the premises to the DP, while DPs are connected to the nearest cabinets to form the distribution side (D-Side) of the network and cabinets are connected to the local exchange to form the exchange side (E-Side) of the network.

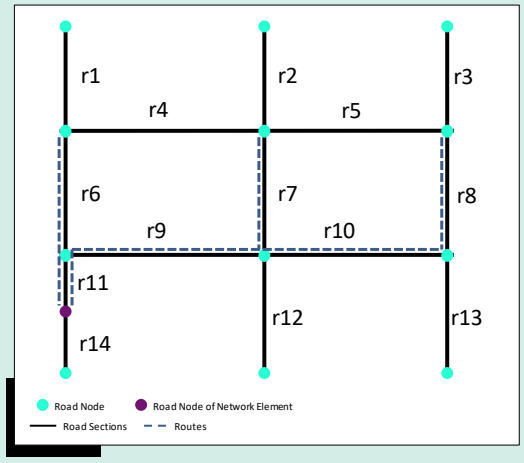
5.74 The final stage also generates output for the Passive Dimensioning model to use. The output generated for every road section includes: its length; the number of premises on each side of the road section; distance from the premises to the road section, and the distance along the road section between the first and last premises.

5.75 D-side cable represents the link between the different distribution points located on the section to the nearest street cabinet. Total ‘D-side demand’ for a road section is the combination of the demand on that section and the aggregation of the demand of each section for which the route to the cabinet uses the current

[86] Eircom also provided a list of core, backbone and aggregation exchanges, along with the location of all cabinets including those that are NGA enabled.
[87] The term “Final drops” is used for both overhead and underground connections.

section.

Figure 9 – Methodology to Estimate the total 'Route Demand' of a Road Section



- To calculate the D-Side we take the shortest route (dotted line) for each road segment (in the diagram depicted as a black line and each identified with a label r1..r14)
- Then we sum the number of premises for all the roads using each of the premises. For example, if we assume that every road has 10 premises then r8 will have only 10 premises passing (from r3) but r9 will have 80 premises passing (from r2, r3, r5, r7, r8, r10, r12, and r13)
- For the E-Side the process is similar. The routes are from the cabinet to the exchange and the demand will be the number of premises associated with each cabinet

Note: For E-Side, Leased Lines, and Core we modified the cost values used in the Dijkstra algorithm to increase the re-use of roads sections. The initial value for the cost is set to the road length and decreased successively with the increased of routes using that road section

Source: Cartesian

5.76 Copper and fibre route lengths are estimated for both the 'E-side' and 'D-side' of a route. This is used to determine the passive network elements needed to support service delivery in each road section. The average distance from the road section to the premises generates the distance from the distribution point to the premises. The rules in the Passive Dimensioning model are applied to the measurements gathered in this part of the modelling:

a) Cabinets marked as FTTC-Enabled are routed to their assigned exchanges (on the E-side route).

b) For Leased Lines, the path length is determined for each given business location to the nearest exchange using the road section network.

c) The core topology is composed of exchanges, aggregation nodes, backbone nodes, and core nodes. The following methodology is used: core nodes are fully interconnected, backbone nodes connect to two core nodes, aggregation nodes connect to two backbone nodes, and exchanges connect to their aggregation node.

5.77 The Geospatial Road Section Model generates a range of outputs for the Passive Dimensioning Model. General Geospatial Outputs contain information at a road section level, including the direct and indirect demand, relevant distances, and information regarding exchange, cabinet, Rural/Non-Rural split, and geographic footprint. Geospatial Splitter Path Outputs contain the path data (road sections) from the splitter location to its assigned exchange with the number of splitters required for the different topologies (single split versus cascaded splits).

Geospatial Exchange Outputs list the exchanges and their parent-child relationships.

The Passive Dimensioning Model

5.78 The Passive Dimensioning model makes use of the Geospatial Road Section Model outputs and applies the "Dimensioning Rules" to generate the number of passive elements required per exchange, per service, and per geographic footprint. A database is used to conduct this modelling, which follows three stages after data has been uploaded to the database; these stages are: dimension passive elements; calculation requirements per geographic footprint; and export the outputs.

5.79 The Passive Element Dimensioning Rules include the following aspects:

a) passive elements can be 'dimensioned' (quantified in the modelling) on each road section separately and independently;

b) buildings can be located on either side of a road section. The "major" side of a road section is the one with more premises, and the other side is the "minor";

c) When the route is underground, the major side will be fully cabled and trenched (end to end), which permits pass through of cables to subsequent road sections. Premises on the major side are connected directly to these cables;

d) Minor side premises can be connected either directly to the major side trench by digging under the road to reach each premise, or by a trench dug on the minor side which requires only a single dig across a road;

e) The distribution type (e.g. underground in trenches or overhead on poles) for a road section is determined based on the following rules:

(i) In urban areas, all cables (E-side and D-side) are underground; and

(ii) In rural areas, E-side cables are underground, but D-side cables can be overhead or underground; if the rural road section requires less than 200 pairs it is overhead, otherwise it is underground.

5.80 Engineering rules are also applied to determine the quantity and type of equipment required for the modelled network, and these rules are outlined in the accompanying Specification Document.

5.81 ComReg seeks stakeholder views on the following engineering rules, in Figure 10, to determine minimum cable capacities:

Figure 10 - Demand aggregation

Service	E-side	D-side	Final drop
Residential copper	1.1 pairs per premise passed	1.1 pairs per premise passed	1 pair per premise connected
Residential fibre	FTTC 1.1 fibres per cabinet	1.1 fibres per premise passed	1 fibre per premise connected
	FTTH 1.1 fibres per splitter		
Leased lines	2 fibres per leased line		
Core	One 37mm sub-duct per core network line		

Source: Cartesian

5.82 The ANM includes an initial spare capacity allowance of 10% by applying a 1.1 weighting to the demand per premises/cabinet/splitter. Furthermore, the 'rounding up' of demand into cables (e.g. if, after including the 10% spare capacity uplift, only 30 fibres are needed, the model will dimension a 36 fibre cable), will result in additional capacity. Consequently, the total additional cable capacity will be higher than the 10% minimum and is currently estimated to be 30%.

Ducts, poles and trenches

5.83 In the ANM, copper cables do not require sub-duct, so sub-ducts are dimensioned for fibre cables only, with the assumption that 75% of each sub duct area is available for fibre cables. On main routes, 100mm ducts are assumed and it is also assumed that a maximum of four sub-ducts can fit in one duct. The total number of sub-ducts required depends on the total cross-sectional area of the fibre cables and only three of those sub-ducts are available for current use, as the last one is kept free for future use.

5.84 The number of E-side and D-side ducts dimensioned along a road section depends on the number of sub-ducts and copper cables that are dimensioned for that road section, with a separate duct reserved for core cables when a road section is part of a core route. It is assumed that each duct can be filled to 75% of its total volume.

5.85 The assumption regarding poles is that they are 50 metres apart along the major side of the road to support overhead cables.

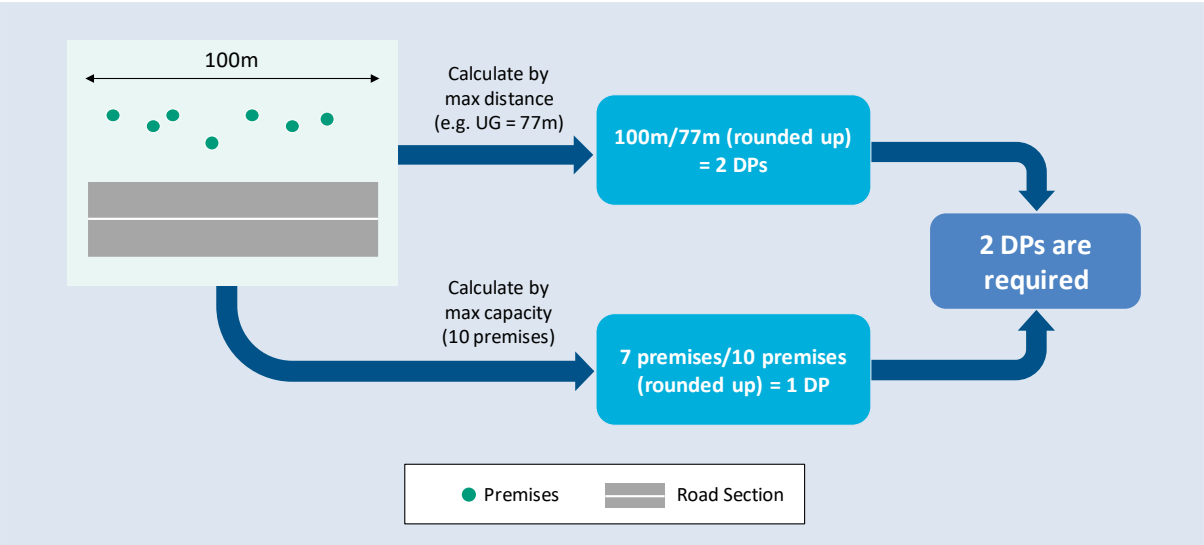
5.86 Trenches are dug to support ducts and are always deployed along the full length of a road section when they are required (e.g. urban settings) and, where needed, an additional trench is also deployed on the minor side. The maximum trench capacity is 12 ducts and if the number of ducts in a trench exceeds 12

then an additional trench is added until sufficient capacity is provided.

Distribution points and final drops

5.87 Copper distribution points can be overhead or underground as required, and it is assumed that each distribution point can serve a maximum of ten premises. The maximum distance between the DP and the last building it can serve is set at 50m along the pole route if served overhead or 77 metres if served underground: if the distance on the road between the DP and the last building is greater than these limits, a second distribution point will be required. The maximum number of distribution points on a road is limited to the number of premises.

Figure 11 – Distribution point calculation

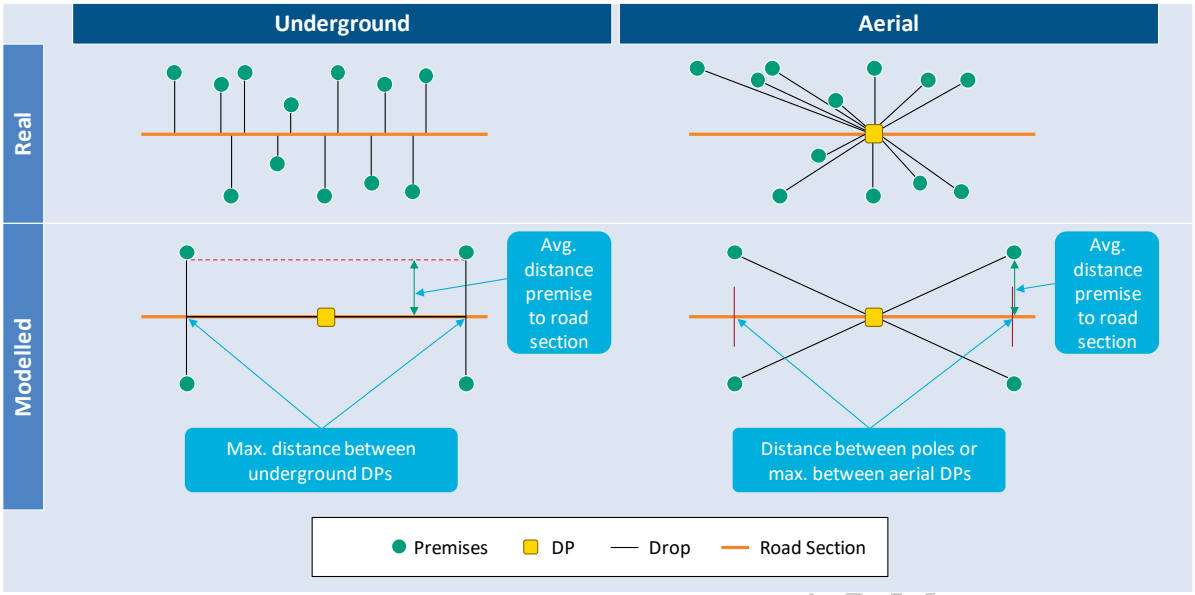


Source: Cartesian

5.88 Fibre distribution points are similar, but can serve a maximum of 12 premises, and underground connections have a limit of 65 metres along the road section, whereas overhead have a limit of 150 metres. Splitters have been dimensioned using a single 1:32 ratio splitter, except where the D-side path exceeds 15km, when a 1:8 primary splitter is used, followed by a 1:4 secondary splitter co-located with the distribution point. ComReg is aware that the 15km engineering rule may result in the proportion of single/dual splitter deployments being dimensioned in the ANM that is not consistent with the actual FTTH networks being deployed in Ireland. Consequently, this rule can be revisited if further detail is received from operators. However, given that FTTH is currently not subject to cost orientation, this parameter does not have a material impact on the model outputs that are of concern to this pricing review.

5.89 The distribution and length of the final drops is dependent on whether it is overhead or underground. As the exact position of the distribution point is unknown these had to estimated, as outlined in Figure 12 below:

Figure 12 - Final Drop Distance Calculation Method



Source: Cartesian

Network elements

5.90 Joints are dimensioned at the start of each road section and where cables meet, with further joints placed for each cable every 2250m for fibre cables and 250m for copper cables.

5.91 Chambers are dimensioned on underground routes based on the number of distribution points plus joints, and the length of the road section. A chamber is required for each joint and distribution point location, in cases where joints and distribution points are collocated, only one chamber is needed. A chamber is also required every 250m for rural road section, and every 150m for urban road section.

5.92 The network dimensioning in the ANM also recognises the extent that different elements can be shared by multiple services. Figure 13 indicates whether a network element is shared across multiple services, and if so, which services are shared. Entries marked with a cross (×) use dedicated elements that are not shared with other services. Entries marked with a tick (✓) share that element with all other services also marked with a tick. Network elements without a cross or a tick are either not relevant to that service, or not dimensioned in the ANM:

Figure 13 – Element sharing by services

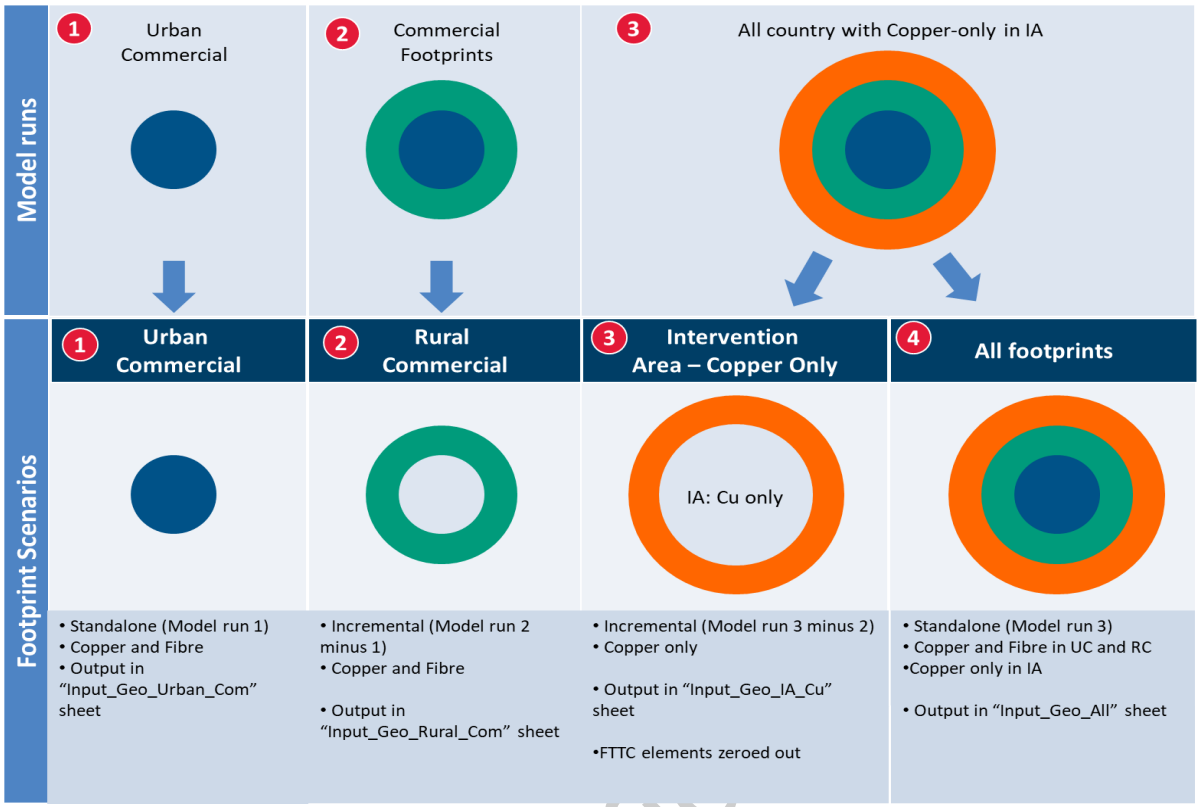
Element	Copper	FTTC	FTTH	Leased Line	Core
Copper Cables	✓	✓			
Fibre Cables		✓	✓	×	×
Distribution Points	✓	✓	✓		
Splitters			×		
Joints	✓	✓	✓	×	×
Main Termination	✓	✓	✓		
Poles	✓	✓	✓	✓	
Chambers	✓	✓	✓	✓	✓
Sub-Ducts		✓	✓	×	×
Ducts	✓	✓	✓	✓	×
Trenches	✓	✓	✓	✓	✓

Source: Cartesian

5.93 In general, elements that are used by multiple services are first dimensioned as per the dimensioning rules and then apportioned to individual services based on a measure of each service's usage of each element, e.g. the cross-sectional area of cables acts as a proxy for the usage of duct. All copper-based services, such as FTTC and PSTN WLR share copper cables, and residential services, such as FTTC and FTTH, are assumed to share E-side fibres cables. However, core services have exclusive use of their own fibre cables and ducts but do share trenches.

5.94 The next stage is to determine the network costs based on classifying geospatial outputs into the three footprint scenarios giving rise to four scenarios in total (the 'All footprints' scenario is the aggregation of the other three) as shown in Figure 14.

Figure 14 – Definition of geospatial footprint scenarios



Source: Cartesian

5.95 Outputs for the 'All footprint' scenario are sense-checked against Eircom data, where available (e.g. number of poles), and the geospatial outputs are also validated against the outputs produced by the Revised CAM where they can be validated (e.g. the length of copper cables) and the results were consistent.

5.96 The ANM models the costs associated with each of the geographic footprints by running the geospatial analysis three times: *Urban Commercial, Commercial Footprints* and *All country with Copper Only in IA*. For the *'Urban Commercial'* iteration, only the Urban Commercial Area premises are included, although all road sections are still within scope to enable the ANM to traverse road sections on other footprints. The ANM can build copper and fibre to all these premises. The *'Commercial Footprints'* iteration adds Rural Commercial Area premises to the Urban Commercial Area premises and builds copper and fibre to all the premises in the combined footprint. The '*All country with Copper only in IA iteration*' models a network capable of serving all premises in the country, including those designated as part of the NBP IA.

5.97 The '*Urban Commercial'* iteration provides the standalone network costs of the 'Urban Commercial' footprint, which is used to inform the access network costs inputs into the NGA Cost Model to derive prices for FTTC/EVDSL services as these are sold primarily in the urban footprint. PSTN WLR and CG SABB are

sold in all footprints so the All footprint scenario is chosen to ensure that all costs in an exchange area are considered when setting the prices for these services.

5.98 Finally, the analysis generates outputs for each footprint scenario, with the quantity of each asset described above per Exchange. Each element is apportioned to individual services, except for trenches, ducts and chambers, which are apportioned to the E-side, D-side, leased lines and core. This means that the ANM can output the incremental costs associated with different footprints. For example, the incremental costs associated with the 'Rural Commercial' footprint can be derived by netting the '*Urban Commercial'* iteration network costs from the '*Commercial Footprints'* iteration network costs (section 2 in Figure 14). Similarly, the incremental costs of the NBP IA can be derived by netting the '*Commercial footprint'*s iteration network costs from the '*All country with Copper-only in IA'* iteration network costs (section 3 in Figure 14).

5.99 ComReg has found this incremental view of footprint costs useful in understanding the cost differences that might pertain to civil infrastructure costs across the footprints, which arise because of the differences in the purpose and timing of investment in poles and duct between these footprints. This analysis has been used to inform the approaches that ComReg has considered for setting the prices for duct and pole access in the 2020 CEI Pricing Consultation.

ComReg's Preliminary View:

5.100 ComReg is of the preliminary view that the approach to network dimensioning in the Geospatial module (adopting a scorched node approach based on Eircom's node locations and applying efficient network dimensioning rules to deploy copper and fibre cables along the Irish road network) is appropriate for a HEO deploying an access network in Ireland today.

5.101 Furthermore, the ability to dimension a network comprising three different footprint scenarios (Urban Commercial Area, Commercial and All) ensures the ANM can isolate the costs of a standalone access network that can serve all premises capable of receiving a viable FTTC service in Ireland (the Urban Commercial footprint), as well as calculating the incremental network costs required to extend that network to serve all remaining premises (the Rural Commercial and NBP IA footprints).

Q. 5 Do you agree with ComReg's preliminary views that the Geospatial module is appropriate for dimensioning the access network (copper and fibre) of a HEO with Eircom's network presence in Ireland? Please provide reasons for your response.

5.6 PAM/DAM modules

5.102 The PAM/DAM modules calculate the costs associated with poles and ducts. A detailed description of these modules is set out in the 2020 CEI Pricing Consultation[88] and therefore this description is not repeated in this consultation[89]. For the purpose of this consultation, ComReg notes that given the expected scale of CEI access associated with NBI's MIP[90] over the timeframe of the ANM, it is necessary to calculate the expected CEI related costs that are recovered in the CEI access revenues associated with NBI's MIP in order to avoid a potential over recovery of CEI costs from the cost oriented prices for other wholesale access services that share the same infrastructure, e.g. PSTN WLR in the Regional Low-Level FACO Market.

5.103 These CEI access revenues were derived based on the modelled take-up of poles and ducts by NBI's MIP, in both the NBP IA and in Commercial Areas, and on the basis of the draft annual rental prices for NBI's MIP, set out in ComReg's 2020 CEI Pricing Consultation, based on the proposed cost sharing / pricing methodologies for CEI access services[91]. As a result, ComReg calculated the total cost annuities for poles and ducts net of these revenues and it is this quantum of net costs that is included in the ANM Capex module to be recovered through the suite of ANM access services other than Pole and Duct access[92].

5.7 Opex module

5.104 In this subsection ComReg provides an outline of the Opex (Operating Expenditure) module of the ANM.[93]

5.105 The purpose of the ANM Opex module is to determine the operating costs that should apply in the ANM for two cost modelling approaches. Hence, the outputs of the Opex module for the relevant approach are then inputted to the Capex module and combined with the annualised capital costs to derive the costs of services.

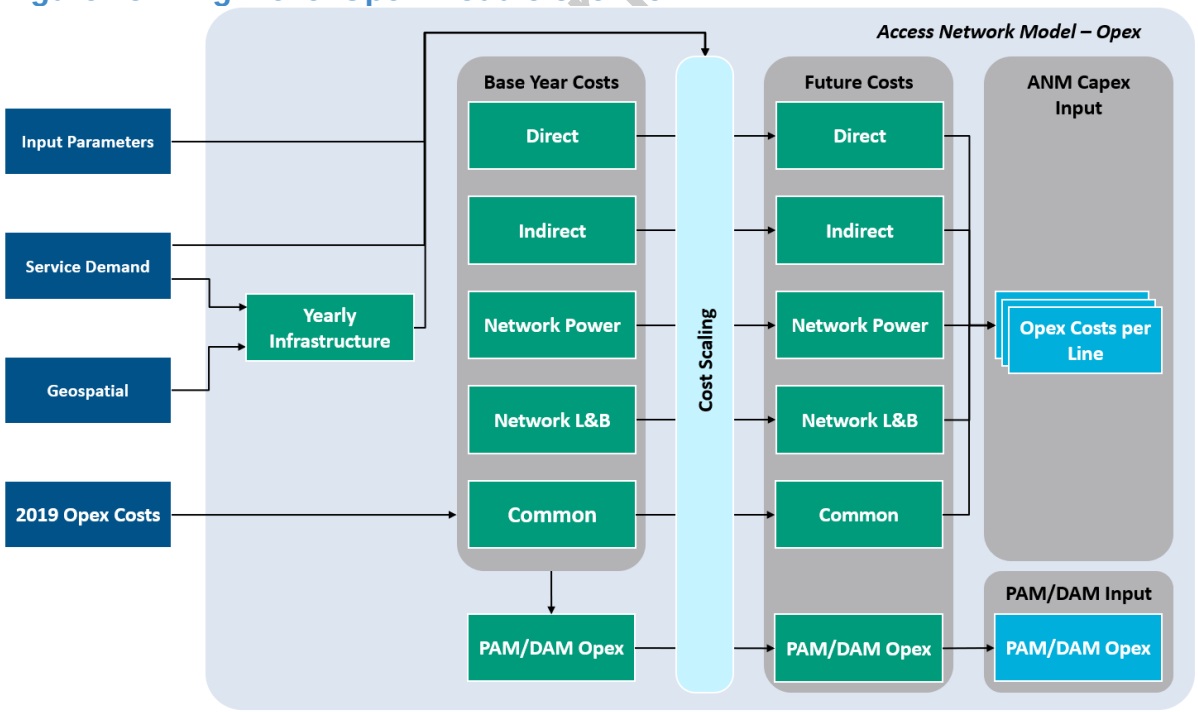
[88] See Section 5.8 of the 2020 CEI Pricing Consultation for a detailed description of the PAM/DAM modules.
[89] Further information on the PAM/DAM modules is contained Sections 6 and 7 of the Cartesian ANM Specification Document.
[90] See paragraph 12 of the 2020 CEI Pricing Consultation, where ComReg refers to NBI's broadband network rollout for the purposes of the NBP as "**NBI's MIP**".
[91] See Section 2 of the 2020 CEI Pricing Consultation to view these prices for the period 1 July 2020 to 30 June 2025. For the remaining ANM modelled years (i.e. 1 July 2025 to 30 June 2030), ComReg has set NBI's MIP prices from the PAM/DAM modules on the same proposed cost sharing / pricing methodologies.
[92] Further information on the calculation of the PAM/DAM inputs into the Capex module is contained Sections 8 of the Cartesian ANM Specification Document.
[93] Further information on the Opex module is contained Section 5 of the Cartesian ANM Specification Document.

5.106 Costs in the Opex module are calculated using a TD approach and a BU approach, as outlined in paragraph 5.14 above. In a TD approach costs reflects an efficient operator operating Eircom's legacy network while in the BU approach, costs are further scaled down to reflect the operation of a recently deployed network. In terms of efficiency adjustments, ComReg has taken the preliminary view that Eircom's TD costs, as recorded in the two most recent HCAs, are representative of an efficient operator, given the series of cost reduction programmes undertaken by Eircom since 2013. However, the ANM still includes significant efficiency adjustments when modelling BU costs in recognition of the fact that the costs of operating a recently deployed copper access network will be lower than the costs incurred in operating Eircom's legacy copper access network.

5.107 Most of the costs that are analysed in the Opex module are comprised of Opex, which can be further broken down between pay and non-pay. However, some non-network capital costs are also included (mainly depreciation and the Net Book Value ('**NBV**') associated with IT, accommodation and transport assets – e.g. motor vehicles) as well as elements of working capital such as debtors, creditors, stock, etc.

5.108 Figure 15 below provides a high-level overview of the Opex module.

Figure 15 – High level Opex module overview



Source: Cartesian

Source of data for the Opex module

5.109 Eircom's Additional Financial Information ('**AFI**'), is the source of the data contained in the Opex module. The base year operating costs were derived from

an analysis of the AFI cost data provided by Eircom as part of the annual regulatory accounting process, with further information provided in response to a data request under Section 13D(1) of the Act. Each year, Eircom provides ComReg with a series of AFIs that are extracted from the cost accounting model that underpins the published HCAs. The AFI also captures whether the costs are considered as 'Opex', 'depreciation', or Mean Capital Employed ('**MCE'**) – the green columns in Figure 16 below. The analysis to determine the base year costs focused on the AFIs from the two most recent sets of Eircom's HCAs for the financial years ending June 2018 and June 2019.

5.110 Eircom's cost accounting model uses an activity-based costing methodology, which consists of two steps:

a) Allocation of operating costs to defined activity-based costing activities; and

b) Mapping activity-based costing activities to network elements, market groups, and markets.

5.111 Cost activities that are relevant to the ANM include network related activities such as repair and maintenance ('**R&M**'), installation and provisioning ('**I&P**'), Network Management (which includes logistics, and network planning and support), as well as central activities such as shared services (i.e. human resources, general IT, finance/strategy, legal, regulatory, CEO, and other corporate). To facilitate modelling in the ANM these are aggregated into four high level cost categories – direct, indirect, network and common, as shown in Figure 16 below, and discussed briefly in the following paragraphs, and in more detail further below.

Figure 16 - Operating costs categorisation

		Opex			Depreciation			MCE		
Cost Category		Copper	Fibre	Provisioning	Copper	Fibre	Provisioning	Copper	Fibre	Provisioning
Direct	I&P									
	R&M – Line Sensitive									
	R&M – MDF									
	R&M – Pole Testing									
	R&M - Tree Trimming									
	R&M – Preventative Underground									
Indirect	Network Management									
	IT									
Network	Network Power									
	Network Land & Buildings									
Common	Network Rates									
	IT									
	Accommodation									
	Transport									
	PersAdmin									
	Other									

Source: Cartesian

5.112 In terms of materiality, the most material direct cost relates to R&M - Line, and ComReg has estimated the TD copper related R&M – Line costs for the base year to be in the region of €30m, based on an analysis of the opex contained in the two most recent HCAs (at 30 June 2018 and 30 June 2019). However, this

TD figure is reduced significantly (circa 40%) when Direct R&M - Line costs are rescaled for the BU scenario as described in paragraphs 5.123 to 5.128. The total costs in the other Direct R&M copper categories are less than €5m. Network management is the most significant indirect cost at over €30m (including depreciation and cost of capital at 5.61%). The total common costs (including depreciation and cost of capital at 5.61%) in the TD scenario is between €35m and €40m, of which Network Rates is the most significant component (~ €10m).

5.113 For those cost types that are of a "direct" nature, such as repair and maintenance costs, Eircom has a recording system that attributes pay and other costs, such as stores (e.g. tools, protective clothing, uncapitalised equipment, etc.), to a range of sub-accounts known as "Appropriation Codes". These appropriation codes describe the type of equipment being maintained, installed or more generally supported, in further detail. It is therefore possible, for example, to identify separately the direct pay and other costs incurred in the maintenance of copper access lines.

5.114 The fact that a direct association can be established between a cost activity and a cost-driver such as copper access lines, also means that the amount of direct costs can be modelled to vary in response to any changes in the associated cost-driver over time. Consequently, direct costs in a future year can be forecast to scale relative to the 2019 base year costs in proportion to the ratio between the expected volume for that year and the 2019 base year volume[94]. This time-dependent scaling enables the modelling to incorporate the implications of the FTTH rollout and subsequent copper switch-off into the forecast of future costs, as the migration of demand from copper to fibre services will result in a reduction in the direct costs of copper access lines and an increase in the direct costs of fibre access lines. Direct costs also tend to be 100% variable in response to changes in the associated cost driver.

5.115 Cost types that are of an "indirect" nature are associated with activities that support the direct activities and include functions such as procurement, transport and network support, as well as some IT related activities such as fault management systems, and personal IT devices (e.g. for staff in the field responding to faults, etc.). Therefore, there is an indirect relationship between these costs and the cost-drivers in the ANM. For example for active copper lines, the amount of an indirect cost associated with these lines can vary in response to the changes in the direct costs, which, in turn, can vary in response to changes in the cost-driver, albeit some of the indirect costs can also be fixed in nature, e.g. the network management system might be a fixed cost but the personal devices that interface with it will vary in proportion to the number of users.

[94] Other factors such as inflation and increased efficiency can also impact the level of scaling between years and these are considered separately.

5.116 The "network" cost category includes network land and buildings and network power. These costs would be associated with the exchange buildings and active equipment and are therefore assumed to vary with the number of exchanges. The Opex module in the ANM only considers the share of costs that are associated with access cables, which ComReg estimates to be in the region of €3M (operating expenditure and depreciation) across all exchanges.

5.117 The "common" cost category includes costs that would not be expected to change materially in response to changes in the level of work undertaken. A proportion of common costs can vary in response to changes in direct costs, but a greater proportion of the costs will be fixed than is the case of either the direct or the indirect cost categories. Examples of such costs include the network rates that Eircom, as a network operator, must pay on an annual basis to local authorities, as well as the costs of central and shared services activities, such as human resources, finance & strategy, business management, corporate insurance, legal fees, etc.

5.118 In addition to providing detailed information on Eircom's costs at an activity level, the AFI's also contain information on which Network Elements ('**NEs**') those activities are allocated to in the HCAs. An NE is a unit of network plant or activity which can be attributed to end services based on a common cost driver. Eircom's Primary Accounting Document, published along with Eircom's HCAs, describes NEs as representing "*the most significant destination for network related costs in the cost allocation process before their final attribution to services based on usage factors or defined allocation bases*"[95].

5.119 The HCAs also contain the "Network Cost Market Summary Wholesale Markets"[96], which show the costs of various NEs and the wholesale markets to which they are allocated. The NEs that are most relevant to the services being costed in the ANM are the Copper Access Network, Fibre/High Speed Access Network, Provisioning Wholesale Network and Repair Wholesale Network.

5.120 The following subsections provide further detail on the "Direct", "Indirect", "Network", and "Common" activities that are allocated to the "Network Elements". It also considers the different levels of efficiency that have been applied in the TD and BU approaches and how the costs relevant to the TD approach have been adjusted to reflect a more efficient, recently deployed network that is modelled in the BU approach.

[95] See: https://www.eir.ie/opencms/export/sites/default/.content/pdf/regulatoryinformation/pad_fy_1819.pdf, page 11.
[96] See: https://www.eir.ie/opencms/export/sites/default/.content/pdf/regulatoryinformation/hca_fy_1819.pdf pages 18 & 19.

Direct cost activities

5.121 Repair and maintenance ('**R&M**') costs represent the most significant 'Direct' element of the operating costs modelled in the Opex module. Most R&M costs relate to fault repair in the access network with the result that one of the key factors that influences the level of access network operating costs is the number and frequency of line faults that arise on the network. This can be measured by the line fault index ('**LFI**'). The LFI is influenced by the condition of the network assets, with the LFI being more sensitive to the condition of the cable network than to the condition of poles and ducts.

5.122 Most of the faults recorded on Eircom's access network are cable related and older cables are more prone to faults than newer cables. Consequently, replacing a percentage of existing cables with new cables has a much more significant impact on the level of R&M costs than would arise as a result of the replacement of an equivalent percentage of poles and ducts. The BU approach assumes that all cables have been recently deployed and, as a result, is assumed to have a significantly lower LFI than is evident with Eircom's legacy copper network in the TD approach, which is comprised of older cables in place for many years and is heavily depreciated.[97] ComReg also expects that fibre cables will have a lower fault incidence than copper cables, as fibre cables are more resilient to damage from lightening and water. A lower LFI for FTTH has therefore been assumed in the model.

5.123 To derive the operating costs that should inform the cost analysis in the ANM, ComReg, with its advisors Cartesian, analysed the R&M costs from the recent AFIs[98] from Eircom's HCAs to determine the proportion of these costs that should inform the line sensitive element of R&M costs in the base case TD approach. A scaling adjustment is applied to the base case TD approach for the line sensitive costs so as to derive the lower level of R&M costs that are consistent with the lower LFI that pertains in the BU approach.

5.124 This is similar to the approach adopted in the Revised CAM and, in fact, the level of efficient repair and maintenance costs that has been modelled in the BU approach in the ANM has been informed by the level of repair and maintenance costs that had been modelled in the BU approach in the Revised CAM, which was derived as follows:

a) Determining a reasonable LFI representative of a new efficient network;

b) Determining a reasonable number of direct front-line staff required to maintain a network with this level of LFI;

[97] The ratio of Gross Book Value to Net Book Value can provide an indication of the average age of assets. For Eircom's copper cable network this ratio is [✂ ✂]%, which suggests that the majority of copper cable costs have already been recovered.
[98] The analysis focused on the two most recent financial years, 2017/2018 and 2018/2019.

c) Estimating the pay costs consistent with the efficient number of front-line staff (as per point b) and then adjusting the existing R&M costs to align with this estimate; and

d) Determining a reasonable level of actual indirect and common costs consistent with the BU approach.

5.125 The AFI information on R&M available to ComReg covers a number of years and there can be significant variances in the level of R&M costs incurred in any one year. The most significant factor that causes this variance is the level of storm activity that occurs in each year with some years experiencing more extreme weather events than others. For example, the financial year ending June 2019 recorded no storm costs of consequence whereas the previous financial year had significant storm costs. Consequently, ComReg and its advisors used an average of these two financial years to determine the level of R&M copper costs that should inform the operating costs for the 'typical' year that is modelled in the ANM.

5.126 In terms of the level of efficiency that is relevant to the fault repair activities for the legacy network that is modelled in the TD approach, ComReg is aware that, since the Revised CAM was finalised, Eircom has agreed specific fault repair Service Level Agreements ('**SLAs**') with penalties for failure to achieve those targets. To facilitate compliance with these more challenging SLA targets Eircom has restructured service assurance teams to support faster response/restoration times and invested in preventative maintenance programmes to replace sub-standard copper cables, which reduce the overall LFI of the network.

5.127 In addition, Eircom has undertaken a number of cost reduction programmes in recent years and, although most of these were targeted at areas other than the service assurance teams in the access network, ComReg is of the preliminary view that the access network R&M costs in the most recent accounts are very close to a reasonable measure of efficiency, given the age and condition of the access network assets. Consequently, ComReg has implemented no further efficiency adjustments to the R&M cost in the TD approach as the costs extracted from Eircom's accounts are considered to be representative of an efficient operator operating Eircom's legacy network.

5.128 Nevertheless, ComReg is of the view that the level of R&M costs in the BU approach will still be significantly lower than these TD costs given the lower LFI consistent with the recently deployed cable network in the BU approach. Furthermore, the fact that Eircom recognised the need to replace older cables in recent preventative maintenance programmes in order to comply with stricter SLAs, substantiates the case that newer cables have lower LFIs and require less maintenance. Therefore, ComReg has implemented a rescaling of R&M costs between the TD and BU approaches that results in average R&M cost per active copper line that is comparable to the cost per line evident in the Revised CAM.

As a result, the R&M costs in the Opex module are scaled to be just over 40% lower in the BU approach than in the TD approach.

5.129 The Opex module models the R&M costs relating to fault repair as a cost *per active line* based on the active line count and costs estimated in the base year (2019) and modelled a lower cost per active fibre line costs than for active copper line. This allows future costs to scale in line with forecast volumes of both copper-based and fibre-based services.

5.130 In addition to the reactive R&M costs, the Opex module also models R&M costs relating to preventative maintenance[99] programmes including pole testing and tree trimming programmes. When poles are surveyed and tested in advance of a programme such as the recent FTTH deployment undertaken by Eircom in rural areas, the associated costs tend to be capitalised. However, there are some pole testing costs that are associated with cyclical pole testing programmes that are not capitalised and these costs are included in the Opex module. As these costs are directly attributable to poles, all pole testing costs are incorporated into the PAM module instead of being apportioned to other assets through the Opex module.

5.131 Direct R&M costs also include costs associated with tree trimming. Operators often have to undertake tree trimming when deploying aerial cables or poles, but tree trimming can also be undertaken to prevent damage to existing cables and poles. The ANM can allocate a certain proportion of these costs to the PAM on the basis that they are considered to be pole related. However, tree trimming costs incurred when deploying new infrastructure tends to be capitalised, and ComReg has estimated the average tree trimming costs recorded as operational spend in the last two financial years to be less than €0.5m. In the absence of better information, the allocation of these costs to the PAM is currently set to 5%, so the majority of these costs are treated as "cable-related" and, therefore, recovered as a cable related cost to be recovered across active line numbers.

5.132 The R&M Main Distribution Frame ('**MDF**') costs comprise a preventative maintenance activity that relates to the pressurisation of underground E-Side cables. Pressurisation systems are located beside the MDF in local exchanges and pump air into the E-side copper cables, which can limit potential damage by water ingress and give advance warning of damage to those cables. The associated annual costs are estimated to be €2.5m and are treated as an MDF related cost, which means that the future costs can vary with the number of MDFs (e.g. costs will decrease if copper switch-off occurs in an exchange footprint)

[99] Unlike reactive maintenance, which is undertaken to remediate reported faults, preventative maintenance tends to be undertaken to minimize the risk of future faults by addressing factors (unstable or dangerous poles, defective cables, tree branches or ivy growth that can damage poles and cables), which can give rise to faults.

rather than the number of active copper lines.

5.133 Other costs included in the Direct category relate to the Installation and Provisioning ('**I&P**') activity, which is related to new connections. Eircom has adopted a policy of capitalising the I&P costs associated with NGA broadband connections (e.g. FTTC and FTTH) but still treats the I&P costs for standalone PSTN-WLR services as an operational cost. ComReg understands that Eircom outsources most of the I&P work to contractors, which means that the average cost per connection will reflect the agreed contractor rates. Therefore, forecast connection volumes can act as a cost-driver to forecast future I&P costs in the operating cost module by applying the average cost of a connection to the forecast connections volume. Consequently, as the number of copper connections decline in future years the associated copper connection costs will also be scaled down compared with the 2019 base year.

5.134 Similarly, the cost driver identified for each operational cost category are also scaled, where relevant, based on the ratio between the expected volume for each year and the 2019 volume (e.g. for connections, copper lines, etc.). This time dependent scaling incorporates the FTTH rollout and copper switch-off, as the mix and volume of lines varies each year then this impacts the level of operational costs.

Indirect cost activities

5.135 Indirect cost activities include the costs associated with activities and processes that support the direct activities. For modelling purposes these are further categorised as network management and IT related. Network management includes activities such as the supervision of direct front-line staff, work planning, transport (e.g. vans) and procurement, while IT includes the costs of various support systems including provisioning, fault handling, geo-mapping and work management systems. Indirect Opex costs are then applied as a mark-up to direct operational costs, to recognise the fact that indirect costs are incurred in supporting direct operational activities. The various direct, indirect and network costs allocations can then be combined into a 'non-common cost per line' for each of the copper and FTTC services and for the FTTC links for all relevant exchange-footprints for the modelled year.

5.136 These indirect costs are modelled to vary depending on the corresponding increases or decreases in direct tasks – e.g. supervision will increase to some degree if direct R&M is increasing. However, a percentage of both Network management (30%) and IT (60%) indirect costs are assumed to be fixed, with the remaining costs varying in line with changes to direct costs.

Network costs

5.137 Network costs comprise network related costs such as Network Power and Network Land and Buildings. Most network buildings are owned by Eircom, so

rent is not a significant factor, but the depreciation and MCE of network buildings is included in the Opex module. Security, cleaning and insurance costs are also included. However, the allocation of network building costs to network elements that are modelled in the ANM is relatively small as the occupancy of exchanges is dominated by transmission, switching and data equipment that are not modelled in the ANM. Likewise, only a relatively small element of Network Power costs is modelled directly in the ANM as the power consumption is limited to the access cable related equipment such as cable pressurisation systems and line testing equipment. These costs are attributed across the 1,148 exchanges in the ANM on the basis of active lines.

Common cost activities

5.138 Common corporate costs are modelled in the Opex module under the following categories: Network Rates, IT, Accommodation, Transport, Personnel Administration and Other. The level of common corporate costs in the base year TD approach is determined with reference to the costs in the two most recent set of Eircom accounts, with only the share of common corporate costs attributed to Network Elements that support fibre and copper access services considered for inclusion in the Opex module.

5.139 Some common corporate costs, as outlined below, are assumed to vary due to changes in the level of direct costs incurred in the two approaches, e.g. the reduction in the common corporate costs modelled in the BU approach will be informed by the changes in the level of direct costs between the BU approach in the modelled year and the base year TD approach.

5.140 All these cost categories are modelled as a common corporate cost between fibre and copper services and recovered on a per-service basis, i.e. the same level of common cost is recovered by the service regardless of whether the service uses a fibre or copper transmission medium and, in the case of copper based services, the same level of common cost is recovered regardless of whether it uses an LLU or SLU cost input. The approach, previously adopted in the 2018 Pricing Decision, has the benefit of allowing for greater stability of prices in the medium term and minimises the risk of stranded costs as providers migrate from WLR inclusive services (which use the full local loop) to standalone NGA services (which tend to use D-side of the local loop) and from copper based services to fibre based services.

5.141 Furthermore, the 2018 Pricing Decision determined that common (corporate) costs should not be recovered from services sold to customers in uneconomic areas.[100] ComReg continues to consider that the NBP IA footprint is an uneconomic area in terms of service provision, as it is characterised by longer

[100] Further discussion on the recovery of common corporate costs across Wholesale Access services can be found in the 2018 Pricing Decision, paragraphs 6.211 to 6.226.

than average line lengths, with fewer economies of scope along cable routes due to the dispersed customer base. Consequently, the high incremental cost of providing services in the NBP IA means there is insufficient margin from customer revenues in the NBP IA to contribute to the recovery of common corporate costs with the result that all common corporate costs have to be recovered from those services sold in the Urban Commercial Area and Rural Commercial Area footprints (for further details see paragraphs 6.221 to 6.227 of the 2018 Pricing Decision).

5.142 One of the most significant components of the common cost category relates to Network Rates (an average of €10m attributed to the access network elements in recent accounts), which are the rates that local authorities charge Eircom for operating its network in different parts of the country. Eircom's cost attribution methodology in the HCAs effectively treats network rates as a charge on the revenue-generating capacity of Eircom's network infrastructure, so the activity is mapped across all network elements based on the capital costs of those network elements. As a result, the majority of Network Rate costs are mapped to the access network elements that are relevant to the costs of services modelled in the ANM. Network rates are assumed to be a fixed cost, which does not vary as other costs do.

5.143 Common IT costs relate to general IT costs such as corporate systems and infrastructure but exclude IT systems which have a specific function such as billing systems, network management systems, etc. 60% of common IT costs are assumed to be fixed with the remaining costs varying depending on the amount of direct costs compared to the base case scenario.

5.144 Common Accommodation costs primarily relate to accommodation associated with the other common cost categories, e.g. office space associated with central finance, corporate strategy, central IT, etc. and 90% of common accommodation costs are assumed to be fixed.

5.145 Common Transport costs include transport management and 30% of common transport costs are modelled as being fixed.

5.146 Common Personnel Administration costs include the costs of the human resources function and 90% of personnel administration costs are modelled as being fixed.

5.147 The Other Common cost category includes corporate functions such as finance, legal, regulatory, strategy and other business management functions, and 100% of these costs are modelled as being fixed. Working capital is also included in the Other Common cost category.

5.148 The Opex module includes a worksheet for Input Parameters, which lists the %

of fixed costs for each of the common cost categories discussed above. Changing these percentages will affect how the costs scale both between the TD and BU approaches in any year and between modelled years.

Cost allocations

5.149 The Opex module uses volume information from the Service Demand Module to facilitate the allocation of operating costs to services. Services include voice only PSTN WLR, ADSL, FTTC, FTTH and business copper (Leased Lines). All data is disaggregated across the 1,148 exchange areas and the three footprints (Urban Commercial Area, Rural Commercial Area, and NBP IA).

5.150 As the ANM is modelling an operator with Eircom's market share, service demand is modelled to reflect Eircom's current and planned deployments. Therefore, in relation to service demand across footprints, copper voice services are assumed to be present in all footprints (as Eircom currently has a universal service obligation for the provision of voice services), whereas FTTC is assumed to be present only in the Urban Commercial Area footprint (i.e. not in the NBP IA or Rural Commercial Area footprints). In the base year (2019), FTTH is assumed to be present only in the Rural Commercial Area footprint (consistent with Eircom's recent 300k FTTH deployment in this footprint), but then is deployed across the Urban Commercial Area footprint to reflect Eircom's planned deployment of FTTH in urban areas. ComReg is assuming that NBI will be the only operator to deploy FTTH in the NBP IA.

5.151 The allocation of copper related costs across exchanges and footprints is performed separately for 3 aggregated cost groups:

a) "commercial copper Opex" is comprised of copper network L&Bs and the associated indirect cost mark-up. This cost group is apportioned between commercial copper lines only;
b) "whole country copper Opex" is comprised of all copper direct (including R&M and provisioning but excluding network L&Bs) and indirect mark-ups. This cost group is apportioned between all copper lines (commercial and NBP IA); and
c) "total common cost" includes all common corporate costs and is apportioned between all active commercial services (copper and fibre).

5.152 The same logic is followed for fibre related costs except Opex is initially split between FTTC/FTTH services based on active lines count. The cost per FTTH line in the NBP IA is set to zero because the model assumes that NBI will be the sole supplier of FTTH services in that area and the costs incurred by NBI are outside of the scope of this modelling.

5.153 The direct unit Opex costs including indirect mark ups for FTTC links, which represent the costs of the link between the local exchange and the fibre cabinet,

are calculated by dividing the fibre costs associated with FTTC by the total number of FTTC links in the model year. These direct and indirect costs are then allocated across exchanges based on the distribution of active FTTC links, so the cost is set to zero in all exchange-footprints that do not have an FTTC link. As FTTC is only available in the Urban Commercial Area footprint, no FTTC link costs are attributed to the other two footprints.

5.154 As noted in paragraph 5.140, the 2018 Pricing Decision determined that common (corporate) costs should not be recovered from services sold to customers in uneconomic areas. Therefore, only the services sold in commercial areas receive an allocation of common corporate costs. This is achieved by first deriving the unit cost for common corporate costs based on the number of copper and fibre services in the Urban Commercial Area and Rural Commercial Area footprints, and then using the distribution of these services across exchange areas to allocate the costs.

5.155 A 'common-cost per line' for the copper and FTTH services is then outputted to the Capex model for all relevant exchange areas and footprints for the model year. This results in the multiplication of the average common corporate cost per commercial line in an exchange and the count of commercial lines in an exchange equalling the total common corporate cost associated with that exchange. It also means that, over time, the overall recovery of common corporate costs is maintained as customers migrate off Eircom's copper network onto its fibre network in the commercial areas. Furthermore, the expected migration of customers off Eircom's copper network in the NBP IA onto NBI's fibre network will not affect Eircom's ability to recover its common corporate costs as those customers currently do not contribute to common corporate cost recovery.

ComReg's Preliminary View:

5.156 ComReg is of the preliminary view that the TD approach adopted in the Opex module appropriately models the costs that an efficient operator would incur operating Eircom's legacy network while the approach taken to scale down these costs in the BU approach, models the costs that an efficient operator would incur operating a recently deployed network.

5.157 Based on this, ComReg is also of the preliminary view the Opex module provides an appropriate basis for the relevant operating cost inputs into the Capex, PAM and DAM modules.

Q. 6	Do you agree that the approaches to modelling costs in the Opex module are appropriate? Please provide reasons for your response.

5.8 Capex module

5.158 In this subsection ComReg provides an outline of the Capex (Capital Expenditure) module of the ANM.[101]

5.159 The Capex module calculates the costs of copper-based and fibre-based access services for the modelling period covering the financial years 1 July 2018 to 30 June 2030.

Services covered

5.160 Copper-based access services include:

a) PSTN WLR;

b) LLU, which is mainly used as an input by the NGA Cost Model[102];

c) SLU, which is mainly used as an input by the NGA Cost Model;

d) CG SABB; and

e) Line Share.

5.161 Fibre services include:

a) Dark Fibre;

b) FTTH (The ANM only calculates a cost per FTTH connection.); and

c) Wholesale Symmetrical Ethernet Access ("**WSEA**"). The ANM provides the WSEA access network cost outputs.

5.162 The capital value of network assets in the Capex module can be calculated using a BU or a TD approach. The BU approach calculates service costs using the network asset counts estimated in the geospatial model by Eircom exchange area and in three geographical footprints: a national footprint, Urban Commercial Area and Commercial Areas. This allows the BU approach in the ANM to calculate the standalone costs for the Urban Commercial Area and the All footprint scenarios, as well as the incremental costs for the Rural Commercial and NBP IA footprints. The BU approach is used in the Urban Commercial footprint to calculate the copper loop costs of the LLU and SLU, as well as the cost inputs (LLU, SLU and NGA Fibre Link) from the ANM into the NGA Cost Model for the purpose of calculating the costs of FTTC based services. The BU approach is also used to cost fibre-based services and the active voice

[101] Further information on the Capex module is contained Section 8 of the Cartesian ANM Specification Document.
[102] As per the 2018 Pricing Decision.

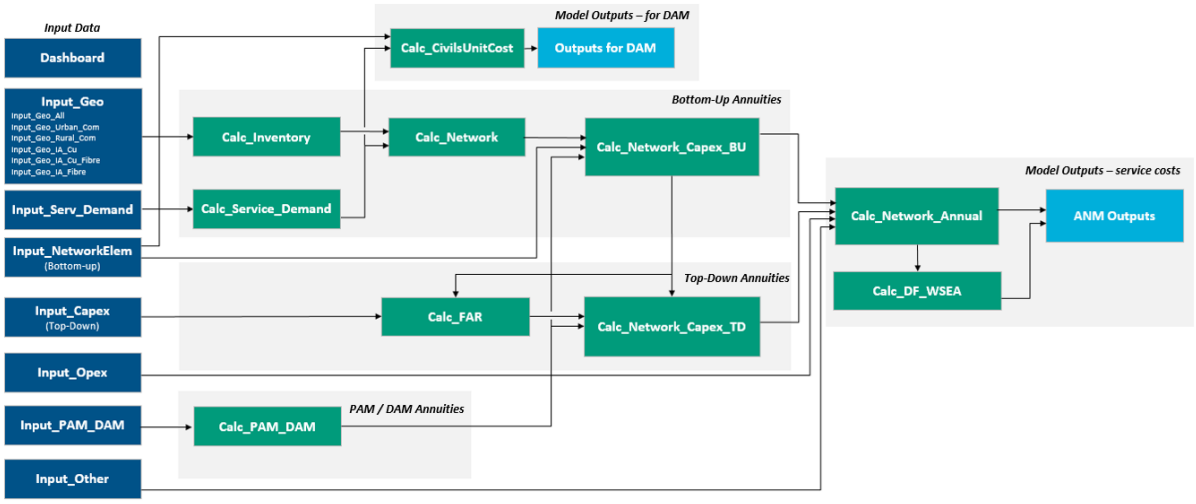
equipment that supports PSTN WLR and other POTS based services.

5.163 The TD approach in the Capex module uses Eircom's actual historic capex costs as the basis to estimate the network costs of Eircom's legacy access network, including those assets, such as ducts and poles, that can be reused to support an NGA network. The TD approach is used in the All footprint scenario to calculate the copper loop costs for the PSTN WLR and CG broadband services.

Interaction with other ANM modules

5.164 To calculate the costs of these services the Capex module takes inputs from the Geospatial module, Service Demand module, Opex module, and the PAM and DAM modules. Figure 17 provides an overview of the Capex module.

Figure 17 – Overview of Capex module



Source: Cartesian

5.165 As set out at paragraphs 5.18 to 5.19, at a high-level, the data inputs provided by the ANM modules into the Capex module are:

a) **Geospatial module**: provides the network asset inventory disaggregated by asset type and by exchange area by footprint;

b) **Service Demand module**: provides the total count of copper and fibre service volumes by year, by exchange area and by footprint, based on the BU and TD approaches. It provides premises coverage data for FTTH rollout and copper switch-off data. It also provides FTTH connection volumes, split by standard and non-standard, by year and footprint;

c) **Opex module**: provides costs per line for copper and fibre-based services, by year, by exchange area by footprint, based on a BU and TD approaches. These are further disaggregated between common costs and other Opex (non-common) costs. Service specific Opex data is also provided;

d) **PAM/DAM modules**: provide CEI (poles and ducts) cost annuities (net of revenues derived from CEI access by NBI) by year, by exchange, by footprint.

Geographical cost differentiation

5.166 The Capex module calculates service costs by Eircom exchange area and in the three geographical footprints, Urban Commercial Area, Rural Commercial Area and NBP IA. As mentioned earlier, the ANM has 1,148 exchanges[103]. Each exchange area is categorised in the Capex module as being part of:

a) The Modified Larger Exchange Areas ('**Modified LEA'**) (237 out of 1,148 ANM exchanges) or Outside of the Modified LEA; or

b) The Regional Low-Level FACO Market exchanges (699 out of 1,148 ANM exchanges) which are proposed for continued regulation under the 2020 FACO Consultation or not (the '**Urban Low-Level FACO Markets'**); or

c) The exchanges which were classified as being part of the Urban WCA Market or the Regional WCA Market (1,011 out of 1,148 ANM exchanges), as determined by the 2018 WLA/WCA Market Review Decision. The forthcoming WCA Mid Term Review may move some exchanges currently subject to regulation in the Regional WCA Market into the Urban WCA Market and so those exchanges may no longer be subject to regulation. In making its final decision on the ANM ComReg will use the most up to date definition of the Regional WCA Market.

5.167 In terms of geographical footprints, and as noted above, the Capex module calculates costs for each of the four geographical footprints. This allows, for example, the ANM to derive the costs of PSTN WLR with reference to the exchanges proposed to be subject to continued regulation, the Regional Low-Level FACO Market, or to derive the NGA related cost inputs (e.g. LLU, SLU, NGA cost per link) with reference to all the exchanges in the Urban Commercial Area footprint (as this is the only footprint where FTTC is presently available or forecast to be available in the modelling undertaken).

Network costing

5.168 The Capex module uses Network Elements ('**NE**') as 'building blocks' to derive the costs associated with services. For example, SLU uses NEs related to the D-side network (e.g. aerial cable) while LLU uses NEs related to both the E-side and D-side.

5.169 For the capital costs of the NEs underpinning each of the access services, the Capex module uses both TD and BU, with each service generally modelled to reflect a combination of both approaches. Capital costs include the depreciation

[103] Please see footnote 69.

charge based on the relevant depreciation method and a reasonable return on capital employed based on the regulated WACC of 5.61%.

5.170 For PSTN WLR all non-CEI NEs are valued based on the TD approach, with the exception of the active equipment for the voice service, which is valued using a BU-LRAIC+ approach, which assumes that the Modern Equivalent Asset (MEA) for PSTN voice is a Multi-Service Access Node ('**MSAN**') port. The key modelling parameters for this equipment, such as average port costs, utilisation factors and asset life have been retained from the Revised CAM. For all other services, non-CEI NEs are valued based on a BU approach. With regards to CEI NEs (poles and ducts), the TD approach is used to value assets which can be reused to deploy NGA services, while BU costs are used to calculate the costs of assets which cannot be reused and hence require replacement at current costs. Table 10 below provides a summary of the valuation approaches by NE.

Table 10 - Capex Valuation approaches by Network Element

Category	Network Elements	Bottom-Up	Top-Down
Copper	- Street Cabinets - Cables - Joints, DPs - Terminations - MDF costs	✓	✓
FTTC	- Fibre cables - Fibre Joints - Terminations	✓	-
FTTH	- Cables - Joints, DPs - Terminations - Splitters	✓	-
FTTH Connections	- FTTH Connections	✓	-
Leased Lines	- Cables - Joints	✓	-
Exchange costs (apply to all services)	- Active equipment (Port, ODF, NTU, etc.) - Manhole - MDF costs (copper only)	✓	-
CEI Costs (applies to all services)	- Trenches - Ducts - Chambers - Poles - LA Tax	PAM/DAM	

Source: Cartesian

5.171 The TD approach uses Eircom's historical costs based on data provided by Eircom under Section 13D(1) of the Act. Eircom provided details of its Fixed Asset Register ('**FAR**') for the financial year ending 30 June 2018, which included Gross Book Value, Accumulated Depreciation (calculated based on a straight-line depreciation method over the relevant regulatory asset lives), and Net Book Value by asset class and the capital 'settlements'[104] to the FAR with respect to

[104] The term 'settlement' refers to Capex that is considered work in progress until it is assigned to an asset class in the FAR, and at which point a depreciation schedule is applied.

the financial year ending 30 June 2019. From this data, ComReg identified the asset classes relevant to the access network and the services within the scope of the ANM.

5.172 Eircom did not provide a capital investment forecast for its copper access network. In the absence of this information, ComReg modelled copper-related capital investment in the period 2020-30 by assuming that Eircom's Capex in this period is 50% of the Capex recorded in the financial year 2019 but only in those exchanges where copper is forecast to remain active.

5.173 ComReg modelled copper Capex at the 50% rate mentioned above, as ComReg considers that over the 10-year period covered by the ANM, it is unlikely that copper investment will continue at current levels based on the expectation that customers will migrate to the fibre network leading to Eircom's eventual copper switch-off so that the focus of new build is likely to be fibre-based. ComReg also considers that copper decline is also likely to occur more quickly in commercial areas.

5.174 Likewise, ComReg also considers that Eircom will be required to incur some copper Capex as a result of having a significant share of its customer base tied to its copper network and as a result of the service performance obligations under the Universal Service Obligation[105]. Without more details from Eircom regarding its copper plans, ComReg is of the preliminary view that the 50% is a reasonable placeholder figure.[106] However, ComReg will be in a position to monitor the capital expenditure on copper related assets in those exchanges in the Regional Low-Level FACO Market through the Additional Financial Information provided by Eircom as part of its cost accounting obligations, which should allow the reasonableness of the investment assumptions to be assessed on an ongoing basis.

5.175 The BU approach values, at current costs, a hypothetical efficient network providing 100% coverage. In the Capex module the network asset inventory calculated by the Geospatial module is overlaid onto the data from the Service Demand module on copper and fibre service availability by exchange and by footprint. For example, for any given year, the Capex module calculates the BU asset count for copper NEs (e.g. aerial copper cable, etc.) but only in those exchanges which have active copper services. The calculated asset count is then valued at current costs based on the unit capex of each asset in that year.

5.176 ComReg, under Section 13D(1) of the Act, requested updated information from

[105] ComReg Decision D05/16: "Universal Service Requirements Provision of access at a fixed location (AFL USO)".
[106] For example, based on the its Geospatial analysis the relative share of copper cable in the NBP IA is approximately 50%, and it would be expected that most of the future investment would occur in these areas, as result of the USO obligations.

Eircom regarding its unit Capex costs for all copper and fibre-related assets, including expected price trends. With regards to copper related assets, Eircom did not provide this information.[107] As a result, ComReg used the unit Capex data contained in the Revised CAM. ComReg did not take into account the price trends that were included in the Revised CAM, which in general reflected positive price trends for copper assets. ComReg considers that this is a reasonable assumption given that demand for these assets will be declining as a result of customer migration to fibre services. With regards to FTTH-specific assets[108] Eircom provided current prices, and these were used to value the BU inventory.

5.177 For CEI NEs the cost annuities from the PAM and DAM modules reflect, as described above, a combination of TD costs for Reusable Assets and BU for Non-reusable Assets, with the exact combination in any given year being determined by the timing and reach of the FTTH deployment. ComReg considers that the FTTC inputs (LLU and SLU) into the NGA Cost Model should be reflective of a network which is 100% NGA-ready, irrespective of the phased nature of the actual FTTH deployment in the Urban Commercial footprint. ComReg's modelling of Eircom's planned FTTH deployment in the Urban Commercial footprint indicated that the CEI network in this footprint will only become 100% NGA-ready by 2024[109] (based on a 5-year rollout plan).

5.178 Given this, for the purpose of calculating the FTTC inputs, ComReg has implemented a 'CEI uplift' to the CEI annuities derived in the PAM and DAM modules for the years prior to 2024 to allow the CEI annuities in those years to be consistent with the model year 2024 when the CEI network is modelled to become 100% NGA-ready, i.e. by 2024 all CEI can be reused for deploying an NGA network. As a result, the uplifts applied to the capital costs of duct in the price control period currently reduce from 8% (in model year starting 1 July 2020) to 1% (in model year starting 1 July 2022), while the uplifts applied to the capital costs of poles reduce from 52% to 11% for the same periods[110]. It is also the case that the majority of CEI in the Urban Commercial Area is duct related.

Poles and ducts

5.179 In the 2020 CEI Pricing Consultation, ComReg calculated and proposed access charges applicable to Generic Access CEI users and NBI's MIP for pole and duct access. Given the significant use of the Eircom pole and duct network that is expected from NBI, ComReg has modelled the take-up of poles and ducts by

[107] ComReg notes that Eircom has signalled plans to replace the legacy PSTN line cards with a modern equivalent MSAN port. However, Eircom has not provided the associated costing and as result ComReg has assumed this to be the same as the PSTN line card, as included in the Revised CAM.
[108] Such as fibre cables, splitters, distribution points, terminations, OLT port.
[109] 2024 refers to the model year, which covers the period from 1 July 2023 to 30 June 2024.
[110] Applying an uplift to the TD CEI valuations in the ANM is intended to serve the same purpose as the 92% / 8% TD / BU and 95% / 5% TD / BU valuations that were applied respectively to the valuation of poles and ducts in the Revised CAM. Further information on the calculation of CEI annuities in the ANM can be found in paragraphs 6.40 to 6.45.

NBI in both in the NBP IA, where it is expected that it will eventually be the only user of these assets, and in Commercial Areas, where it will share use with Eircom (for transit purposes). Based on this, ComReg modelled in the PAM and DAM the revenues that Eircom is expected to derive from the proposed wholesale CEI access charges to NBI. ComReg then calculated the CEI annuities net of these CEI revenues as the quantum of costs to be recovered in the Capex module over the remaining copper and fibre services.

Service unit costs

5.180 The Capex module calculates the service unit costs based on the capital costs of the NEs and also the Opex associated with each service and the service volumes associated with each NE.[111] This is done for the relevant exchange and footprint and for the selected year, except for FTTC.

5.181 For the FTTC inputs, ComReg considers that the unit cost for some associated NEs in the Urban Commercial Area footprint should recognise the use of those NEs by services in the Rural Commercial Area footprint. This is because NE's in the Urban Commercial Area footprint (typically E-side and to a lesser extent D-side) NEs are used to serve customers further out in the Rural Commercial Area footprint (e.g. Rural Commercial Area cable routes overlap with those of the Urban Commercial Area footprint). To reflect this, ComReg estimated from the Geospatial module the total cable route sharing between the two commercial footprints and applied this as a weighting factor to the services volumes in the Rural Commercial Area footprint to derive the combined volumes for the FTTC inputs.

ComReg's Preliminary View:

5.182 ComReg is of the preliminary view that costing approaches adopted in the Capex module (the BU approach using the network asset counts estimated in the geospatial model by Eircom exchange area and geographical footprint and the TD approach using Eircom's actual historic capex costs by exchange area as the basis to estimate the network costs of Eircom's legacy access network, including those assets, such as ducts and poles, that can be reused to support an NGA network) to calculate the costs of copper- and fibre-based access services are appropriate.

Q. 7 Do you agree with ComReg's preliminary views that the costing approaches adopted in the Capex module are appropriate? Please provide reasons for your response.

[111] Some services include in addition service-specific costs, such as the Network Termination Unit for leased lines or the Digital Subscriber Line port for current generation broadband. For brevity, these are not described in this document, but details can be found in the Cartesian ANM Specification Document.

5.9 Assessment of FTTH connection costs in the ANM

5.183 In the section below, ComReg is interested in stakeholder views on the assumptions in the ANM's draft modelling of FTTH connection costs (e.g. no non-standard connections in the Urban Commercial Area, and the split between labour and materials). Please see also Section 8, which considers factors relevant to FTTH connection costs.

5.184 The ANM has included the rollout of FTTH in the modelling undertaken as part of the Service Demand module. ComReg considers that the availability of FTTH will have a number of impacts on Eircom's access services (e.g. copper switch-off) and their prices (e.g. common cost allocation). As outlined earlier in this Section, the Service Demand module recognises the impact of FTTH on the modelling of service provision through copper – i.e. on deployment of FTTH in an exchange, then after a number of years copper services will be switched off. For example, end-users seeking a voice only service will, after copper switch-off, be provided their service via FTTH using a voice over broadband solution. Copper-switch off is at the earliest expected to start in 2025 in the ANM.

5.185 The modelling of FTTH connection costs was informed by the connection costs incurred by Eircom as part of its FTTH Rural (300k) programme, provided by Eircom under Section 13D(1) of the Act. The Section 13D data provided a detailed disaggregation of connection costs, which could be classified between standard and non-standard activities. Based on this data, ComReg calculated the percentage of labour and material costs associated with the different classifications and applied different annual cost trends to each cost category. Future FTTH connection costs reflect these cost trends and are calculated using the forecast of FTTH connection volumes that is derived in the Service Demand module, as outlined in paragraphs 5.48 to 5.52.

5.186 Presently the split between labour and materials is modelled to be in the range of 65 to 75% versus 35 to 25% for standard connections, and to be in the range of 80 to 90% versus 20 to 10% for non-standard connections. The assumption in the Capex module is that this split will remain relatively fixed over time, albeit with labour increasing its share of costs due to wage inflation and future decreases in the price of materials. ComReg is also of the view that the experience gained in the Rural Commercial Area deployment has provided a sufficiently robust sample pool to gauge the mix of standard and non-standard connections.

5.187 In relation to the various footprints, the Rural Commercial Area footprint is assumed to have 100% coverage already, given the contractual commitments by Eircom in that area. As mentioned earlier, as FTTH deployment in the NBP IA will be conducted by NBI, the costs of NBI's FTTH connections are not

calculated/included in the ANM. ComReg expect that the level of non-standard connections in the Rural Commercial Area would be higher than in the Urban Commercial Area footprint on the basis that premises in urban settings are less likely to be one-off premises that present unique challenges in connecting them. Consequently, ComReg have taken the preliminary view that the percentage of non-standard connection is circa 10% in the Rural Commercial footprint but 0% in the Urban Commercial footprint.

ComReg's Preliminary View:

5.188 ComReg considers that the modelling approach adopted in the Capex module to cost FTTH connections in terms of standard and non-standard connections in urban and rural areas is appropriate for forecasting the customer specific costs associated with FTTH connections in the commercial areas in Ireland.

Q. 8	Do you agree with ComReg's preliminary view that the assumptions made around FTTH connection costs in the ANM are appropriate? Please provide reasons for your response.

6 Pricing approach for existing access services

6.1 Overview

6.1 In Section 3 ComReg recalled the price controls in place (including costing / pricing methodologies) for the services in the WLA and WCA Markets that are concerned by the ANM and proposed a price control for PSTN WLR, further detailed in Section 4. Section 5 outlined the proposed modelling approaches and related assumptions for determining access network costs in the ANM.

6.2 In this section ComReg assesses the options available for setting prices for the relevant access services in accordance with the price controls applicable to PSTN WLR, LLU, SLU, Dark Fibre, Line Share and CG SABB.

6.3 This section also examines the implications of the update of the ANM on the pricing of FTTC and CG Bitstream services.

6.4 The rest of this section discusses ComReg's preliminary views on the pricing approaches to be adopted for the services being reviewed under the following subheadings:

a) Pricing approach for PSTN WLR and POTS based FTTC;

b) Pricing approach for LLU / SLU;

c) Pricing approach for Dark Fibre;

d) Pricing approach for Line Share;

e) Pricing approach for CG SABB; and

f) Assessing the implications of model updates on the pricing of FTTC and CG Bitstream.

6.2 Pricing approach for PSTN WLR and POTS Based FTTC

6.5 In Section 4 ComReg reached the preliminary view that the costs of PSTN WLR should be modelled using a TD FAC approach based on Eircom's HCAs using FAC for the copper loop component (on the basis that there is little prospect of market entry in the Regional Low-Level FACO Market by commercial operators so the primary concern is to allow Eircom recover its efficiently incurred costs in respect of the copper loop) and a BU LRAIC+ approach for the active equipment (on the basis that operators will need to invest in active equipment to provide a voice service).

6.6 To determine the costs of the copper loop component that is part of the PSTN WLR service the ANM undertakes an analysis of Eircom's Top Down costs. As described in Section 5, this analysis is based on the details of the capital costs of the access network assets such as copper cables, ducts and poles as recorded in Eircom's FAR and the operating costs extracted from the recent AFIs to Eircom's HCAs.

6.7 PSTN WLR can be provided in all footprints (Commercial Areas and NBP IA). As the TD costs are based on Eircom's actual network rather than the recently deployed copper network that is modelled in the BU approach, the level of line faults on the TD network is assumed to be consistent with the level of line faults Eircom actually incurs. Consequently, the level of repair and maintenance (R&M) costs is derived from Eircom's recent accounts without the scale adjustments that are modelled in the BU approach. As a result, the level of R&M costs modelled are close to Eircom's actual level of R&M costs[112]. This is in contrast to the BU approach that is applied to derive the costs of the LLU and SLU copper costs that are used to model the costs for FTTC VUA, which ComReg has assumed the R&M costs are over 40% lower than Eircom's actual R&M costs, to be consistent with the lower Line Fault Index (LFI) that applies in the BU methodology.

6.8 As the TD capital costs for cable, poles and ducts are extracted from Eircom's FAR, the valuation in any year will reflect the age of the asset by recognising the extent that the asset has been depreciated since it was first deployed, and thus the costs that have already been recovered by Eircom. This reduces the risks of over-recovery. As PSTN WLR is only proposed to be regulated in the Regional Low-Level FACO Market, allowing an over-recovery of costs would not be appropriate.

[112] This holds true in the base year, but R&M costs in later years will depend on the number of active copper lines, etc.

6.9 The ANM analyses TD costs at the exchange level and each exchange is categorised as being in either the Regional Low-Level FACO Market or the Urban Low-Level FACO Market[113]. This enables the ANM to isolate the costs and the service demand in the Regional Low-Level FACO Market, including the demand for copper services that is used to model the unit cost of the copper loop that is required to provide PSTN WLR in the Regional Low-Level FACO Market. Having derived the average copper loop cost it is then necessary to determine the equivalent PSTN WLR price that is consistent with overall cost recovery.

6.10 While PSTN WLR is the predominant copper access service sold in the Regional Low-Level FACO Market the pricing approach has also to recognise that there are significant sales of FTTC services which also use the copper loop but are charged for the use of that loop on a different basis. The prices for FTTC services are set with reference to the lower costs of the shorter lines that can avail of these services and excludes the higher cost lines that are considered too long to avail of a viable FTTC service[114]. Furthermore, the standalone FTTC service only uses the SLU component of the copper loop, which increases the average level of copper costs remaining to be recovered by services such as PSTN WLR that continue to use the E-side copper cables.

6.11 Consequently, the pricing approach for PSTN WLR in the Regional Low-Level FACO Market has to recognise the extent that the level of copper cost recovery embedded in the prices for FTTC based services is lower than the simple average TD copper line cost, in order that Eircom can recover its efficiently incurred costs across the portfolio of wholesale access services it provides in those areas. This can be referred to as a "waterbed effect". The greater the extent that the level of copper loop costs recovered in the prices for FTTC based services are below the average loop cost, the greater the waterbed effect that puts upward pressure on PSTN WLR prices in the Regional Low-Level FACO Market.

6.12 To understand the extent of this waterbed effect, ComReg needs to consider the proportion of copper based services that are sold either as standalone FTTC services (using only the SLU component of the local loop) or EVDSL (using the full local loop) or POTS based FTTC services (using a shorter than average LLU component priced on a BU basis) and the average revenues that are generated by these services for the use of the copper access network. The difference between this average revenue and the average local loop costs derived in the

[113] The Urban Low-Level FACO Market is not the same as the Urban Commercial footprint. The Urban Low-Level FACO Market is defined on an exchange basis but the Urban Commercial footprint is based on those premises that can receive a viable FTTC/EVDSL service, which depends on the proximity of the premises to a DSLAM. Consequently, while an exchange in the Urban Low-Level FACO Market will include premises that are in the Urban Commercial footprint, it can also include premises that are in the either the Rural Commercial or the NBP IA footprints.

[114] Premises that are further than 1.5km from the DSLAM are unlikely to receive a broadband service that complies with NGA thresholds.

ANM can then be applied to the proportion of FTTC services to inform the average costs to be recovered in the PSTN WLR price to ensure that Eircom recovers all of its copper access costs. To illustrate this concept, a simplified version of the formula is shown below:

Average copper loop cost = C
Average FTTC copper revenues = F
Percentage of FTTC services = P
Then average PSTN WLR copper loop price "W" is derived by:

W = C + (C-F) * P/(1-P)

6.13 The uplift to the copper loop costs allocated to PSTN WLR will increase if the differential between the copper loop costs that are recovered from FTTC services sold in the Regional Low-Level FACO Market[115] and the average copper loop costs derived in the ANM (C-F) increases. It will also increase if the proportion of FTTC services (P) increases. Based on an analysis of the demand for both FTTC based services and PSTN WLR services in the Regional Low-Level FACO Market, combined with the level of copper loop costs recovered in the FTTC based services, ComReg has determined that the uplift that is required to apply to the average TD ANM copper loop costs in the Regional Low Level FACO Market is €0.30[116]. In addition to the cost of the copper loop, the pricing approach for PSTN WLR also considers the costs of the active equipment used to provide voice services, which are calculated using a BU LRAIC+ approach. As outlined in Section 5, the active equipment is modelled on the basis that the Modern Equivalent Asset ('**MEA**') for PSTN voice is a multi-service access node (MSAN) port.

PSTN WLR cost trends

6.14 The ANM derives an annualised cost for PSTN WLR in the Regional Low-Level FACO Market for each of the 10 years of the model's time horizon. At a WACC rate of 5.61% the PSTN WLR price in 2021 is €16.07 and then declines each year until 2025, when it starts to increase. This pattern of unit costs reflects the trends in service volumes and investment costs across the model time horizon.

6.15 Service volumes are assumed to only decline marginally in the earlier years, but the rate of decline increases as customers migrate on to FTTH. The residual value of copper cables in the Regional Low Level FACO Market is also assumed

[115] This analysis is confined to the costs of active lines in the Regional Low-Level FACO Market only. ComReg recognises that most of the demand for FTTC services is in the Urban Low-Level FACO Market where PSTN WLR is not proposed to be regulated. However, the prices for PSTN WLR in the Urban Low-Level FACO Market in the sunset period should allow Eircom to recover all copper related costs.
[116] As CG SABB is also assumed to recover the same level of copper loop costs as PSTN WLR (see paragraph 6.61) the €0.30 is also recovered from CG SABB lines.

to decline as the modelled investment in copper cables is not sufficient to offset the rate of depreciation. The observed decline in CEI costs is due to increased sharing of costs with NBI and Eircom's fibre services. Unit costs increase significantly in the later years as an element of operating costs is fixed while the decline in cable capex costs is less than the overall decline in service demand.

6.16 It is also possible that not all cable costs will be fully depreciated before the copper network is switched off. However, prior to the 2018 Pricing Decision Eircom has been recording excess returns for copper access services and ComReg expects that these should be sufficient to ensure that Eircom will have fully recovered all of the investments it has made in the copper cable network over the economic life of the assets.

6.17 ComReg is also aware that reported returns in the HCAs can be affected by once-off events in a particular financial year. The fact that the PSTN WLR price includes a BU valuation for the active assets will also mean that reported returns will be impacted by the level of investment actually undertaken by Eircom to replace its legacy voice platforms. ComReg proposes that Eircom provide ComReg with annual information on key metrics[117] so as to enable ComReg to monitor the level of investment relevant to PSTN WLR services reported in the HCAs to ensure that the prices for PSTN WLR remain cost oriented in the Regional Low-Level FACO Market. This means that Eircom must ensure that its cost accounting systems are capable of providing such information.

PSTN WLR prices

6.18 ComReg considers that there are three potential options in terms of setting cost-oriented prices for PSTN WLR during this review.

6.19 One option would be to set a price cap that would maintain the existing PSTN WLR price of €16.59 for the entire period of the price control, thereby providing maximum stability of prices in the Regional Low-Level FACO Market. However, as the outputs of the ANM indicate that annual costs are lower than the existing price, it is ComReg's view that such an approach would lead to excess recovery in the Regional Low-Level FACO Market. Therefore, ComReg does not think it is appropriate to maintain the existing price for the price control period.

6.20 A second option is to set a price cap for the price control period that is informed by the outputs of the ANM, for example by deriving an average cost over the next five years. Price stability would be affected in that such an approach would result in an initial significant reduction to current rates, but it does provide constant rates thereafter. Such a price cap should also support cost recovery over the price control period if the modelling assumptions remain valid.

[117] Including the levels of capital and operating expenditure on copper cables in the Regional Low-Level FACO Market and the demand for the various copper-based services.

6.21 However, cost recovery is still dependent on the modelling assumptions being, on average, correct and, given the level of uncertainty that currently exists, over- or under-cost recovery may not be avoided. For example, Eircom was not able to provide reliable budget forecasts for copper related investment when the model was being developed as Eircom's investment plans were targeting Eircom's FTTH deployment and supporting the NBI CEI access requests rather than the legacy copper network. Similarly, demand projections are heavily dependent on the timing and extent of both Eircom's and NBI's deployment of FTTH in the Regional Low-Level FACO Market, and the subsequent rate of migration onto these FTTH networks. Consequently, there is a risk that actual costs and/or demand in future years may prove to be materially different than modelled with the result that Eircom could over or under recover costs.

6.22 The third option is to set a price per year for each year of the price control period based on the modelled outputs for that year. The outputs of the ANM indicate that this would result in a gradual decline in PSTN WLR prices in the Regional Low-Level FACO Market, thereby avoiding the once-off shock to the PSTN WLR price that is evident in the first year under the second option. Also, the fact that the first couple of years are less prone to forecast errors than later years should provide comfort that this option is better at ensuring cost recovery than either of the other two options, as forecast errors tend to be more prevalent in later years. Therefore, ComReg is of the preliminary view that this third option best meets the objectives of ensuring cost recovery and providing stability of prices.

ComReg's Preliminary View:

6.23 Further to Section 4 where ComReg reached the preliminary view that the price control obligation for PSTN WLR in the Regional Low-Level FACO Market should be based on cost orientation and further specified based on a TD costing approach for the copper access component of PSTN WLR and a BU approach for the active equipment, ComReg is of the preliminary view that the price for PSTN WLR should be a price per year for each year of the price control period based on the ANM modelled outputs for that year.

6.24 Furthermore, as outlined in Section 6.2 the prices for PSTN WLR should recognise the extent that the charges for other copper access services are below the average costs, to ensure that Eircom can recover its efficiently incurred expenditure across the portfolio of copper access services in the Regional Low Level FACO Market.

6.25 As PSTN WLR prices are based on the level of Eircom's incurred copper access costs and demand, ComReg will (through the annual information on key metrics provided by Eircom from its cost accounting system) monitor that the prices of PSTN WLR services in the Regional Low-Level FACO Market remain cost oriented and ensure that there is no material over- or under-recovery of costs across the price control period

6.26 In Section 4 ComReg also reached the preliminary view that the supplemental charge for POTS based FTTC, should be based on a TD costing approach for the incremental copper access component and a BU approach for the active voice equipment. Eircom always deploy a full copper loop to provide a POTS based FTTC service, which means that there are no incremental copper costs when the service is provided over EVDSL, as this already includes the full LLU costs. However, as a standalone FTTC service only recovers the SLU cost, the incremental copper loop cost of the POTS based service is associated with the copper feeder cable between the exchange and the cabinet. ComReg considers that this cost can be represented by the TD costs associated with the E-side copper cables in the Regional Low-Level FACO Market. The BU costs of the active voice equipment can also be modelled by using the same approach as for PSTN WLR.

Q. 9 Do you agree with ComReg's preliminary views that the price for PSTN WLR should be based on a price per year for each year of the price control period based on the ANM modelled outputs for that year? Please provide reasons for your response.

Q. 10 Do you agree with ComReg's preliminary views that the supplemental charge for POTS based FTTC should be based on the incremental costs, using the same approach as for PSTN WLR? Please provide reasons for your response.

6.3 Pricing approach for LLU/ SLU

6.27 The copper access network is used to provide the access paths that support PSTN WLR, LLU, and SLU. FTTC services are also supported by the copper access network using LLU and SLU equivalent inputs. Therefore, factors of relevance to the pricing of these services include: the number of active lines; the length of those lines (on average); the distribution of premises (which influences the type and size of cables needed to serve those premises); and the costs associated with operating the access network.

6.28 In relation to LLU, ComReg recognises that the external demand for LLU by OAOs has declined in recent years (currently less than 2.5k) and is expected to be immaterial for the duration of the proposed price control period.

6.29 In relation to SLU, to date there has been no external demand for this service, as to avail of SLU an OAO would need to co-locate equipment at an Eircom cabinet, and the associated investment costs appear prohibitive given the limited level of demand available at each cabinet.

6.30 Consequently, the pricing approach for LLU and SLU as standalone services that are bought by OAOs is not a significant concern given the immaterial demand by OAOs for these services.

6.31 However, LLU and SLU are key elements of the cost stack underpinning the price for FTTC services, providing the copper network costs from the VDSL cabinet to the final drop for Standalone FTTC and similarly from the local exchange to the final drop for EVDSL and POTS based FTTC[118]. As the full copper loop and sub loop continue to be used in the provision of FTTC based services ComReg considers that it is important to review the prices for LLU (equivalent to a full copper loop) and SLU (equivalent to the copper sub loop) in the context that the prices for these services can also inform the prices charged for FTTC services.

6.32 Presently, both LLU and SLU are costed on the basis of a BU-LRAIC+ approach applied to those assets that cannot be reused for NGA services with a TD approach applied to those assets that can be reused for NGA services (i.e., reusable ducts and poles).

6.33 While a detailed discussion of the ANM and its modules is included in section 5, in this section ComReg focuses on the implications of the cost modelling for the pricing of LLU and SLU equivalent inputs. To this end, the first factor to consider is the relevant subset of copper lines – the 'line base', which can support a viable FTTC/EVDSL service. Then consideration is given to the approaches taken to model operating costs and common cost recovery. ComReg then addresses the costing approach for CEI and, in particular, the need to ensure that the valuation of CEI that informs cost-oriented NGA prices reflects a network that is 100% reusable for NGA. Finally, ComReg concludes this section by outlining how the prices of LLU/SLU change and the implications this has for the future LLU/SLU charges.

Line base

6.34 In the 2018 Pricing Decision, ComReg determined the costs of the LLU input into the VUA cost calculations by excluding LLU lines in excess of 3km from the local exchange and SLU lines in excess of 1.5km from the cabinet, on the basis that these line lengths are more typical of the maximum line lengths used in providing FTTC and EVDSL services to the required NGA standard of broadband of at least 30 Mbps. However, ComReg considers that, due to developments in the geospatial modelling in the ANM, applying the 3km or the 1.5km line length limits is no longer necessary; instead, ComReg proposes that the costs of LLU and SLU are those of the lines serving premises in the Urban Commercial footprint

[118] While ComReg is proposing that POTS based services will be deregulated in the Urban FACO markets the FTTC VUA service, which supports the POTS based service, will continue to be regulated.

in the ANM.

6.35 The Urban Commercial footprint has been set to include only those premises that are close enough to the exchange or FTTC cabinet to avail of a viable FTTC based service, whereas all lines serving premises that cannot receive a viable FTTC based service are included in the other footprints. Therefore, all lines in the Urban Commercial footprint can support a viable FTTC services. Consequently, no further adjustments to exclude lines in excess of a certain line length is required as using the Urban Commercial footprint to inform the prices for LLU and SLU will ensure that the incremental costs of all lines that cannot support a viable FTTC based service (i.e. those lines serving premises in the Rural Commercial and NBP IA footprints) are excluded from the cost analysis when setting the prices for those services.

Operating and Common costs

6.36 The operating costs in the ANM have also been updated based on the most recently available Eircom's HCAs as described in Section 5. However, because the BU approach in both the Revised CAM and the ANM assumes an efficient level of operating costs consistent with a recently deployed access network, there will not be the same level of variation between the direct operating costs that are modelled in the BU approach for both the Revised CAM and ANM models as there might be for the costs in the TD approach. For example, in both the Revised CAM and the ANM, the direct R&M costs are modelled to be significantly lower in the BU approach than in the TD approach, but the level of BU R&M costs is comparable in both models.

6.37 Indeed, the major change is that the modelled level of scaling of R&M costs between the TD and BU approach is lower in the ANM (i.e. BU R&M Costs are circa 40% lower than TD) when compared to the Revised CAM (circa 55% lower), as the level of TD Costs inputted to the ANM is lower. This is because the level of staffing that is assumed in the BU approaches in both the Revised CAM and the ANM are similar and any changes in BU R&M costs for copper over time arise from the changes in the number of active copper lines and the impact of wage inflation. As a result, the R&M costs related to the BU copper network in the ANM are circa €15M to €20M.

6.38 The indirect and common corporate costs (including network rates) are updated based on recent HCAs and then re-scaled, as appropriate, for the BU approach. As described in Section 5.7, all common costs are recovered from both copper-based and fibre-based services sold in the commercial footprints. Hence, ComReg proposes to maintain the same approach to common corporate cost recovery that applied in the 2018 Pricing Decision, i.e. that all common corporate costs have to be recovered from those services sold in the commercial footprints (e.g. Urban Commercial, Rural Commercial) and that those common corporate costs should be recovered on a per service basis, i.e. the same level of common

corporate cost is recovered regardless of whether the commercial service uses an LLU or SLU cost input.

Usage factors

6.39 As was the case in the Revised CAM the usage factors for the SLU service in the ANM are set to zero for the E-Side copper network elements to recognise that SLU does not use E-side copper cables. As with LLU, the operating and common (corporate) costs are based on the BU approach. However, the SLU usage factor for Opex is 0.85 for SLU, compared with 1.0 for LLU to recognise the reduction in operating costs associated with not having to maintain the E-Side copper pair. In addition, the SLU usage factors for E-side duct and trench are set to 1.0, in recognition of the fact the E-side duct and trenches are joint costs that are shared by the copper cables and the NGA Fibre link cables that connects the FTTC cabinet to the exchange. Therefore, having a usage factor of 1.0 for the SLU component ensures that E-side duct and trench costs are not stranded as customers migrate from PSTN WLR to FTTC based VUA.[119]

CEI costs

6.40 A significant component of the copper access cost relates to the costs of duct and poles. In the Revised CAM, the duct and pole costs were estimated using Eircom's Indexed RAB on the basis of 95% reuse of Eircom's duct base and 92% reuse of Eircom's pole base using projected TD costs to recognise the costs of duct and poles absent NGA roll-out. In addition, there was a provision of an additional 5% for duct replacement and 8% for pole replacement due to expected NGA deployment based on BU-LRAIC+ costs.

6.41 When the Revised CAM was finalised there was limited information as to when and where FTTH might be deployed by Eircom, therefore ComReg determined that using the replacement factors, mentioned above, to value non-reusable poles and ducts was necessary to recognise the need to replace existing CEI assets in the event that NGA services would be deployed in all parts of Ireland. The analysis undertaken by ComReg at that time indicated that building such a network would necessitate Eircom having to replace a greater number of poles and ducts in order to deploy fibre cables more extensively in the access network than had been the case before 2016 (see paragraphs 4.138 to 4.144 of the 2016 Access Pricing Decision).

6.42 The ANM continues to value the reusable CEI on the basis of Eircom's TD costs and replacement CEI on the basis of BU-LRAIC+ costs. However, since 2016, a number of developments have taken place which ComReg can now factor into the overall cost modelling for CEI and, in particular, for the BU valuation of

[119] Usage factors are used to determine the extent that different Network Elements are used by different services. Details of the Usage Factors used in the ANM can be found in the "Copper Cost Allocation Matrix" in the "Input Other" worksheet of the ANM Capex module.

replacement CEI. Eircom has completed deployment of its 300k rural network and announced plans to overlay FTTH in urban areas, while NBI is planning to pass 540k premises with FTTH in the NBP IA. The fact that Eircom has deployed its 300k FTTH rural network since 2016 means that significant information relating to the costs involved in replacing and remediating duct and poles to facilitate an extensive NGA roll-out is available. ComReg and its advisors (Cartesian) undertook a detailed analysis of this information to determine the current unit costs associated with replacing duct and poles in order to make them NGA ready.

6.43 The modelling in the ANM has combined this current cost information (from the 300k deployment) with Eircom's latest plan to overlay FTTH to pass approximately 1.45m[120] premises over 5 years in the Urban Commercial footprint. This information enables ComReg to derive a BU valuation (current costs by quantity of duct and poles to be remediated/replaced) of the CEI related expenditure that Eircom can be expected to incur for each year of its planned FTTH deployment. This BU valuation is then locked-in as an investment cost in that year and then rolled forward from one year to the next to inform the annualised costs of duct and poles in future years. By 2024, when the planned FTTH deployment is modelled to be complete, all the remediation/replacement of CEI necessary to make the network in the Urban Commercial footprint NGA ready is also complete and the annualised duct and pole costs for 2024 and subsequent years can be considered as the annualised cost for a CEI network that is 100% NGA ready.

6.44 Consequently, instead of using the 95% TD and 5% BU approach that the Revised CAM took to the determine the RAB valuation for ducts, the earlier years modelled in the ANM can reference the 2024 duct costs to determine the costs of a duct network in the Urban Commercial footprint that is 100% NGA ready. Similarly, the NGA ready pole costs in the Urban Commercial footprint can be determined with reference to the post 2024 costs of poles. As a result, for each of the pre-2024 years in the ANM an 'uplift' is applied to the annualised duct and pole costs to ensure that the costs are always modelled to be consistent with the 100% NGA ready network that is modelled in the year beginning July 2023. The mark-up[121] is highest in earlier years and declines to zero by 2024, as locking-in the CEI investment each year means that the subsequent year's TD costs include an increasing proportion of the CEI investment required to make the network NGA ready, as recommended in the 2013 EC Recommendation, in particular paragraphs 32 to 35.

6.45 ComReg considers that this approach continues to recognise the extent that existing CEI can be reused for NGA by using a TD valuation to take account of

[120] https://www.eir.ie/pressroom/eir-launches-0.5-billion-fixed-network-investment-programme/
[121] Please see paragraphs 8.32 to 8.33 of the Specification Document for further information.

the assets' elapsed economic life and thus of the costs already recovered by Eircom, while also using a BU valuation to capture all the incremental CEI investments that Eircom needs to undertake to ensure that all duct and poles are capable of supporting a full NGA deployment[122].

Modelled LLU/SLU prices

6.46 Using the methodology outlined above and updating the underlying data and parameters (including a WACC rate of 5.61%), the 2021/22 monthly price as outputted by the ANM for LLU is €12.72[123] and for SLU is €10.39, as compared with existing prices of €11.58 for LLU and €6.12 for SLU. The main reason for the observed increases is that the costing approach for LLU and SLU in the ANM is now consistent with the approach adopted in the 2018 Pricing Decision to determine the costs of the LLU and SLU inputs that are used to inform the prices for FTTC based services. These included deriving the unit costs of LLU and SLU with reference to the line base capable of serving premises in commercial areas and recovering common (corporate) costs on a per service basis, such that the same level of costs are recovered from an LLU based service as an SLU based service. Further details on the costing approach adopted for LLU and SLU in the 2018 Pricing Decision are outlined in paragraphs 6.210 to 6.237 of that decision.

6.47 Maintaining a consistent approach to the costing LLU and SLU with that taken in the 2018 Pricing Decision recognises that the main demand for LLU and SLU now arises from their use as inputs to provide FTTC based services (including EVDSL). For example, in the case of SLU, there is no prospect of external demand from OAOs for the SLU services, due to the need to co-locate at the Eircom cabinet. ComReg is also aware that the external demand for LLU is currently less than 3k lines and will continue to decline over the price control period.

6.48 ComReg considers that the most significant implication of the changes to the LLU and SLU prices derived as a result of the ANM modelling relates to the potential implication that these changes have for the prices of FTTC based services. In that context, ComReg does not believe that it would be appropriate or proportionate to require Eircom to amend LLU and SLU prices to the level of costs calculated in the ANM. ComReg accordingly is of the preliminary view that the prices derived in the ANM for LLU and SLU should be set as the maximum prices that can apply for the price control period.

[122] A full description of the approach taken to the valuation of Duct and Poles can be found in the 2020 CEI Pricing Consultation.
[123] This excludes the monthly fault rental charge of €0.63.

ComReg's Preliminary View:

6.49 ComReg is of the preliminary view that prices for LLU/ULMP[124] and SLU should be derived based on the Urban Commercial Footprint (while maintaining the existing BU-LRAIC+ methodology for Non-reusable Assets and TD FAC for Reusable Assets as already discussed at Section 3) and set as the maximum monthly rental prices that Eircom can charge for those services.

6.50 The maximum LLU monthly rental prices (excluding repair) for the price control period are set out in Section 7, Table 11.

6.51 The maximum SLU monthly rental prices for the price control period are set out in Section 7, Table 12.

Q. 11 Do you agree with ComReg's preliminary views that the prices for LLU and SLU should be derived based on the Urban Commercial Footprint and set by way of maximum prices (rather than the existing price points) as set out in Section 7? Please provide reasons for your response.

6.4 Pricing approach for Dark Fibre

6.52 For Dark Fibre the annual cost of fibre cables is based on the quantity of fibre cables deployed in the access network to support Leased Line access links[125]. In circumstances where there does not appear to have been significant demand for Dark Fibre to date, ComReg is of the view that basing the costs for Dark Fibre on those cables that are used to support Leased Line access is reasonable as both Dark Fibre and Leased Lines are point to point services and the potential demand for Dark Fibre is most likely to arise in the same areas as the existing Leased Line demand. Consequently, the fibre costs for Leased Line access can be considered a reasonable proxy of the costs associated with Dark Fibre and ComReg has modelled the costs for Dark Fibre accordingly.

6.53 The relevant costs for Dark Fibre include costs associated with trench, chambers, duct and sub-duct, poles and fibre cables (including joints). The annual costs in the ANM comprise associated depreciation charges and relevant operating costs, common costs and process charges (or wholesale specific costs).

6.54 As set out in Section 5, in general ComReg is of the preliminary view that the RAB value of Reusable Assets should be set by reference to Eircom's HCAs and the RAB value of Non-reusable Assets should be based on current replacement costs. The provision of Dark Fibre is based on a combination of Reusable Assets and Non-reusable Assets. Therefore, in line with the approach set out in Section

[124][124] See footnote 36.
[125] Core cables are not included as dark fibre is taken to mean "unlit fibre in Eircom's access network".

3.3 (paragraph 3.23), the price for Dark Fibre should be derived with reference to the costs modelled for Eircom's RAB.

6.55 In the 2018 WLA/WCA Market Review Decision, ComReg determined that the pricing of Dark Fibre should be based on a continuation of the prices set out in the 2016 Access Pricing Decision, which adopted a price per metre of fibre approach. This entails dividing the total annual cost of fibre used to support Leased Lines by the associated total length of those fibres in the access network, using assumptions on the average number of fibres per cable and the average utilisation rate of the fibres in the cables over time.

6.56 The total annual cost for fibre includes the costs of the fibre cable plus the associated costs of infrastructure (including trenches, chambers, duct, sub-duct and poles), all of which are sensitive to fibre length. Consequently, ComReg remains of the view that Dark Fibre should follow a price per metre of fibre approach, as this respects the principle of cost causality. For the avoidance of doubt, the per metre length of Dark Fibre refers to the distance between the ingress and egress points that are accessed by the OAO.

6.57 The ANM derives the price of Dark Fibre with reference to the costs associated with fibre routes in the access network that are used to support Leased Lines, which has resulted in the maximum prices for Dark Fibre set out in Section 7, Table 14.

ComReg's Preliminary View:

6.58 ComReg's preliminary view is that the maximum national monthly rental charge for Dark Fibre should be based on the costs associated with fibre routes in the access network that are used to support Leased Lines.

Q. 12 Do you agree with ComReg's preliminary views that the maximum monthly charge for Dark Fibre should be based on fibre costs associated with Leased Lines access? Please provide reasons for your response.

6.5 Pricing approach for CG SABB

6.59 CG SABB uses ADSL[126] or ADSL2 Plus[127] technology to provide a standalone broadband access service that is delivered without a Public Switched Telephone Network voice telephony service. Although it is purchased without PSTN, it generally uses the same copper loop that is used to provide PSTN WLR and the pricing approach allows for the same level of copper access recovery that applies for the PSTN WLR service.

[126] Asymmetric Digital Subscriber Line.
[127] ADSL2 Plus is the next generation ADSL. It offers high bandwidth using the same copper lines. It can offer up to 24 Mbps but this depends on a number of parameters.

6.60 The 2016 Access Pricing Decision set the prices for CG SABB Outside the LEA on the basis of a TD HCA costing methodology except for Active Assets where the costs are calculated using a BU-LRAIC+ methodology so as to address concerns that Eircom may price excessively for CG SABB services, given that there is little or no alternative infrastructure competition in this area. In the 2018 WLA/WCA Market Review Decision, ComReg (re)imposed an obligation of cost orientation based on a TD HCA costing methodology except for Active Assets where the costs are calculated using a BU-LRAIC+ methodology for CG SABB. However, the Outside the LEA footprint was replaced by those exchanges in the Regional WCA Market reflecting the scope of the regulated market following ComReg's market analysis.

6.61 The cost of the active equipment for CG SABB is the same as the BU port costs derived in the NGN Core Model for CG Bitstream, while the ANM models the costs of the copper loop using the same TD approach as that used for PSTN WLR. This ensures that there is an appropriate consistency between the pricing approaches for CG SABB, PSTN WLR and CG Bitstream by recognising the extent that different network components are used in the provision of each service. For example, PSTN WLR and CG SABB both make similar use of the copper loop and the pricing approaches for both services recognise this by adopting a TD approach to cost the copper loop. At the same time, CG Bitstream and CG SABB both use the ADSL port and the pricing approaches for both services recognise this by adopting the same BU approach to cost the port. However, to take account of the 2018 WLA/WCA Market Review Decision, the cost of the copper loop for CG SABB is set in the ANM with reference to the exchanges which are part of the Regional WCA Market.

6.62 Furthermore, separate monthly rental prices for CG SABB have been derived depending on whether the service uses Regional or National Handover, in line with the pricing approach for CG Bitstream that was determined in the 2018 Pricing Decision and the traffic based charges for CG SABB are set to be the same as the equivalent CG Bitstream services (i.e. BMB and Bitstream IP).

6.63 Applying these costing approaches to price CG SABB and using the regulated WACC of 5.61%, result in the average monthly charges (including fault repair and provisioning costs but excluding traffic / usage costs) set out in Table 15 of Section 7. Eircom currently offers 8Mbps and 24Mbps CG SABB services, with the 24Mbps service priced at a premium to the 8Mbps service. ComReg is of the view that such an approach is consistent with the price control provided that the average price charged for both services does not exceed the average prices derived in the ANM.

ComReg's Preliminary View:

6.64 ComReg is of the preliminary view that the average monthly rental charge for CG SABB should be updated to reflect costs in the exchanges that are part of the Regional WCA Market as well as to provide separate monthly rental prices for Regional and National Handover based on the maximum rates shown in Table 15 in Section 7.

Q. 13 Do you agree with ComReg's preliminary view that the average monthly rental charge for CG SABB should be updated to reflect costs in the Regional WCA Market as well as to provide separate monthly rental prices for Regional and National Handover based on the maximum rates shown in Table 15 in Section 7? Please provide reasons for your response.

6.6 Pricing approach for Line Share

6.65 In relation to Line Share, the 2018 WLA/WCA Market Review Decision determined that the price control obligation should be based on cost orientation, and that Eircom may recover no more than the incremental costs associated with the provision of Line Share. The current Line Share price of €0.77 a month only applies to lines where different operators provide the line rental with a voice service and the ADSL service. The Line Share price is based on the incremental cost of supporting the ADSL broadband service on the copper line where the costs of that line are already recovered in the PSTN WLR price.

6.66 In recent years the number of such lines has declined (currently circa 20,000) and service volumes are expected to continue to decline over the price control period. When ADSL was first introduced Eircom had to undertake a programme to remove pair gain systems from those copper lines on which Eircom had previously deployed multi-channel customer carriers to ensure these lines were suitable for broadband. For pricing purposes, the costs associated with this programme were considered as a capital cost that was incremental to the line share service. ComReg has estimated that a monthly charge of €0.18 per month (based on a WACC of 5.61%) is required to contribute to the ongoing recovery of the remaining capital costs.

6.67 The only other costs that were considered to be incremental to the Line Share service were the wholesale costs associated with managing and billing the service. Following an analysis of the carrier administration and billing costs associated with the LLU and Line Share statement within Eircom's HCAs for the year ended 30 June 2019, ComReg estimates that the average cost per services equates to €0.44.

6.68 Combining the capital related cost of €0.18 per month with the wholesale cost of €0.44 per month results in an incremental cost for Line Share of €0.62 per month. Consequently, ComReg is of the preliminary view that the Line Share charge should be no more than €0.62 per month. The prices are presented in Section 7, Table 13.

ComReg's Preliminary View:

6.69 ComReg is of the preliminary view that the monthly rental charge for Line Share should be updated to reflect the latest available cost information resulting in a charge of no more than €0.62 per month.

Q. 14 Do you agree with ComReg's preliminary view that the monthly rental charge for Line Share should be updated to reflect the latest available cost information resulting in a charge of no more than €0.62 per month? Please provide reasons for your response.

6.7 Implications of model updates on FTTC and CG Bitstream

6.70 To determine prices in the 2018 Pricing Decision, ComReg developed two models:

a) An NGA Cost Model, which primarily models the costs of FTTC/EVDSL specific infrastructure (e.g. FTTC cabinets and DSLAMs); and

b) An NGN Core Model, which is used to derive certain core network cost inputs that are relevant to the provision of FTTC based NGA services (e.g. inter-aggregation link[128] costs for Bitstream and the link costs from the aggregation node to the exchange for VUA).

6.71 The costs of equipment specific to FTTC based services, such as cabinets and DSLAMs, were derived in the NGA Cost Model while the costs associated with for backhaul for FTTC related demand to local aggregation nodes, and from the aggregation nodes to the regional and national handover points, were calculated in the NGN Core Model. In addition, the costs associated with the access network underpinning the LLU and SLU services (i.e. the full local loop and the segment of the full local loop between the cabinet and customer), which are the relevant cost inputs for the provision of FTTC based services, including the costs of the NGA link (i.e. the fibre connecting the FTTC cabinet to the exchange), were derived in the Revised CAM.

FTTC based services:

6.72 The costs (and prices) for FTTC (including EVDSL) based services were determined in the 2018 Pricing Decision using the NGA Cost Model, based on

[128] This includes the link between Local VUA and Remote VUA.

the network cost inputs of SLU, LLU and the NGA Link from the Revised CAM. The Revised CAM also provided the cost of the active equipment associated with voice services that is used to provide a POTS based FTTC service[129]. ComReg has considered, as part of this pricing review, the possible impact of changes to these network cost inputs on FTTC based services, as a result of the modelling undertaken in the ANM.

6.73 In Section 6.3, ComReg reviewed the costs of LLU and SLU with particular emphasis on how LLU and SLU are used to support the provision of FTTC based services. The LLU and SLU costs derived in the ANM are slightly higher than the equivalent costs that were derived in the Revised CAM to inform the 2018 Pricing Decision. However, the ANM has better data on the FTTC line base than was available for the Revised CAM. The fact that the ANM derives the costs of the SLU and LLU inputs with reference to the line base required to serve all those premises that are capable of receiving a viable FTTC/EVDSL service from Eircom means that the basis for deriving the LLU and SLU costs to cost FTTC based services is now more robust than the assumptions that were in the Revised CAM (regarding maximum line lengths of 3km for LLU and 1.5km for SLU) when deriving the costs for the 2018 Pricing Decision.

6.74 Absent any change to the WACC rates, updating the NGA Cost Model with the revised cost inputs from the ANM would lead to an increase in the modelled costs of FTTC based VUA rental across the price control period.

6.75 However, in the 2018 Pricing Decision, ComReg noted that it was planning to consult on the WACC rate and that it reserved the right to require prices to be updated depending on the outcome of any decision that would be taken on the WACC rate as a result of that consultation process. ComReg recently determined in the 2020 WACC Decision that a lower WACC rate of 5.61% was appropriate for the Irish fixed line telecoms market. Applying this lower WACC rate will, as expected, reduce the costs modelled in the ANM for the LLU, SLU and the NGA Link inputs into the NGA Cost Model.

6.76 The WACC rate is also a modelling parameter in both the NGA Cost Model and the NGN Core Model. Revising the WACC rate from 8.18% to 5.61% in both these models further reduces the costs modelled for FTTC based services with consequent reductions in the modelled prices.

[129] The ANM maintains the assumption (previously adopted in the Revised CAM and the NGA Cost Model) that the active equipment used to support the POTS based FTTC is the same as that used to support the PSTN WLR service.

6.77 ComReg recognises that there are other parameters and inputs that inform the costs modelled in both the NGA Cost Model and the NGN Core Model. Nonetheless, ComReg is not proposing to revisit any of these other parameters or model inputs at this stage. Both the NGA Cost Model and the NGN Core Model in the 2018 Pricing Decision are BU models where the costs are based on those of an HEO with a recently deployed network that is assumed to have Eircom's scale and market share. This means that the HEO's operating costs are not the same as the operating costs in a TD model, which more closely relate to the costs Eircom has incurred in operating its legacy networks. Consequently, changes in Eircom's reported TD costs do not necessarily require corresponding adjustments to the HEO costs in a BU model.

6.78 Furthermore, the NGA Cost Model uses an Economic Depreciation ('**ED**') approach to cost modelling, which considers demand and costs across a model time horizon of 50 years. The ED approach is consistent with the approach taken by ComReg in the NGA Cost Model to model VDSL as an anchor technology, with the result that VDSL based services, such as FTTC, are modelled as remaining active for the entire 50 year period of the model time horizon. As stated in paragraph A1.27 of the 2018 Pricing Decision, "… *because VDSL is being considered as an anchor technology, ComReg assumes that Eircom will not overlay its FTTC network with FTTH in the future, so the NGA Cost Model does not include migration from FTTC to Eircom's FTTH.*"

6.79 Consequently, the HEO in the NGA Cost Model is assumed to continue to deploy VDSL specific assets such as FTTC cabinets and DSLAMs over the 50 year time horizon and the demand for the VDSL services that use those assets is also assumed to persist for that period[130].

6.80 In summary, ComReg considers that the general demand and costs assumptions that were used in the NGA Cost Model and NGN Core Model for the 2018 Pricing Decision continue to be consistent with the HEO approach adopted in both models and consequently do not need to be updated at this stage. Therefore, ComReg is of the view that it is only necessary to revise the ANM input costs into the NGA Cost Model and the WACC parameter in both models, as all the other modelling assumptions on demand and costs remain appropriate.

6.81 Given this, it is ComReg's preliminary view that when the impact of the ANM update is combined with the application of the latest WACC to all relevant cost models, the reduction in modelled FTTC rental prices is significant and warrants a revision of the prices determined under the 2018 Pricing Decision. The resulting prices are presented in Section 7, Table 17.

[130] Further information on the anchor technology approach can be found in paragraphs 6.60 and 6.131 of the 2018 Pricing Decision.

ComReg's Preliminary View:

6.82 ComReg's preliminary view is that the monthly rental charge for FTTC based services should be amended to reflect the updates to the LLU, SLU and NGA Link cost inputs as modelled in the ANM, and by applying the regulated WACC of 5.61% in the ANM, the NGA Cost Model and the NGN Core Model.

CG Bitstream Services:

6.83 In the 2018 Pricing Decision ComReg recognised that fixed line network operators in Ireland have been focused on investing in NGA infrastructure rather than CGA and this trend is expected to continue for the duration of this price control period. This continues to result in the migration of wholesale customers from CGA to NGA broadband services such as FTTC or FTTH. It must also be recognised that NGA broadband is not available for all lines so CG Bitstream will still be required until the NBP network is complete. Currently demand for the POTS based CG Bitstream service is in the region of 200k.

6.84 Going forward, ComReg considers that there is no need to encourage further build in terms of current generation services but considers that it is important to protect investments that have already occurred. ComReg also considers that the build/buy signals for CG Bitstream and FTTC services should remain consistent. Simply altering the prices for FTTC services may affect the incentives for OAOs to migrate end-users to fibre-based services.

6.85 Consequently, ComReg is of the view that the monthly prices for CG Bitstream services[131] should be amended by applying the regulated WACC of 5.61% in the NGN Core Model.

ComReg's Preliminary View:

6.86 ComReg's preliminary view is that the monthly rental charge for CG Bitstream services should be revised to take account of the revised WACC of 5.61%, in line with that presented in Table 16.

Q. 15 Do you agree with ComReg's preliminary views that the price for FTTC based services should be updated in line with the approach at paragraph 6.82? Please provide reasons for your response.

Q. 16 Do you agree with ComReg's preliminary views that the price for CG Bitstream services should be updated in line with paragraph 6.86? Please provide reasons for your response.

[131] BMB and Bitstream IP.

7 Draft wholesale prices

7.1 Overview

7.1 This section of the Consultation sets out the proposed rental charges for the following access services:

a) LLU, SLU, Line Share and Dark Fibre in the WLA Market (see Section 7.2 below);

b) CG SABB, CG Bitstream (i.e. BMB and Bitstream IP) in the Regional WCA Market (see Section 7.3 below);

c) FTTC based services (including EVDSL) i.e. FTTC based VUA and Bitstream (see Section 7.4); and

d) PSTN WLR and supplemental POTS based FTTC in the Regional Low-Level FACO Market (see Section 7.5 below).

7.2 The prices set out below assume that new prices will come into effect during the financial year ending 30 June 2021, with updates to prices then due each year on 1 July.

7.2 Proposed prices for access services in the WLA Market

7.3 The tables below set out the proposed monthly rental charges for LLU, SLU, Line Share and Dark Fibre for the price control period to 30 June 2024.

LLU and SLU

7.4 For LLU and SLU services the proposed maximum monthly rental prices are set out in Table 11 and Table 12 based on the updates as discussed in Section 6.

Table 11: Proposed maximum monthly rental prices for LLU

1 July 2020 – 30 June 2021	*1 July 2021 – 30 June 2022*	*1 July 2022 – 30 June 2023*	*1 July 2023 – 30 June 2024*
12.72*	12.72*	12.79*	13.44*

* Excludes monthly fault repair (e.g. €0.63) and Monthly connection / provisioning (€0.38), as per the prevailing ARO price list.

Table 12: Proposed maximum monthly rental prices for SLU

1 July 2020 – 30 June 2021	*1 July 2021 – 30 June 2022*	*1 July 2022 – 30 June 2023*	*1 July 2023 – 30 June 2024*
10.43	10.39	10.39	10.82

Line Share

7.5 For Line Share services the proposed maximum monthly rental prices are set out in Table 13.

Table 13 - Proposed maximum monthly rental prices for Line Share

1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
0.62*	0.62*	0.62*	0.62*

* Excludes monthly fault repair (e.g. €0.05) and Monthly connection / provisioning (€0.38), as per the prevailing ARO price list.

Dark Fibre

7.6 For Dark Fibre services the proposed maximum annual rental prices are set out in Table 14.

Table 14 - Proposed maximum annual rental prices for Dark Fibre (per metre for 1 single fibre)

1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
0.11	0.11	0.11	0.11

7.3 Proposed prices for access services in the Regional WCA Market

7.7 The tables below set out the proposed monthly rental charges for CG SABB and CG Bitstream (i.e. Bitstream Managed Backhaul and Bitstream IP). For the avoidance of doubt the charges for Bitstream Managed Backhaul (BMB) and Bitstream IP are incremental to the charges for PSTN WLR.

7.3.1CG SABB and CG Bitstream

CG SABB

7.8 Table 15 sets out the proposed maximum monthly rental charges for CG SABB for the price control period to 30 June 2024.

Table 15 - Proposed maximum monthly rental prices for CG SABB in the Regional WCA Market

Service	CG SABB - €			
	1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
CG SABB: National handover				
Per Port	21.56*	21.31*	21.05*	21.09*
Per Mbps	0.54	0.44	0.37	0.33
CG SABB: Regional handover				
Per Port	19.97*	19.71*	19.45*	19.49*
Per Mbps	0.23	0.19	0.16	0.14

* Includes rental costs, fault repair costs and connection / provisioning costs

CG Bitstream

7.9 Table 16 sets out the proposed monthly rental charges for CG Bitstream for the price control period to 30 June 2024.

Table 16 - Proposed monthly rental prices for CG Bitstream in the Regional WCA Market

Service[132]	CG Bitstream - €			
	1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
BMB: National handover				
Per Port	7.74*	7.89*	8.07*	8.30*
Per Mbps	0.54	0.44	0.37	0.33
BMB: Regional handover				
Per Port	6.33*	6.35*	6.41*	6.52*
Per Mbps	0.23	0.19	0.16	0.14
Bitstream IP: National Handover				
Bitstream IP[133]	8.16*	8.23*	8.36*	8.55*
Bitstream IP: Regional Handover				
Bitstream IP[134]	6.51*	6.50*	6.53*	6.63*

* Including line share and fault repair

7.4 Proposed price for FTTC based services

FTTC based VUA, FTTC based Bitstream

7.10 Table 17 sets out the proposed monthly rental charges for FTTC based NGA services for the price control period to 30 June 2024.

[132] These costs / prices are incremental to the cost / price for PSTN WLR / POTS.
[133] Bitstream IP prices are based on a combination of the costs of the port and traffic usage. The prices listed here are based on a weighted average assumption of traffic use by the Bitstream IP user for each year.
[134] Ibid footnote 133.

Table 17 - Proposed monthly rental prices for FTTC based services

Service	FTTC based NGA services - €			
	1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*
FTTC based VUA[135]	18.67*	18.62*	18.62*	19.08*
FTTC based Bitstream: National Handover				
Per Port	22.45*	22.47*	22.59*	23.22*
Per Mbps	0.34	0.29	0.27	0.27
FTTC based Bitstream: Regional Handover				
Per Port	20.50*	20.47*	20.51*	21.05*
Per Mbps	0.13	0.11	0.11	0.11
Assumed 90/10 mix for Regional / National Handover				
Per Port	20.69*	20.67*	20.72*	21.26*
Per Mbps	0.15	0.13	0.13	0.13

* Including fault repair and provisioning costs

7.5 Proposed price for PSTN WLR in the Regional Low-Level FACO Market

PSTN WLR

7.11 Table 18 sets out the proposed monthly rental charges for PSTN WLR in the Regional Low-Level FACO Market for the proposed price control period to 30 June 2026.

7.12 The supplemental charge relevant to the provision of POTS based FTTC services in the Regional Low-Level FACO Market are also set out in Table 18. These supplemental charges pertain only for FTTC based Bitstream services provided in the Regional WCA Market, and for FTTC based VUA services provided in the WLA Market.

7.13 With regards to the supplemental charge relevant to the provision of the POTS based FTTC services in the Urban FACO Markets the prevailing price of €2.91 per month set out in the 2018 Pricing Decision for year ended June 2021 is to remain as a maximum price for the duration of the sunset period applicable to the Urban FACO Markets as set out in Section 11 of the 2020 FACO Consultation[136].

[135] This includes the average costs for Remote VUA, Local VUA and EVDSL.
[136] As proposed in Section 17 of the draft Decision Instrument in the 2020 FACO Consultation.

Table 18 - Proposed monthly rental prices for PSTN WLR and Supplemental charge for POTS based FTTC services in the Regional Low-Level FACO Market

Service	PSTN WLR and Supplemental charge for POTS based FTTC services - €					
	1 July 2020 - 30 June 2021	*1 July 2021 - 30 June 2022*	*1 July 2022 - 30 June 2023*	*1 July 2023 - 30 June 2024*	*1 July 2024 - 30 June 2025*	*1 July 2025 - 30 June 2026*
PSTN WLR	16.07	15.77	15.41	15.35	14.80	15.67
Supplemental charge for POTS based FTTC services*	2.48	2.39	2.31	2.24	2.18	2.09

* Supplemental charge to be added to FTTC based services' prices in Table 17

8 FTTH Connections

8.1 Overview

8.1 In the 2018 Pricing Decision ComReg outlined a cost-based pricing mechanism for FTTH connections and migrations. It was envisaged that the pricing mechanism would have a positive impact on the development of retail competition for FTTH-based services.

8.2 ComReg, in a Settlement Agreement with Sky Ireland Limited[137] agreed that the Access Network Model consultation would consider the appropriate level of costs of FTTH connections and migrations and would seek views from stakeholders on the "*market impact of the existing prices*" in relation to FTTH connection and migration charges at the same time as consulting on the ANM.

8.3 This section seeks views on the appropriate factors to be taken into account in determining the costs associated with FTTH connections and migrations, and on the market impact of FTTH connection and migration prices charged by Eircom since the 2018 Pricing Decision came into effect.

8.2 Background

Existing approach as per the 2018 Pricing Decision

8.4 Prior to the 2018 Pricing Decision each connection and subsequent migration charge (the fee payable by a Retail Service Provider ('**RSP**') on gaining a retail customer from a competitor) were subject to a cost orientation obligation. This had resulted in a connection fee of €270 per connection and a migration charge of €2.50.

8.5 The 2018 Pricing Decision set out a revised pricing mechanism for FTTH connections / migrations.

8.6 In summary, ComReg determined that the cost of FTTH connections / migrations could be recovered based on a combination of an initial up-front connection charge, a charge for migration to another service provider and a recurring rental charge, but that the new connection charge and the charge for migration to another service provider should be subject to two conditions:

a) The charges for new connections and migrations to another service provider should be the same; and

[137] https://www.comreg.ie/publication-download/settlement-of-high-court-proceedings-sky-ireland-limited-v-comreg-2018-459-mca

b) The combination of a new connection charge and a charge for migration to another service provider should not exceed the level that would allow Eircom to recover its customer specific connection related investment over the lifetime of the underlying assets, given the same assumptions about customer churn as are used in the margin squeeze tests.

Evolution of FTTH Connection/Migration charges post the 2018 Pricing Decision

8.7 To comply with the 2018 Pricing Decision Eircom notified ComReg under Wholesale Notification No. 13 of 2018 of Eircom's intention to charge a maximum national FTTH Connection/Migration Charge of €170 from 1 January 2019 (for a period of at least five years). Based on an analysis of the cost information provided by Eircom, ComReg saw no reason to intervene with the introduction of these charges and published Information Notice 18/101[138] to inform stakeholders of same.

8.8 The cost data provided at that time indicated that the average FTTH connection customer specific cost incurred by Eircom was higher than the €170 connection charge, while the costs incurred when an existing customer migrates between RSPs was significantly less than €170. Consequently, any risk of Eircom over-recovering its customer specific FTTH connection costs from revenues for the combination of FTTH connection/charges depends to a significant degree on how often an existing FTTH customer migrates between RSPs.

8.9 In March 2020 Eircom notified ComReg of a reduction in the maximum FTTH Connection/Migration charge from €170 to €100 from 1 July 2020 in "*order to balance risk/reward and demand considerations*". An FTTH Connection/Migration charge of €100 has applied since 1 July 2020.

The Settlement Agreement

8.10 In Information Notice ComReg 19/92 setting out the terms of a Settlement Agreement with Sky, ComReg said in respect of the forthcoming consultation on the ANM, that:

> "*the consultation will consider the appropriate level of costs of FTTH connections and migrations. At the same time, ComReg will also, by way of a call for inputs, seek views on the market impact of the existing prices and having regard to those views, will consider expeditiously the relationship between connection, migration and rental charges in the recovery of those costs and will as soon as reasonably practicable thereafter assess whether it is appropriate*

[138] https://www.comreg.ie/publication-download/ftth-connection-migration-charges

to consult on price control obligations for FTTH connection and migration charges."

8.11 Accordingly, ComReg is issuing this call for input in relation to FTTH connections and migrations from stakeholders.

8.12 The 2018 Pricing Decision requires Eircom to provide ComReg with an Additional Financial Information ('**AFI**') statement in relation to the FTTH connection/migration costs and charges as part of its Regulatory Accounting obligations. This AFI allows ComReg to compare the total customer specific FTTH connection costs that Eircom incurred since the 2016/17 financial year (when Eircom began deploying FTTH in rural areas) with the total revenues for connections and migrations that it has billed both internally to eir Retail and externally to other RSPs.

8.13 The latest AFI, which covers the period up to the 30 June 2019, indicates that the average FTTH connection charge incurred by Eircom was in excess of €450 per connection. ComReg's modelling of FTTH connections in the ANM indicates that non-standard connections (more common in rural areas) are likely to cost of the order of €1,200 to €1,500 while standard orders are modelled to cost €300 to €400. A comparison of the billed FTTH connection/migration revenues and costs in the AFI's also indicates that total billed FTTH connection/migration revenues account for less than 50% of the incurred FTTH connection costs across the same period. This provides some assurance to ComReg that Eircom remains compliant with the condition imposed in the 2018 Pricing Decision, i.e. that the combination of a new connection charge and a charge for migration to another service provider should not exceed the level that would allow Eircom to recover its customer specific connection costs.

8.14 In assessing compliance with the 2018 Pricing Decision ComReg takes account of the following considerations:

a) The cost of the connection;

b) The weighted average asset life of the underlying assets used to provide connection;

c) The length of time a retail customer will remain on average with an RSP on Eircom's network assumed, consistent with the treatment of retail margin squeeze tests, to be 42 months;

d) The degree of off-network churn. Assumed in rural areas to be low but likely to be higher in as Eircom rolls out FTTH in urban areas;

e) The mix of standard and non-standard connections;

f) The time value of money determined by reference to Eircom's Weighted Average Cost of Capital which is set 5.61% since the 2020 WACC Decision and 8.18% prior to that.

8.15 For illustrative purposes two scenarios are shown in the table below which show the maximum connection/migration fee for a given set of inputs. Access to a non-confidential FTTH connection/migration assessment spreadsheet, is available to interested parties upon request to ComReg.[139]

Table 19: Illustrative example of maximum connection/migration fee

	Rural scenario	Urban / Rural mix scenario
Average connection cost[140]	€450	€350
The weighted average asset life of the underlying assets used to provide connection	10 years overhead, 15 years underground, weighted average 12 years	10 years overhead, 15 years underground, weighted average 14 years
Retail customer lifetime	42 months	42 months
Market share	100%	80%
Off-network churn	3%	10%
% of non-standard connections	10%	4%
Time value of money	5.61%	5.61%
Maximum connection / migration charge	€152	€116

8.16 As mentioned above, on 1 July 2020, Eircom reduced the charge for FTTH connection/migrations from €170 to €100 which will, should these charges remain in place, further reduce the risk of any over recovery by Eircom. However, ComReg also expects that the average cost of an FTTH connection will be lower in the future as Eircom overlays FTTH in urban settings, on the basis that there will be a greater proportion of standard connections in urban settings than Eircom has experienced to date with the rural FTTH network[141]. As a result, the average costs of an FTTH connection nationally is likely to fall as the proportion of urban based FTTH customers increases, which suggests that the current price of €100 per connection/migration should allow Eircom recover the customer specific FTTH connection related investments from a combination of an initial upfront

[139] For access to this non-confidential spreadsheet, please email Pedro.Fontes@comreg.ie and Karl.Hurley@comreg.ie.
[140] For further information on how average FTTH connection costs are calculation in the ANM please see subsection 5.9.
[141] In rural areas the costs of some non-standard connections can be 10 times the cost of a standard connection, due to some rural connections requiring road crossings and additional poles. This is unlikely to be the case in urban areas.

connection charge, a charge for migration to another service provider and recurring rental charge.

8.3 Relevant factors for the appropriate level of costs for FTTH connection and migration charges

8.17 In order to implement a cost-based price control, it is necessary for Eircom to adopt an appropriate methodology for determining the appropriate level of costs. ComReg considers that factors relevant to such a methodology include but are not limited to:

a) Eircom's total connections to date in Ireland and the associated data surrounding the costs of all connections including standard and non-standard connections;

b) The rollout plans, not just of Eircom but of alternative networks in Ireland, in order to assess rollout risks associated with potential future off-network churn rates;

c) Costs of connections incurred by alternative operators e.g. Virgin Media, Magnet, SIRO, etc. If possible, this should be broken down between standard and non-standard connections to facilitate comparisons between Irish FTTH operators and inform efficiency assessments;

d) The mix of assets used on providing connections and estimates of lifetimes for the physical asset and the connection in the premise to determine the monthly charge;

e) Information on likely customer churn between RSPs, e.g. the average customer life of an FTTH customer per RSP on its network;

f) The expected active lifetime of the customer/premises on the network (as distinct from the customer lifetime with an individual RSP);

g) The likely mix of standard and non-standard connections in rural and urban areas;

h) Established connection cost methodologies in other jurisdictions; and

i) Any other factors that stakeholders consider relevant.

8.18 ComReg considers that the above factors are relevant to determining the level of connection costs as:

i. The 2018 Pricing Decision was finalised at a time when data on FTTH connection costs and customer migration patterns were very limited as FTTH

deployment had only recently commenced. By Q2 of 2020 a number of network operators, including Eircom, SIRO and Virgin Media, have circa 201k FTTH active connections with the result that more comprehensive data should now be available to inform ComReg's view as to how FTTH connection/migration costs might evolve in the future.

ii. Secondly the rollout plans of companies evolve over time; the 2018 Pricing Decision is based on the data that were available at the time. ComReg expects that operators may have revised / reviewed their rollout plans and expected market shares in light of take-up data. Eircom's own experience in relation to the 300K rollout in the rural commercial area and the urban commercial area ('Ireland's Fibre Network') should assist in updating ComReg's knowledge on this matter;

iii. At the same time as Eircom has been rolling out its fibre network, other operators have been rolling out their alternative networks. ComReg considers that these operators should be in a position to share their observed costs and volumes with ComReg to enable a comparison with the Eircom charges. ComReg considers that while these other companies are not subject to the same level of regulation as Eircom is, and as such are not required to prepare management accounts to the same level of granularity as Eircom does, the information that they have gathered on their costs and volumes should enable a comparison to be made. ComReg considers that this comparison is of use as these companies are more likely than not to encounter the same average profile of premises in Ireland e.g. the housing stock should be broadly similar for operators in the country outside of the major urban areas where apartment complexes and office buildings may make the picture more nuanced;

8.19 ComReg is also interested in stakeholder views on the following matters:

i. Stakeholder views of the costs and factors considered relevant for FTTH connections in other jurisdictions, where there may be greater numbers of connections, and alternative networks than in Ireland;

ii. The relevant/realistic timelines to be applied in modelling in relation to the customer lifetime period, nothing that ComReg applied a 42-month average in the calculation in the 2018 Pricing Decision as this was consistent with the customer life used in margin squeeze tests;

iii. In relation to asset lives, ComReg is interested to understand if there is expected to be a different asset life if the lead into the customer premises is overhead or underground; and

iv. There is a chance that a connection might be unused for a proportion of the physical asset life, either because the occupant of the connected premises uses an alternative network connection or does not require a connection at all. ComReg would welcome views on how the proportion of asset life during which the connection is unused should be assessed and incorporated into an assessment of FTTH connection and migration costs. In this regard, views are sought on how this might vary between urban and rural locations, or locations with different numbers of competing networks.

8.20 ComReg will consider any matters raised and decide on next steps accordingly.

Q. 17 Having outlined ComReg's initial assessment of relevant factors for the costs associated with connections and migrations, do you consider that they are relevant and complete? Do you consider that any other factors are relevant? In response please provide well justified reasons and provide data to assist in ComReg's consideration of this matter.

8.4 Market impact of existing prices

Market developments for FTTH since 2018[142]

8.21 Since the end of 2018, FTTH subscriptions have increased from 90,642 to 201,133 at 30 June 2020. This represents an increase of about 120%. Annual growth in FTTH subscriptions was running at 58.8% at Q2 2020. The operator with the largest market share of FTTH subscriptions across all networks at Q2 2020 was Vodafone with 39.8%, followed by Eircom Retail with a market share of 38.7%. At Q1 2019 shortly after the 2018 Pricing Decision Eircom Retail held 47% of the FTTH market. The price for connection to/migration on Eircom's FTTH network fell from €170 to €100 in that period, a reduction of just over 40%.

8.22 In making the 2018 Pricing Decision, ComReg was concerned to prevent over recovery by Eircom in relation to connection related costs. In addition, ComReg noted that the large differential between the connection fee and the charge for subsequent migrations in place before the 2018 Pricing Decision had appeared to have stifled competition. It appeared to ComReg that many RSPs were dissuaded from competing for new connections and seemed to be waiting for the opportunity to win customers from other RSPs thereby incurring the much lower migration charge. ComReg addressed these problems by a) requiring that the combination of connection and migration charges should not exceed the customer specific connection costs and b) requiring that connection and migration charges should be the same.

[142] All data from ComReg Quarterly Key Data Report - https://www.comreg.ie/publication/quarterly-key-data-report-q2-2020/, please note that the Quarterly Key Data Report uses the term "FTTP" (Fibre to the Premise) which in terms of this Consultation is equivalent to "FTTH".

8.23 Wholesale volumes accounted for 10% of Eircom FTTH network volumes in Q4 2018, but by Q2 2020 this share had increased to almost 37%, indicating that RSPs have become significantly more active on Eircom's FTTH network since the 2018 Pricing Decision was finalised. Consequently, ComReg is of the view that the measures introduced in the 2018 Pricing Decision have helped address the competition problems that were identified at that time.

8.24 ComReg notes that its statutory objectives will under the European Union Electronic Communications Code, once transposed, include to:

a) promote connectivity and access to, and take-up of, very high capacity networks, including fixed, mobile and wireless networks, by all citizens and businesses of the Union;

b) promote competition in the provision of electronic communications networks and associated facilities, including efficient infrastructure-based competition, and in the provision of electronic communications services and associated services;

c) contribute to the development of the internal market by removing remaining obstacles to, and facilitating convergent conditions for, investment in, and the provision of, electronic communications networks, electronic communications services, associated facilities and associated services, throughout the Union, by developing common rules and predictable regulatory approaches, by favouring the effective, efficient and coordinated use of radio spectrum, open innovation, the establishment and development of trans-European networks, the provision, availability and interoperability of pan-European services, and end-to-end connectivity;

d) promote the interests of the citizens of the Union, by ensuring connectivity and the widespread availability and take-up of very high capacity networks, including fixed, mobile and wireless networks, and of electronic communications services, by enabling maximum benefits in terms of choice, price and quality on the basis of effective competition, by maintaining the security of networks and services, by ensuring a high and common level of protection for end-users through the necessary sector-specific rules and by addressing the needs, such as affordable prices, of specific social groups, in particular end-users with disabilities, elderly end-users and end-users with special social needs, and choice and equivalent access for end-users with disabilities.

e) Under the Code ComReg will also be obliged to promote efficient investment and innovation in new and enhanced infrastructures, including by ensuring that any access obligation takes appropriate account of the risk incurred by the investing undertakings.

f) It also will be obliged to promote regulatory predictability by ensuring a consistent regulatory approach over appropriate review periods and through cooperation with other NRAs, with BEREC[143], and with the European Commission.

8.25 ComReg monitors market developments on an ongoing basis and may receive representations from stakeholders from time to time that a price control decision is not effective. Ordinarily ComReg would not revisit the nature of a price control obligation in advance of a fresh market analysis, and clear and compelling evidence that the price control is failing to address the competition problems identified in the market analysis would be required prior to ComReg engaging in an early review of a price control.

8.26 In accordance with the settlement agreement with Sky, ComReg invites input on the market impact of the controls on FTTH connection and migration charges included in the 2018 Pricing Decision. Such input should be accompanied by relevant supporting evidence.

Q. 18 Do you have any views as to the market impact of the existing FTTH connection and migration charges on the potential competition problems that ComReg identified in the WLA market? If you consider that the existing price control obligation is materially failing to address these problems, please provide supporting evidence and reasoning.

[143] Body of European Regulators for Electronic Communications.

9 Other regulatory measures

9.1 Overview

9.1 This Consultation proposes to update the prices based on the price controls set out in the 2018 WLA/WCA Market Review Decision and in the 2018 Pricing Decision; it also proposes to specify the price control for PSTN WLR and set out prices for PSTN WLR. Considered below is the following:

a) annual review of models; and

b) price control period.

9.2 Annual review of models

9.2 In the context of monitoring price control obligations imposed on Eircom, an annual review of the cost models can be undertaken to ensure that material changes to key modelling assumptions, e.g. factors such as service demand or annual operating costs, can be assessed and the possible implications for modelled prices determined. This approach is particularly relevant when the prices are determined with respect to Eircom's TD costs and demand, as was the case in the modelling of PSTN WLR prices in the Revised CAM. In the 2016 Access Pricing Decision ComReg imposed a requirement on Eircom to provide ComReg with an annual reconciliation between the costs reported in its accounts for the provision of SB-WLR (now PSTN-WLR) compared to the costs in the Revised CAM.[144]

9.3 However, an annual review may be less important when costs are modelled on a BU basis and the demand assumptions follow a Hypothetical Efficient Operator approach. The modelling of Eircom's TD costs in the ANM that informs the proposed PSTN WLR prices is now limited to those active lines in the exchanges of the Regional Low-Level FACO Market. Therefore, the need to conduct an annual review of these prices may not be proportionate as the cost-orientation of PSTN WLR prices is no longer established on a national basis. Hence, ComReg is of the preliminary view that it is no longer proportionate and justified to continue to require Eircom to prepare the annual reconciliation as described in the paragraph above. Notwithstanding this, it is ComReg's preliminary view that Eircom should provide ComReg with annual information on key metrics in the Regional Low-Level FACO Market's exchanges, including the levels of capital and operating expenditure on copper cables in these areas and the demand for the various copper-based services. ComReg would require Eircom to provide

[144] See paragraph 12.18 of the 2016 Access Pricing Decision. The required template was set out in Annex 12 of that Decision.

this information as part of the Additional Financial Information ('**AFI**') in accordance with the procedures set out in ComReg Decision D08/10.

9.4 In respect of the NGA Cost Model and the NGN Core Model, Eircom should continue to, as stated in paragraph 12.20 of the 2018 Pricing Decision (and noting that this Consultation is proposing to update prices based on renewed modelling), "…*review the inputs, costs and assumptions of the NGN Core Model and NGA Cost Model annually. Any material/exceptional changes should be brought to the attention of ComReg for consideration*."

9.5 ComReg is mindful that predictability of pricing is an important aspect of creating the right environment for all operators to make investment decisions. Consequently, ComReg will generally avoid intervening within a price control period where it has mandated specific prices unless circumstances are materially different from those envisaged at the time of the pricing decision or exceptional circumstances have otherwise arisen. While it is desirable that prices in wholesale markets should reflect market conditions, ComReg also notes that too-frequent adjustments to regulated prices can have an inhibiting effect on network investment and can impair business planning by both the SMP operator and access seekers.

9.6 Given that context, and similar to the existing practice for the NGA Cost Model and the NGN Core Model, ComReg considers that the inputs, costs and assumptions of the ANM, should as necessary be reviewed by Eircom annually, with any material/exceptional changes brought to the attention of ComReg for consideration.

9.3 Price control period

9.7 ComReg proposes that the prices to be imposed following this Consultation process are imposed for the duration of the relevant market analysis period but in any event, the price controls would remain in place until further notice by ComReg.

9.8 Therefore, ComReg proposes that prices directed in respect of WLA and WCA services under the 2018 WLA/WCA Market Review Decision and the 2018 Pricing Decision should run until 30 June 2024. For PSTN WLR and POTS based FTTC ComReg proposes that the price control period should run for five years consistent with the forthcoming FACO Decision until 30 June 2026. ComReg does not currently envisage the need for a price review of PSTN WLR and POTS based FTTC during these five years given the expectation that volumes will continue to decline. ComReg proposes, however, to monitor cost recovery by Eircom and will intervene where necessary, where circumstances are materially different from those envisaged at the time of the ultimate decision on this paper

or exceptional circumstances have otherwise arisen, in order to ensure the continued cost orientation of prices over the price control period..

9.9 ComReg considers that the proposed price control period should permit enough time for the further development of the market for wholesale products, and infrastructural investment by alternative operators.

ComReg's Preliminary View:

9.10 The price control period for the WLA and WCA Services should run until 30 June 2024 but in any event, it should remain in place until further notice by ComReg. For PSTN WLR and POTS based FTTC the price control period should run for five years consistent with the forthcoming FACO Decision but in any event, it should remain in place until further notice by ComReg.

9.11 ComReg believes that setting prices for PSTN WLR for a five year period is appropriate, but that it will be necessary to monitor key demand and cost metrics in the exchanges that are part of the Regional Low-Level FACO Market in relation to PSTN WLR, in order to ensure the continued cost orientation of prices. ComReg proposes that the AFI submissions, the content of which is agreed on an annual basis between ComReg and Eircom in accordance with ComReg Decision D08/10, are used for that purpose.

9.12 Eircom should review the inputs, costs and assumptions of the ANM on an annual basis. If material changes are identified, Eircom should submit them to ComReg for further consideration.

Q. 19 Do you agree with ComReg's preliminary view that Eircom should, for PSTN WLR, provide annual information on key demand and cost metrics as part of its AFI submissions? Please provide reasons for your response.

Q. 20 Do you agree with ComReg's preliminary view that Eircom should review the ANM annually for material / exceptional changes, and that such material/exceptional changes are brought to the attention of ComReg for consideration? Please provide reasons for your response.

Q. 21 Do you agree with ComReg's preliminary view on the price control periods at paragraph 9.10? Please provide reasons for your response.

10 Regulatory Impact Assessment (RIA)

10.1 Overview

10.1 A Regulatory Impact Assessment ('**RIA**') is an analysis of the likely effect of proposed new regulation or regulatory change. The RIA should help identify regulatory options and should establish whether 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.

10.2 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[145], issued by the Department of An Taoiseach in June 2009 under the Government's Better Regulation programme. Section 13(1) of the Communications Regulation Act 2002 (as amended), requires ComReg to comply with Ministerial Policy Directions. The Policy Direction of February 2003[146] 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.

10.3 In conducting the RIA, ComReg has regard to the RIA guidelines. ComReg's ultimate aim in conducting a RIA is to ensure that all measures are appropriate, proportionate and justified. This Consultation document constitutes an impact assessment of the various regulatory options considered by ComReg as well as ComReg's preferred approach. Hence, the entire document should be considered part of the RIA.

10.4 In the context of this Consultation ComReg is not proposing to change the underlying price control obligations for Eircom's LLU, SLU, Line Share, Dark Fibre, or CG SABB access services i.e., the obligation of cost orientation imposed by way of the 2018 WLA/WCA Market Review Decision. However, ComReg is imposing a price control obligation and further specifying the underlying costing / pricing methodology associated with Eircom's PSTN WLR access service consequent to the recent 2020 FACO Consultation. In this regard, ComReg has considered in Section 4 the various regulatory options for

[145] 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/

[146] Ministerial Policy Direction made by the Minister for Communications, Marine and Natural Resources on 21 February 2003.

determining the appropriate price control and costing / pricing methodology for PSTN WLR access for the Regional Low-Level FACO Market, and Section 6.2 outlines the various options related to the pricing approach for PSTN WLR.

10.5 The rest of this section looks at the five steps involved in conducting a RIA with regard to the price control for PSTN WLR in the Regional Low-Level FACO Market.

10.2 Steps for assessing regulatory options

10.6 In assessing the available regulatory options, ComReg's approach to the RIA is based on the following five steps:

a) Step 1: describe the policy issue and identify the objectives

b) Step 2: identify and describe the regulatory options

c) Step 3: determine the likely impacts on stakeholders

d) Step 4: determine the likely impacts on competition

e) Step 5: assess the likely impacts and choose the best option

10.7 Each step is discussed in detail below.

10.3 Step 1: Describe the policy issue and identify the objectives

10.8 An important consideration for this RIA is the imposition of a cost orientation price control for PSTN WLR in the proposed Regional Low-Level FACO Market, and then choosing the appropriate costing/pricing methodology.

10.9 The competition problems identified in Section 9 of the 2020 FACO Consultation (and summarised in paragraph 4.4 of this Consultation), led to ComReg's preliminary conclusion that some form of price control should apply to PSTN WLR. Further, ComReg specified in the 2020 FACO Consultation that the form of price control for PSTN WLR would be specified through this Consultation, including the relevant costing / pricing methodology to be applied.

10.10 Section 4 of this Consultation sets out ComReg's preliminary assessment of the form of price control and the costing/pricing methodology to adopt for PSTN WLR. ComReg proposes that cost orientation is the most suitable form of price control obligation to impose, as set out in Section 4.1, paragraphs 4.14 to 4.19. Further, ComReg proposes that the costing methodology for PSTN WLR should be based on TD HCA costs in the Regional Low-Level FACO Market only for the copper loop and a BU LRAIC+ approach for the active equipment associated with voice services, as set out in Section 4.2, paragraphs 4.22 to 4.55. This is consistent with the existing approach used to set the current prices for PSTN WLR.

10.11 ComReg's objective in re-imposing cost orientation on Eircom for PSTN WLR, (albeit on a sub-national basis rather than nationally as before), is that it balances the risk of Eircom charging excessive prices with the need to ensure that PSTN WLR prices allow Eircom to recover its efficiently incurred costs.

10.12 In choosing the proposed price control measure and proposed costing / pricing methodology for PSTN WLR ComReg has taken account of Section 12 of the Act, Regulation 6(1), 8(6) and 13 of the Access Regulations, and Regulation 16 of the Framework Regulations. Set out below is a discussion on how each of the relevant objectives from the Act, the Access Regulations, and the Framework Regulations are addressed in the context of the proposed price control and costing / pricing approach for Eircom's PSTN WLR service.

10.3.1 Section 12 of the Act

10.13 ComReg's objectives, as set out in Section 12 of the Act, aims to:

(i) *Promote competition and in particular to encourage efficient investment in infrastructure and promoting innovation;*

(ii) *Contribute to the development of the internal market;*

(iii) *Promote the interests of users within the Community and in particular to encourage access to the internet at a reasonable cost to end-users.*

Promote competition

10.14 With respect to the objective of promoting competition, ComReg must consider the trade-off between the promotion of competition in the short term and in the long term. While infrastructure-based competition may provide a wider set of consumer choices, it requires significant investment to duplicate infrastructures; thus, this option will rarely be chosen by OAOs in the short to medium term. Service-based competition, on the other hand, where OAOs buy access services, is more likely to develop in the short and medium term. In order to promote competition in the short to medium term, ComReg should ensure that

the difference between wholesale access prices and retail prices is not so small that it could create a margin squeeze. On the other hand, the access price should not be set too low as it may deter investments in the long term.

10.15 Given the proposed reduction in the regulated FACO Markets from a national to a sub-national market (e.g. the Regional Low-Level FACO Market), where the exchanges are characterised by low line densities, the "buy" option is likely to be favoured by OAOs in the short to medium term. ComReg therefore considers that OAOs will buy access to PSTN WLR to serve end users that seek telecom services in the Regional Low-Level FACO Market. Hence, in areas where no infrastructure-based competition is likely to develop investment signals are less important and cost recovery of efficiently incurred costs (or TD HCA costs) is the key regulatory concern. This appears to be the case in the Regional Low-Level FACO Market, as discussed further below at paragraph 10.20 to 10.22.

10.16 If the price for PSTN WLR is set too low OAOs may not be able to migrate their customers to more modern technologies such as fibre, even where fibre is available. This would prolong the use of the copper network. If the price for PSTN WLR is set too high, and where fibre is not available, then this could be to the detriment of end users. Therefore, in choosing the appropriate price control measure and the costing / pricing methodology for PSTN WLR in the Regional Low-Level FACO Market it is important to balance these objectives of encouraging efficient migration, ensuring the efficient recovery of actual costs incurred by Eircom as well as protecting consumers from excessive prices where alternatives are not available.

10.17 Therefore, ComReg proposes in this Consultation that the monthly rental price for PSTN WLR should be set based on the TD HCA costs in the Regional Low-Level FACO Market for the copper loop component and include a BU LRAIC+ cost approach for the active equipment associated with voice services, for the reasons set out in Section 4.2 (paragraphs 4.48 to 4.55).

Encourage efficient investment in infrastructure and promoting innovation

10.18 Access prices should be set in such a way that Eircom and OAOs are encouraged to make efficient investment decisions.

10.19 The priority between short-term and long-term investments may vary depending on the specific conditions of wholesale products and geographic area. In densely populated areas infrastructure-based competition (mainly from Virgin Media and SIRO) as well as competition relying on LLU (to a lesser degree) has been observed. Outside densely populated areas, infrastructure-based competition is unlikely absent state funding, such as through the NBP. Therefore, in areas where no infrastructure-based competition is likely to develop investment signals are less important and cost recovery of efficiently incurred costs is the key

regulatory concern.

10.20 Given the Regional Low-Level FACO Market consist mainly of suburban and rural areas characterised by lower population density (see paragraph 7.52 of the 2020 FACO Consultation) it is unlikely that infrastructural investment will occur in this sub-national area.

10.21 Indeed, the Regional Low-Level FACO Market was described as being "*characterised by the absence - or the insufficient presence - of NG broadband.*"[147] Given the absence of next generation / fibre networks in the Regional Low-Level FACO Market this fact prohibits the possibility of Managed Voice Over Internet Protocol ('**Managed VOIP**') which is considered an "*effective demand-side substitute*"[148] for PSTN WLR dependent voice services developing.

10.22 Therefore, OAOs that wish to provide a voice service to end users in the Regional Low-Level FACO Market, are reliant on PSTN WLR provided by Eircom, as it would be uneconomical for the OAO to invest in their own infrastructure in the short to medium term. As such, visibility and certainty regarding future wholesale prices is important so that operators can progress their investment plans. For Eircom it is necessary to ensure that it recovers at least its efficiently incurred costs plus a reasonable rate of return through the wholesale access prices otherwise there is a risk that Eircom may not invest in maintaining its copper network.

10.23 As set out in Section 4.2 of this document, the proposed costing / pricing methodology for PSTN WLR is that it should continue to be set based on the TD HCA costs in the Regional Low-Level FACO Market only for the copper loop and include a BU LRAIC+ cost approach for the active equipment associated with voice services.

10.24 The TD HCA approach for the pricing of the copper loop element of PSTN WLR should ensure that Eircom can recover the efficiently incurred costs of the copper loop in the Regional Low-Level FACO Market.

10.25 The BU-LRAIC+ approach should ensure that Eircom is not prevented from upgrading its network to support voice services in an efficient manner while this approach maintains efficient infrastructure investment signals for OAOs in the relevant areas. As mentioned earlier (see footnote 107), Eircom has indicated to industry that it intends to undertake a project that will extend the lifetime of its PSTN network by means of Multi-Service Access Nodes[149]. Therefore, including a BU-LRAIC+ valuation of the active assets (e.g., line card) associated with voice

[147] Paragraph 1.11 of the 2020 FACO Consultation.
[148] Paragraph 1.27 of the 2020 FACO Consultation.
[149] See paragraph 5.30 of the 2020 FACO Consultation for more detailed information about that proposal.

services provides a better investment signal for the replacement of active assets associated with PSTN WLR.

Contribute to the development of the internal market

10.26 For active assets (e.g. line card) ComReg has recognised the need to provide the appropriate efficient infrastructure investment signals and accordingly ComReg has proposed the BU-LRAIC+ cost approach. The principles of BU-LRAIC+ for active assets is in line with the 2013 EC Recommendation. For active assets (e.g. line card) ComReg has recognised the need to provide the appropriate efficient infrastructure investment signals and accordingly ComReg has proposed the BU-LRAIC+ cost approach. The principles of BU-LRAIC+ for active assets is in line with the 2013 Recommendation.

10.27 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 NRAs in other EU Member States.

10.28 ComReg will consider all responses received to this Consultation before proceeding to a final decision.

Promote the interests of users within the Community

10.29 A cost orientation price control for PSTN WLR services should help to facilitate greater regulatory certainty and price stability in the Regional Low-Level FACO Market, while also ensuring that the appropriate price signals are provided to Eircom and other operators, as already discussed above at paragraphs 10.18 to 10.22. This should have positive implications for the price, choice and quality of services ultimately delivered to end-users.

10.3.2 Regulation 6 of the Access Regulations

10.30 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 Communications Regulation Act and Regulation 16 of the Framework Regulations, encourage and, where appropriate, ensure 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.

Promote efficiency:

10.31 A cost-oriented price control aims to ensure that prices do not exceed an appropriate level of efficient costs.

10.32 There are three forms of efficiency including:

a) Allocative Efficiency: Where prices of different products results in an optimum allocation of resources to end-users;

b) Productive Efficiency: Where the cost of producing the products is minimised;

c) Dynamic Efficiency: This refers to the efficiency of investor and end-user behaviour over time.

10.33 ComReg believes that any pricing remedy imposed needs to strike a balance between these three forms of efficiency.

10.34 Allocative and productive efficiency are essentially static concepts considering the level of costs to deliver products/services at a particular point in time. In terms of productive efficiency, ComReg believes that the sequential nature of investment decisions, when assessing whether the level of costs reported is efficiently incurred, needs to be considered in the pricing remedy.

10.35 The BU-LRAIC approach already assumes a level of efficiency (as it assumes a new network) therefore no further adjustments are required. Please see Section 4.2, for further details on this cost modelling approach relevant to access services.

10.36 With regard to ComReg's consideration of efficiency adjustments regarding Eircom's HCA data, please see paragraph 5.106.

Promote sustainable competition

10.37 Please refer to paragraphs 10.14 to 10.17.

Promote efficient investment and innovation

10.38 Please refer to paragraphs 10.18 to 10.25.

Give the maximum benefit to end-users

10.39 Please refer to paragraph 10.29.

10.3.3 Regulation 8 of the Access Regulations

10.40 Regulation 8(6) of the Access Regulations provides that:

Any obligations imposed in accordance with this regulation 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 2002 Act and Regulation 16 of the Framework Regulations, and

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

Based on the nature of the problem identified:

10.41 As set out in Section 9 of the 2020 FACO Consultation, ComReg's preliminary view is that, absent regulation, Eircom, as the proposed SMP service provider in the Regional Low-Level FACO Market, has the ability and incentive to engage in the types of exclusionary practices, leveraging behaviour, and exploitative practices, which are likely to negatively impact on competition and end users in related retail and/or wholesale markets, as well as having the potential to reinforce its SMP in the Regional Low-Level FACO Market over time.

10.42 In Section 4 of this Consultation, ComReg has set out its regulatory objectives and how the various competition problems identified in relation to PSTN WLR (as set out at Section 4.1 of this Consultation) and the proposed price control measures set out in this document meet those objectives (discussed throughout Section 4.2 of this Consultation).

Proportionate and justified:

10.43 Sections 4.1 and 4.2 of this Consultation set out the reasons why the proposed price control measure (of cost orientation) and the proposed costing / pricing methodology (of TD HCA for copper network elements and BU-LRAIC+ for active assets) for PSTN WLR is proportionate and justified.

Only be imposed following consultation:

10.44 ComReg will consider all responses it receives to this Consultation. Based upon those responses it may amend some of its views before it proceeds to notify its draft measures to the EC and which it may then issue a final decision.

10.3.4 Regulation 13 of the Access Regulations

10.45 Regulation 13(1) of the Access Regulations considers that ComReg may:

"…impose on an operator obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of access or interconnection in situations where a market analysis indicates that a lack of effective competition means that the operator concerned may sustain prices at an excessively high level or may apply a price squeeze to the detriment of end users."

10.46 Section 9 of the 2020 FACO Consultation sets out the competition problems that have provisionally been identified in the context of the Regional Low-Level FACO Market with the proposal that a price control obligation should apply in relation to PSTN WLR services. This Consultation, as referred to earlier in paragraphs 10.9 to 10.11, specifies the proposed price control obligation as well as further specifying the costing / pricing methodology for PSTN WLR. Please refer to paragraphs 10.14 to 10.25 as well as Section 4.1 for further details.

10.47 Regulation 13(2) of the Access Regulations provides that:

To encourage investments by the operator, including in next generation networks, the Regulator shall, when considering the imposition of obligations under paragraph (1), take into account the investment made by the operator which the Regulator considers relevant and allow the operator a reasonable rate of return on adequate capital employed, taking into account any risks involved specific to a particular new investment network project.

10.48 Section 4 and Section 6.2 of this Consultation considers the cost of investment and the rate of return so as to encourage continued investment by Eircom in the provision of its PSTN WLR service.

10.49 Regulation 13(3) of the Access Regulations provides that:

The Regulator shall ensure that any cost recovery mechanism or pricing methodology that ComReg imposes under this Regulation serves to promote efficiency and sustainable competition and maximise consumer benefits. In this regard, the Regulator may also take account of prices available in comparable competitive markets.

10.50 Consideration of Regulation 13(3) has been addressed earlier in this section. Please see paragraphs 10.14 to 10.17 on promoting sustainable competition; paragraphs 10.18 to 10.25 on promoting efficiency; and paragraph 10.29 on maximising consumer benefit.

10.51 Regulation 13(4) of the Access Regulations provides that:

"*Where an operator has an obligation under this Regulation regarding the cost orientation of its prices, the burden of proof that charges are derived from costs,*

including a reasonable rate of return on investment shall lie with the operator concerned……"

10.52 In Section 9 ComReg has proposed that on an annual basis Eircom should provide ComReg with annual information on key demand and cost metrics in the exchanges that are part of the Regional Low-Level FACO Market in relation to PSTN WLR. This information should be provided as part of the AFI submissions. Please refer to paragraphs 9.2 and 9.3 for further details.

10.3.5 Regulation 16 of the Framework Regulations

10.53 Regulation 16 of the Framework Regulations aims to:

(1) "In addition to, …its objectives under section 12 of the Act of 2002, the Regulator shall–

(a) *…take the utmost account of the desirability of the technological neutrality in complying with the requirements of the Specific Regulations having particular regard to those designed to ensure effective competition*,

(b) in so far as the promotion of competition is concerned–

(i) ensure that elderly users and users with special social needs derive maximum benefit in terms of choice, price and quality and

(ii) ensure that, in the transmission of content, there is no distortion or restriction of competition in the electronic communications sector,

(c) in so far as contributing to the development of the internal market is concerned, co-operate with BEREC in a transparent manner to ensure the development of consistent regulatory practice and the consistent application of European Union law in the field of electronic communications, and

(d) in so far as promotion of the interests of users within the European Union is concerned–

(i) address the needs of specific social groups, in particular, elderly users and users with special social needs, and

(ii) promote the ability of end-users to access and distribute information or use applications or services of their choice.

(2) *…the Regulator shall apply objective, transparent, non-discriminatory and proportionate regulatory principles…"*

10.54 While some of the main requirements / objectives of Regulation 16 of the Framework Regulations have already been addressed above as part of the discussion on Section 12 of the Act and Regulation 6, Regulation 8 and Regulation 13 of the Access Regulations, set out below are some other key requirements associated with Regulation 16 which have not been addressed so far as part of the discussions above.

Promoting regulatory predictability by ensuring a consistent approach over appropriate review periods:

10.55 With regard to promoting regulatory predictability by ensuring regulatory consistency across review periods, ComReg has assessed the price control options (see paragraphs 4.8 to 4.21). ComReg considers that the proposed cost orientation price control does provide for consistency with the existing (cost orientation) price control remedy in place since 2016, although it is proposed that the remedy will only apply to PSTN WLR in the Regional Low-Level FACO Market as per the 2020 FACO Consultation. Please refer to paragraphs 4.14 to 4.21 for further details. ComReg as discussed in Section 4.2 (paragraphs 4.22 to 4.55), has reached the preliminary view that the costs should be based on TD FAC approach based on Eircom's HCAs for the copper loop component and with BU-LRAIC+ approach for the active equipment, which is consistent with the existing costing methodology approach[150]. Furthermore, in this Consultation ComReg has also considered three possible pricing approach options for determining the prices for PSTN WLR in subsection 6.2, please refer to Section 6.2 for further details.

Taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within the State:

10.56 With regard to taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within the State, in the 2020 FACO Consultation ComReg has reached the preliminary conclusion that Eircom continues to have SMP only in the Regional Low-Level FACO Market (and not across the national market under the existing decision). Please see Sections 7 and 9 of the 2020 FACO Consultation for a further discussion on the competition conditions at play in the relevant FACO markets. Given the competition problems identified in the 2020 FACO Consultation that relate to the Regional Low-Level FACO Market, ComReg considered that a price control obligation continued to be justified and proportionate for PSTN WLR. ComReg has specified the preferred price control remedy (paragraph 4.21) and

[150] The current national price for PSTN WLR is set with reference to Eircom's TD HCA costs for the provision of WLR nationally (and with BU-LRAIC+ applied to active assets). The 2016 Access Pricing Decision specified that Eircom shall charge the higher of (i) the national TD HCA costs or (ii) the BU-LRAIC+ costs for Non-reusable Assets and active equipment in the Modified LEA. The prices were higher based on (i).

the preferred costing / pricing methodology for Eircom's PSTN WLR service in the Regional Low-Level FACO Market, after considering a number of options (see paragraphs 4.22 to 4.55). Please refer to Section 4 for further details.

10.4 Step 2: Identify and describe the regulatory options

10.57 The regulatory options considered by ComReg for the pricing measures for PSTN WLR in the Regional Low-Level FACO Market are discussed in the earlier sections of this Consultation. Section 4 looks at the options on the appropriate price control remedy and costing methodology for PSTN WLR as well as the preferred approaches and Section 6.2 looks at the options on the pricing approach for PSTN WLR and the preferred approach, in the Regional Low-Level FACO Market.

10.58 The price control options for Eircom's PSTN WLR in the Regional Low-Level FACO Market include regulatory forbearance, retail minus, cost orientation, benchmarking and margin squeeze obligations. Please see Section 4 for further details.

10.59 Furthermore, the regulatory options considered in the context of determining the appropriate costing methodology to apply to Eircom's PSTN WLR services in the context of the Regional Low-Level FACO Market are discussed in Section 4. These options include the use of LRIC, LRAIC, LRAIC+, FAC cost standards, current and historical cost bases, as well as BU and TD models. The costing approach is outlined at subsection 4.2. Please see subsection 4.2 for further details.

10.60 In terms of the appropriate pricing approach for Eircom's PSTN WLR service in the Regional Low-Level FACO Market, the regulatory options considered include maintaining the existing price, setting a price cap, or setting a cost-based price per year based on the outputs of the ANM. Please see Section 6 for further details.

10.5 Step 3: Determine the likely impact on stakeholders

10.61 Throughout this Consultation document ComReg has considered the impacts of the various regulatory options and ComReg's preferred approach, in relation to the proposed price control measure for Eircom's PSTN WLR service in the Regional Low-Level FACO Market. Please refer to Section 4 for consideration of the appropriate price control measure as well as the costing methodology, Section 6.2 for discussion on the pricing approach and Section 9.2 for the details on the proposed annual review, for PSTN WLR in the Regional Low-Level FACO Market.

10.6 Step 4: Determine the likely impacts on competition

10.62 The likely impacts on competition of the various regulatory options considered in this Consultation are detailed in Section 4. Please refer to that section for further details. Please also see paragraphs 10.14 to 10.17 above.

10.7 Step 5: Assess the likely impacts and choose the best option

10.63 As discussed in subsection 10.3 above, ComReg has taken account of Section 12 of the Act, Regulation 6(1) of the Access Regulations, Regulation 8(6) of the Access Regulations, Regulation 13 of the Access Regulations and Regulation 16 of the Framework Regulations, in arriving at its preliminary views on the appropriate price control measure and costing / pricing methodologies for Eircom's PSTN WLR access service in the Regional Low-Level FACO Market.

10.64 In addition, ComReg has considered the potential impact of its proposals in the context of the key stakeholders, as summarised at Section 10.5. On balance, ComReg considers that the proposed measures set out in this Consultation (and draft Decision) should meet ComReg's regulatory objectives while addressing the competition concerns associated with the Regional Low-Level FACO Market, for the reasons already discussed in Section 4 and in Section 6.2 of this Consultation document.

Q. 22 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.

11 Submitting comments

11.1 The consultation period will run for six weeks from 22 October 2020 to **5.30pm on 4 December 2020** during which time ComReg welcomes written comments on any of the issues raised.

11.2 In light of the current remote working arrangements, ComReg requests that any responses to this consultation be submitted to ComReg by email only, to arrive on or before 5.30pm, on 4 December 2020. All responses to this consultation should be clearly marked "Response to ComReg Document No 20/101" and submitted to: wholesaleconsult@comreg.ie. Any interested parties who wish to submit a response to this consultation other than via email are requested to contact ComReg[151] in advance of such a submission.

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

11.4 Having analysed and considered the comments received, ComReg will review the preliminary views set out in the consultation, amend if necessary in light of representations received and will then notify the draft measure to the European Commission, the NRAs and BEREC pursuant to Regulation 13 of the Framework Regulations. ComReg will take utmost account of any comments received from the European Commission as well as from other aforementioned parties. ComReg will then adopt and publish the final decision in its subsequent Response to Consultation and final Decision.

11.5 In order to promote further openness and transparency ComReg will publish all non-confidential responses to this Consultation, subject to the provisions of ComReg's guidelines on the treatment of confidential information in ComReg Document No. 05/24.

11.6 ComReg appreciates that many of the issues raised in this paper may require respondents to provide confidential information if their comments are to be meaningful. As it is ComReg's policy to make all responses available on its website and for inspection generally, respondents to this Consultation are requested to clearly identify confidential material within their submissions and place any such confidential material in a separate document to their response, with this also being provided by the date referred to at paragraph 11.1.

[151] Karl.Hurley@comreg.ie

11.7 Confidential elements of responses must be clearly marked as such, using the following format: [✂ text deemed to be confidential ✂], and be set out in a separate document which must also be provided to ComReg by the closing date set out above at paragraph 11.1.

11.8 Such information will be treated subject to the provisions of the guidelines on treatment of confidential information as set out in ComReg Document No. 05/24. In submitting comments, respondents are also requested to provide a copy of their submissions in an unprotected electronic format in order to facilitate their subsequent publication by ComReg.

Annex: 1 DRAFT – Decision Instrument: Price controls in the WLA and WCA Markets (ComReg Decision D10/18)

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") for the purpose of amending the specifications, or further specifying, the price controls set out in the WLA and WCA Decision Instruments respectively at Annex 20 and Annex 21 of ComReg Decision D10/18.

1.2 This Decision Instrument is made:

(i) Pursuant to Regulation 18 of the Access Regulations;

(ii) Pursuant to, and having regard to, the significant market power (SMP) designation of Eircom as provided for in Section 5 of the WLA Decision Instrument

(iii) Pursuant to, and having regard to, the significant market power (SMP) designation of Eircom as provided for in Section 5 of the WCA Decision Instrument;

(iv) Pursuant to the cost orientation price control obligation, imposed pursuant to Regulation 8 and Regulation 13 of the Access Regulations in Section 12.2 of the WLA Decision Instrument;

(v) Pursuant to the cost orientation price control obligation, imposed pursuant to Regulation 8 and Regulation 13 of the Access Regulations in Section 12.2 of the WCA Decision Instrument;

(vi) Pursuant to Regulation 13(4) of the Access Regulations;

(vii) Pursuant to and having regard to the 2020 WACC Decision;

(viii) Pursuant to Section 10.12 of the WLA Decision Instrument;

(ix) Pursuant to Section 10.11 of the WCA Decision Instrument;

(x) Having had regard to Sections 10 and 12 of the Communications Regulation Act 2002 (as amended); Regulation 16 of the Framework Regulations; and Regulations 6, 8, and 13 of the Access Regulations;

(xi) Having, pursuant to Section 13 of the Communications Regulation Act 2002 (as amended), complied with Ministerial Policy Directions where applicable;

(xii) Having taken utmost account of the European Commission's 2010 Recommendation and 2013 Recommendation;

(xiii) Having regard to the provisions contained in the European Electronic Communications Code;

(xiv) 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 account of any comments made by these parties;

(xv) Having had regard to the analysis and reasoning set out in ComReg Decision D10/18;

(xvi) Having had regard to the analysis and reasoning set out in ComReg Document No. […/…] 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;

(xvii) Having had regard to the analysis and reasoning set out in ComReg Decision […/…]. *[this Decision]*

1.3 This Decision Instrument shall, where appropriate, be construed consistently with the provisions of ComReg Decision D10/18, ComReg Document No. 18/94, ComReg Decision D11/18, ComReg Document No. 18/95, and ComReg Decision […/…], ComReg Document No. […/…] (this Decision).

PART I - GENERAL PROVISIONS

2 DEFINITIONS

2.1 In this Decision Instrument, unless the context otherwise suggests:

"(the) 2010 Recommendation" the European Commission's Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (C(2010) 572 final);

"(the) 2013 Recommendation" means the European Commission Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (C(2013) 5671 final);

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

"ComReg Decision D10/18" means ComReg Document No. 18/94 entitled "Market Review – Wholesale Local Access (WLA) provided at a Fixed Location and Wholesale Central Access (WCA) provided at a Fixed Location for Mass Market Products: Response to Consultation and Decision" dated 19 November 2018;

"ComReg Decision D11/18" means ComReg Document No. 18/95 entitled "Pricing of Wholesale Broadband Services – Wholesale Local Access (WLA) market and the Wholesale Central Access (WCA) markets: Response to Consultation Document 16/26 and Final Decision" dated 19 November 2018;

"Effective Date" means the date specified in Section 13 of this Decision Instrument;

"Eircom" means Eircom Limited, a company incorporated in Jersey (Number 116389), registered as a Branch in Ireland (Number 907674), with an Irish registered Branch Office at 2022 Bianconi Avenue, Citywest Business Campus, Dublin 24, D24 HX03;

"European Electronic Communications Code" means Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code;

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"WCA Decision Instrument" means the Decision Instrument included at Annex 21 of ComReg Decision D10/18;

"WLA Decision Instrument" means the Decision Instrument included at Annex 20 of ComReg Decision D10/18;

2.2 Capitalised terms which are not defined in Section 2.1 shall have the meaning set out in the WLA Decision Instrument, the WCA Decision Instrument, the WLA Price Control Decision Instrument and the WCA Price Control Decision Instrument.

3 SCOPE AND APPLICATION

3.1 This Decision Instrument further specifies the price control obligations imposed on Eircom in respect of the Wholesale Local Access and Wholesale Central Access markets defined in ComReg Decision D10/18.

3.2 This Decision Instrument shall apply to Eircom and its subsidiaries and any related companies, and any Undertaking which it owns or controls, and any Undertaking which owns or controls Eircom, and its successors and assigns, and the terms "subsidiary" and "related company" shall have the meanings ascribed to them in the Companies Act 2014.

3.3 The amendments to prices specified in Part II and Part III of this Decision Instrument shall apply from the first day of the third month following the Effective Date of this Decision Instrument and Table 1 of Annex 7 of ComReg Decision D11/18 shall be then withdrawn.

PART II – AMENDMENTS OF THE WLA DECISION INSTRUMENT AND FURTHER SPECIFICATION OF OBLIGATIONS IN THE WLA DECISION INSTRUMENT

4 AMENDMENT OF SECTION 2.1 OF THE WLA DECISION INSTRUMENT: DEFINITIONS

4.1 Section 2.1 of the WLA Decision Instrument is hereby amended by adding the following definitions:

"Access Network Model" means the cost model developed by ComReg for the purpose of assessing the efficient costs of an access network in the State using both BU-LRAIC+ including all LRIC/LRAIC/LRAIC+ variants and TD-HCA (on a Fully Allocated Cost basis) cost methodologies as described in the [ANM Decision];

"Active assets" means electronic equipment such as voice and digital subscriber line ('DSL') cards and backhaul;

"Commercial Area" means the collective areas within the Urban Commercial Area and the Rural Commercial Area, representing all areas in the State outside of the Intervention Area;

"Fully Allocated Costs" or "FAC" means an accounting method to distribute all costs, including common corporate costs, among Eircom's various products and services in line with the allocation methodologies set out in Eircom's HCA regulatory accounts;

"**High Speed Broadband Map"** means the interactive map published on the webpage of the Department of Communications in April 2017 that identifies locations and premises in the State as being either AMBER areas (Intervention Area), BLUE areas (Urban Commercial Area) or LIGHT BLUE areas (Rural Commercial Area);

"Intervention Area" means the total geographic area comprising the premises for which there is no existing or planned commercial deployment of high-speed broadband services, as represented by the AMBER areas on the High Speed Broadband Map;

"Leased Lines" means a service that involves the supply of dedicated transmission capacity between fixed locations;

"Long Run Incremental Costs" or **"LRIC"** means the costs derived from the economic and/or engineering model of an efficient network that are directly attributable to the provision of a service which would be avoided in the long run if Eircom did not provide that service and as such exclude shared network costs and common corporate costs. For the avoidance of doubt, in the context of CEI Access, the Long Run Incremental Costs of CEI Access are the costs which

Eircom would have avoided had it not provided Access to CEI to the Undertaking or Undertakings concerned;

"**Long Run Average Incremental Costs"** or **"LRAIC"** means the average efficiently incurred variable and fixed costs derived from the economic and/or engineering model of an efficient network that are directly attributable to a particular activity over the long-run including, for the avoidance of doubt, an apportionment of joint and common (shared) costs but excluding common corporate costs;

"Non-reusable Assets" means passive local loop assets and Non-Reusable Civil Engineering Infrastructure, including the network termination unit ('NTU'), final drops, D-side cables, E-side cables, cabinets, and main distribution frames ('MDFs');

"Non re-useable Civil Engineering Infrastructure" or "Non re-useable CEI" means Civil Engineering Infrastructure that is used for the copper network but cannot be reused to accommodate an NGA network without further investment;

"Re-usable Assets" means Re-usable Civil Engineering Infrastructure;

"Re-useable Civil Engineering Infrastructure" or "Re-useable CEI" means Civil Engineering Infrastructure that is used for the copper network which can be reused to accommodate an NGA network without further investment;

"**Rural Commercial Area**" means the areas where Eircom committed to deliver (or has delivered) commercial rural deployment of a high speed broadband network, identified by the LIGHT BLUE areas on the High Speed Broadband Map;

"Urban Commercial Area" means the areas where commercial operators are delivering or have indicated plans to deliver high speed broadband services, identified by the BLUE areas on the High Speed Broadband Map;

"WACC" means the regulated Weighted Average Cost of Capital set by ComReg for fixed telecommunications in accordance with the 2020 WACC Decision;

"2020 WACC Decision" means ComReg Decision No. D10/20 entitled "Review of Weighted Average Cost of Capital", ComReg Document 20/96, dated 14 October 2020.

4.2 The definitions in Section 2.1 of the WLA Decision Instrument corresponding to the definitions in this Section 4.2 are hereby substituted and replaced as follows:

"Bottom Up Long Run Average Incremental Cost Plus" or **"BU-LRAIC+"** means the average efficiently variable and fixed costs derived from the economic and/or engineering model of an efficient network that are directly attributable to a particular activity over the long-run, including an apportionment of joint and common (shared) costs (including by contrast with LRAIC, an apportionment of common corporate costs); and

"Top-Down HCA" means the costs calculated using Eircom's HCA and network information, adjusted for efficiencies.

4.3 The following definitions in Section 2.1 of the WLA Decision Instrument are hereby deleted:

"Revised Copper Access Model".

5 AMENDMENTS OF SECTIONS 12.3, 12.4, 12.5 AND 12.7 OF THE WLA DECISION INSTRUMENT: SPECIFICATION OF THE PRICE CONTROL OBLIGATIONS FOR LLU, SLU, LINE SHARE AND DARK FIBRE

5.1 The specification of the obligation of cost orientation imposed by Section 12.2 of the WLA Decision Instrument is hereby amended by the substitution of Section 12.3 with the following section and sub-sections:

ULMP and SLU

"12.3 - The cost orientation obligation set out in Section 12.2 is hereby specified as follows in respect of ULMP:

12.3.1 Eircom shall ensure that the monthly rental price it charges to any Undertaking in the State in relation to ULMP does not exceed the average costs per month of providing ULMP Access in the Urban Commercial Area, calculated by reference to the Access Network Model using a combination of Top-Down HCA (calculated on a Fully Allocated Cost basis) and BU-LRAIC+ costing methodologies, reflecting the proportion of Reusable and Non-reusable network assets used respectively in the provision of ULMP Access, allowing for a rate of return equal to the WACC applicable on [the Effective Date of this Decision Instrument amending the WLA Decision Instrument].

12.3.2 For the purpose of Section 12.3.1, in the period [202X – 202X4], the average costs per month are in the amounts set in Table 1 below.

TABLE 1 – ULMP: ULMP Costs per month (€)		
Year 1	[…] – 30 June 2021	12.72
Year 2	1 July 2021 – 30 June 2022	12.72
Year 3	1 July 2022 – 30 June 2023	12.79
Year 4	1 July 2023 – 30 June 2024	13.44

12.3.3 ComReg may, from time to time, update or require Eircom to update the Access Network Model and the costs in Table 1 at Section 12.3.2 setting the maximum price for ULMP Access may be amended as appropriate.

12.3.4 For the avoidance of doubt no charges other than those provided for under Section 12.3.1 may be raised by Eircom on an Undertaking in respect of access to ULMP, save as otherwise explicitly allowed for by ComReg."

5.2 The specification of the obligation of cost orientation imposed by Section 12.2 of the WLA Decision Instrument is hereby amended by the substitution of Section 12.4 with the following section and sub-sections:

"12.4 - The cost orientation obligation set out in Section 12.2 is hereby specified as follows in respect of SLU:

12.4.1 Eircom shall ensure that the monthly rental price charged by Eircom to any Undertaking for the provision of SLU Access in the State does not exceed the average costs per month of providing SLU Access in the Urban Commercial Area calculated by reference to the Access Network Model using a combination of Top-Down HCA (calculated on a Fully Allocated Cost basis) and BU-LRAIC+ costing methodologies, reflecting the proportion of Reusable and Non-reusable Network Assets used respectively in the provision of SLU Access, allowing for a rate of return equal to the WACC applicable on [the Effective Date of this Decision Instrument amending the WLA Decision Instrument].

12.4.2 For the purpose of Section 12.4.1, in the period [202X – 2024], the average costs per month are in the amounts set in Table 2 below.

TABLE 2 – SLU Costs per month (€)		
Year 1	[…] – 30 June 2021	10.43
Year 2	1 July 2021 – 30 June 2022	10.39
Year 3	1 July 2022 – 30 June 2023	10.39
Year 4	1 July 2023 – 30 June 2024	10.82

12.4.3 ComReg may, from time to time, update or require Eircom to update the Access Network Model and the costs set out in Table 2 at Section 12.4.2 setting the maximum price for SLU Access may be amended as appropriate.

12.4.4 For the avoidance of doubt no charges other than those provided for under Section 12.4.1 may be raised by Eircom on an Undertaking in respect of access to SLU, save as otherwise explicitly allowed for by ComReg."

5.3 The specification of the obligation of cost orientation imposed by Section 12.2 of the WLA Decision Instrument in respect of Line Share is hereby amended by the substitution of Section 12.5 with the following section and sub-sections:

Line Share

"12.5 - The cost orientation obligation set out in Section 12.2 is hereby specified as follows in respect of Line Share:

12.5.1 Eircom shall ensure that the monthly rental price charged by it to any Undertaking in the State for Line Share Access is no more than the incremental costs per month associated with the provision of Line Share calculated using the Access Network Model, allowing for a rate of return equal to the WACC applicable on [the Effective Date of this Decision Instrument amending the WLA Decision Instrument].

12.5.2 For the purpose of Section 12.5.1, in the period [202X – 2023], Eircom shall ensure that the prices it charges for Line Share Access are the prices set out in Table 3 – Line Share, subject however to Section 12.5.3.

TABLE 3 – Line Share: Monthly price for Line Share (€)		
Year 1	[…] – 30 June 2021	0.62
Year 2	1 July 2021 – 30 June 2022	0.62
Year 3	1 July 2022 – 30 June 2023	0.62
Year 4	1 July 2023 – 30 June 2024	0.62

12.5.3 ComReg may, from time to time, update or require Eircom to update the Access Network Model and direct amendments to the prices set out in Table 3 at Section 12.5.2 as appropriate.

12.5.4 For the avoidance of doubt no charges other than those provided for under Section 12.5.1 may be raised by Eircom on an Undertaking in respect of access to Line Share, save as otherwise explicitly allowed for by ComReg."

5.4 The specification of the obligation of cost orientation imposed by Section 12.2 of the WLA Decision Instrument in respect of Dark Fibre is hereby amended by the substitution of Section 12.7 with the following section and sub-sections:

Dark Fibre

"12.7- The cost orientation obligation set out in Section 12.2 is hereby specified as follows in respect of Dark Fibre:

12.7.1 Eircom shall ensure that the annual price it charges to any Undertaking for the provision of Dark Fibre Access is, per metre of fibre, no more than the annual average costs of a metre of fibre between the points of Egress and Ingress calculated in accordance with Section 12.7.2.

12.7.2 For the purpose of Section 12.7.1, the annual cost of a metre of Dark Fibre shall be derived from the Access Network Model by dividing the total annual costs of fibre and associated infrastructure used to support Leased Line services by the total length, in metres, of fibre associated with Leased Line services, derived by assuming an average number of fibres per cable and an average utilisation rate of fibres in cables, using the Top-Down HCA (calculated on a Fully Allocated Cost basis) methodology for Reusable Assets and the BU-LRAIC+ methodology for Non-reusable network assets, allowing for a rate of return equal to the WACC applicable on [the Effective Date of this Decision Instrument amending the WLA Decision Instrument].

12.7.3 For the purpose of Section 12.7.2, in the period [202X – 2024], the annual cost of a metre of Dark Fibre is as set out in Table 4 – Dark Fibre, subject however to Section 12.7.4.

TABLE 4 – Dark Fibre: Annual costs for Dark Fibre Access, per metre per single fibre (€)		
Year 1	[…] – 30 June 2021	0.11
Year 2	1 July 2021 – 30 June 2022	0.11
Year 3	1 July 2022 – 30 June 2023	0.11
Year 4	1 July 2023 – 30 June 2024	0.11

12.7.4 ComReg may, from time to time, update or require Eircom to update the Access Network Model and direct amendments to the prices set out in Table 4 at Section 12.7.3 as appropriate.

12.7.5 For the avoidance of doubt no charges other than those provided for under Section 12.7.1 may be raised by Eircom on an Undertaking in respect of access to Dark Fibre, save as otherwise explicitly allowed for by ComReg."

PART III – AMENDMENTS OF THE WCA DECISION INSTRUMENT AND FURTHER SPECIFICATION OF OBLIGATIONS IN THE WCA DECISION INSTRUMENT

6 AMENDMENT OF SECTION 2.1 OF THE WCA DECISION INSTRUMENT: DEFINITIONS

6.1 Section 2.1 of the WCA Decision Instrument is hereby amended by adding the following definitions:

"Access Network Model" means the cost model developed by ComReg for the purpose of assessing the efficient costs of an access network in the State using both BU-LRAIC+ including all LRIC/LRAIC/LRAIC+ variants and TD-HCA (on a Fully Allocated Cost basis) cost methodologies as described in the [ANM Decision];

"WACC" means the regulated Weighted Average Cost of Capital set by ComReg for fixed telecommunications in accordance with the 2020 WACC Decision;

"2020 WACC Decision" means ComReg Decision No. D10/20 entitled "Review of Weighted Average Cost of Capital", ComReg Document 20/96, dated 14 October 2020.

6.2 The definitions in Section 2.1 of the WCA Decision Instrument corresponding to the definitions in this Section 6.2 are hereby substituted and replaced as follows:

"Bottom Up Long Run Average Incremental Cost Plus" or **"BU-LRAIC+"** means the average efficiently variable and fixed costs derived from the economic and/or engineering model of an efficient network that are directly attributable to a particular activity over the long-run, including an apportionment of joint and common (shared) costs (including by contrast with LRAIC, an apportionment of common corporate costs); and

"Top-Down HCA" means the costs calculated using Eircom's HCA and network information, adjusted for efficiencies.

6.3 The following definitions in Section 2.1 of the WCA Decision Instrument are hereby deleted:

"Revised Copper Access Model".

7 AMENDMENTS OF SECTIONS 12.5 OF THE WCA DECISION INSTRUMENT: SPECIFICATION OF THE PRICE CONTROL OBLIGATIONS FOR CURRENT GENERATION STANDALONE BROADBAND

7.1 The specification of the obligation of cost orientation imposed by Section 12.2 of the WCA Decision Instrument in respect of Current Generation Standalone Broadband in the Regional WCA Market is hereby amended by the substitution of Section 12.5 with the following section and sub-sections:

Current Generation Standalone Broadband

"12.5 - The cost orientation obligation set out in Section 12.2 is hereby specified as follows in respect of Current Generation Standalone Broadband:

12.5.1 Eircom shall ensure that the monthly rental price charged by it to any Undertaking for Current Generation Standalone Broadband Access in the Regional WCA Market is no more than the average costs per month of providing Current Generation Standalone Broadband Access calculated in accordance with Section 12.5.2.

12.5.2 For the purpose of Section 12.5.1, the average costs per month of providing Current Generation Standalone Broadband Access shall be calculated using the Access Network Model as follows:

(i) The costs shall be the costs of the Exchanges in the WCA Regional Market, save that the costs in respect of the copper loop component shall be adjusted to account for the lower level of copper costs recovered from FTTC-based services;

(ii) The Top-Down HCA (calculated on a Fully Allocated Cost basis) methodology shall be used, save for Active Assets the costs of which shall be calculated using BU-LRAIC+ methodology;

(iii) A rate of return shall be allowed that is equal to the WACC applicable on [the Effective Date of this Decision Instrument amending the WCA Decision Instrument].

12.5.3 In the period [202X – 2024], the average cost per month of providing Current Generation Standalone Broadband Access referred to in Section 12.5.2 is as set out in Table 1 – Current Generation Standalone Broadband, which includes an uplift of €0.30 in respect of the adjustment referred to in Section 12.5.2(i), subject however to Section 12.5.4.

TABLE 1 – Current Generation Standalone Broadband: Monthly Cost (€)					
		National Handover		*Regional Handover*	
		Per Port	*Per Mbps*	*Per Port*	*Per Mbps*
Year 1	[…] – 30 June 2021	21.56	0.54	19.97	0.23
Year 2	1 July 2021 – 30 June 2022	21.31	0.44	19.71	0.19
Year 3	1 July 2022 – 30 June 2023	21.05	0.37	19.45	0.16
Year 4	1 July 2023 – 30 June 2024	21.09	0.33	19.49	0.14

12.5.4 ComReg may, from time to time, update or require Eircom to update the Access Network Model and direct amendments to the prices in Table 1 at Section 12.5.3 as appropriate.

12.5.5 For the avoidance of doubt no charges other than those provided for under either of Section 12.5.1 may be raised by Eircom on an Undertaking in respect of access to Current Generation Standalone Broadband, save as otherwise explicitly allowed for by ComReg."

PART IV – OPERATION AND EFFECTIVE DATE

8 STATUTORY POWERS NOT AFFECTED

8.1 Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it under any primary or secondary legislation in force prior to or after the Effective Date of this Decision Instrument.

9 MAINTENANCE OF OBLIGATIONS

9.1 Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to Eircom and in force immediately prior to the Effective Date of this Decision Instrument, including all obligations specified in the WLA Decision Instrument, continue in force and Eircom shall comply with same.

10 SMP OBLIGATIONS

10.1 For the avoidance of doubt, any obligations under Part II, Part III, Part IV and Part V of this Decision Instrument shall apply to Eircom only to the extent that a relevant SMP Designation is extent.

11 CONFLICT

11.1 For the avoidance of doubt, to the extent that there is any conflict between a ComReg Decision Instrument or ComReg document dated prior to the Effective Date and Eircom's obligations now set out herein, this Decision Instrument shall prevail.

12 SEVERANCE

12.1 If any Section(s), clause(s) or provision(s), or portion(s) thereof, contained in this Decision Instrument, is(are) 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(those) Section(s), clause(s) or provision(s), or portion(s) 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(s) thereof, of this Decision Instrument, and shall not in any way affect the validity or enforcement of this Decision Instrument or other Decision Instruments.

13 PUBLICATION, NOTIFICATION AND EFFECTIVE DATE

13.1 This Decision Instrument shall be published on ComReg's website (www.comreg.ie) and on the same day, notified to Eircom.

13.2 Further to Section 10.12(i) of the WLA Decision Instrument, ComReg hereby determines that Eircom shall publish on its publicly available website the price changes arising from the amendments made in Part II of this Decision Instrument within one month of the Effective Date.

13.3 Further to Section 10.11 of the WCA Decision Instrument, ComReg hereby determines that Eircom shall publish on its publicly available website the price changes arising from the amendments made in Part III Decision Instrument within one month of the Effective Date.

13.4 The Effective Date of this Decision Instrument shall be the date of its notification to Eircom.

13.5 This Decision Instrument shall remain in force until further notice by ComReg.

GARRETT BLANEY
COMMISSIONER
THE COMMISSION FOR COMMUNICATIONS REGULATION
THE […]TH DAY OF […] […]

Q. 23 Do you believe that the draft text of the proposed Decision Instrument in relation to the WLA and WCA Markets (ComReg Decision D10/18) is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

Annex: 2 DRAFT – Decision Instrument and Direction (ComReg Decision D11/18)

1 STATUTORY POWERS GIVING RISE TO THIS DECISION INSTRUMENT

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

(i) Pursuant to Regulation 18 of the Access Regulations;

(ii) Pursuant to, and having regard to, the significant market power (SMP) designation of Eircom as provided for in Section 5 of the WLA Decision Instrument;

(iii) Pursuant to, and having regard to, the significant market power (SMP) designation of Eircom as provided for in Section 5 of the WCA Decision Instrument;

(iv) Pursuant to the cost orientation price control obligation, imposed pursuant to Regulation 8 and Regulation 13 of the Access Regulations in Section 12.2 of the WLA Decision Instrument;

(v) Pursuant to the cost orientation price control obligation, imposed pursuant to Regulation 8 and Regulation 13 of the Access Regulations in Section 12.2 of the WCA Decision Instrument;

(vi) Pursuant to Regulation 13(4) of the Access Regulations;

(vii) Pursuant to Section 10.12 of the WLA Decision Instrument;

(viii) Pursuant to Section 10.11 of the WCA Decision Instrument;

(ix) Having regard and pursuant to the 2020 WACC Decision;

(x) Having had regard to Sections 10 and 12 of the Communications Regulation Act 2002 (as amended); Regulation 16 of the Framework Regulations; and Regulations 6, 8, and 13 of the Access Regulations;

(xi) Having, pursuant to Section 13 of the Communications Regulation Act 2002 (as amended), complied with Ministerial Policy Directions where applicable;

(xii) Having had regard to the analysis and reasoning set out in ComReg Decision D10/18;

(xiii) Having had regard to the analysis and reasoning set out in ComReg Decision D11/18;

(xiv) Having had regard to the analysis and reasoning set out in ComReg Document No. […/…] 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; and

(xv) Having had regard to the analysis and reasoning set out in ComReg Decision […/…]. *[ANM Decision]*

1.2 This Direction shall, where appropriate, be construed consistently with the provisions of ComReg Decision D10/18, ComReg Document No. 18/94, ComReg Decision D11/18, ComReg Document No. 18/95, and ComReg Decision […/…], ComReg Document No. […/…] (the ANM Decision).

PART I - GENERAL PROVISIONS

2 DEFINITIONS

2.1 In this Direction, unless the context otherwise suggests:

"Access Network Model" means the cost model developed by ComReg for the purpose of assessing the efficient costs of an access network in the State using both BU-LRAIC+ including all LRIC/LRAIC/LRAIC+ variants and TD-HCA (on a Fully Allocated Cost basis) cost methodologies as described in the [ANM Consultation];

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

"ComReg Decision D10/18" means ComReg Document No. 18/94 entitled "Market Review – Wholesale Local Access (WLA) provided at a Fixed Location and Wholesale Central Access (WCA) provided at a Fixed Location for Mass Market Products: Response to Consultation and Decision" dated 19 November 2018;

"ComReg Decision D11/18" means ComReg Document No. 18/95 entitled "Pricing of Wholesale Broadband Services – Wholesale Local Access (WLA) market and the Wholesale Central Access (WCA) markets: Response to Consultation Document 16/26 and Final Decision" dated 19 November 2018;

"Effective Date" means the date specified in Section 11 of this Decision Instrument;

"Eircom" means Eircom Limited, a company incorporated in Jersey (Number 116389), registered as a Branch in Ireland (Number 907674), with an Irish

registered Branch Office at 2022 Bianconi Avenue, Citywest Business Campus, Dublin 24, D24 HX03;

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"**Rural Commercial Area**" means the areas where Eircom committed to deliver (or has delivered) commercial rural deployment of a high speed broadband network, identified by the LIGHT BLUE areas on the High Speed Broadband Map**;**

"Urban Commercial Area" means the areas where commercial operators are delivering or have indicated plans to deliver high speed broadband services, identified by the BLUE areas on the High Speed Broadband Map;

"WACC" means the regulated Weighted Average Cost of Capital set by ComReg in respect of fixed telecommunications in accordance with the 2020 WACC Decision;

"WCA Decision Instrument" means the Decision Instrument included at Annex 21 of ComReg Decision D10/18;

"WCA Price Control Decision Instrument" means the Decision Instrument included at Annex 2 of ComReg Decision D11/18;

"WLA Decision Instrument" means the Decision Instrument included at Annex 20 of ComReg Decision D10/18;

"WLA Price Control Decision Instrument" means the Decision Instrument included at Annex 1 of ComReg Decision D11/18;

"2020 WACC Decision" means ComReg Decision No D10/20 entitled "Review of Weighted Average Cost of Capital", ComReg Decision 20/96, dated 14 October 2020;

"2020 WLA Price Control Decision Instrument" means the Decision Instrument included at Annex [1] of ComReg Decision D…/… [the ANM Decision].

2.2 Capitalised terms which are not defined in Section 2.1 shall have the meaning set out in the WLA Decision Instrument, the WCA Decision Instrument, the WLA Price Control Decision Instrument and the WCA Price Control Decision Instrument.

3 SCOPE AND APPLICATION

3.1 This Decision Instrument directs the prices arising from the price controls set out in Section 4.1 of the WLA Price Control Decision Instrument and Section 4.1 of the WCA Price Control Decision Instrument respectively at Annex 1 and Annex 2 of ComReg Decision D11/18.

3.2 This Decision Instrument is addressed to Eircom and its subsidiaries and any related companies, and any Undertaking which it owns or controls, and any Undertaking which owns or controls Eircom, and its successors and assigns, shall comply with it, and the terms "subsidiary" and "related company" shall have the meanings ascribed to them in the Companies Act 2014.

3.3 The prices set out in Part II of this Decision Instrument shall apply from [the first day of the third month] following the Effective Date of this Decision Instrument and Annex 7 of ComReg Decision D11/18 shall be then withdrawn.

PART II – AMENDMENTS TO THE FURTHER SPECIFICATION OF THE COST ORIENTATION OBLIGATION IN THE WLA AND WCA PRICE CONTROL DECISION INSTRUMENTS

4 FOOTPRINTS

4.1 Section 2.1 of the WLA Price Control Decision Instrument shall be amended by adding the following definitions:

"**High Speed Broadband Map"** means the interactive map published on the webpage of the Department of Communications in April 2017 that identifies locations and premises in the State as being either AMBER areas (Intervention Area), BLUE areas (Urban Commercial Area) or LIGHT BLUE areas (Rural Commercial Area);

"Intervention Area" means the total geographic area comprising the premises for which there is no existing or planned commercial deployment of high-speed broadband services, as represented by the AMBER areas on the High Speed Broadband Map;

"**Rural Commercial Area**" means the areas where Eircom committed to deliver (or has delivered) commercial rural deployment of a high-speed broadband network, identified by the LIGHT BLUE areas on the High Speed Broadband Map;

"Urban Commercial Area" means the areas where commercial operators are delivering or have indicated plans to deliver high-speed broadband services, identified by the BLUE areas on the High Speed Broadband Map;

4.2 In Section 4.1 of the WLA Price Control Decision Instrument, the reference to "*FTTC VUA and EVDSL Footprint"* shall be replaced by "*the Urban Commercial Area".*

5 UPDATE OF THE NGA COST MODEL AND OF THE NGN CORE MODEL

5.1 The NGA Cost Model and the NGN Core Model, as defined in Section 2.1 of the WLA Price Control Decision Instrument and in Section 2.1 the WCA Price Control Decision Instrument, are hereby amended as follows:

5.1.1 The WACC value of 8.18% is substituted by the value of 5.61% as set out in the 2020 WACC Decision in respect of fixed telecommunications;

5.1.2 The cost inputs in the NGA Cost Model derived from the Revised CAM shall be substituted by the equivalent cost inputs derived from the Access Network Model;

5.1.3 In particular and for the avoidance of doubt, the cost inputs in respect of LLU and SLU in the NGA Core Model shall be substituted by the values set out in Table 1 and Table 2 at Section 12.3.3 and Section 12.4.3 of the WLA Decision Instrument (as amended by the 2020 WLA Price Control Decision Instrument).

6 COST-ORIENTED PRICE FOR VIRTUAL UNBUNDLED ACCESS

Virtual Unbundled Access (VUA)

6.1 For the purpose of Section 4.1 of the WLA Price Control Decision Instrument, ComReg hereby directs that the costs per month of providing FTTC based VUA and/or Exchange Launched VUA in the Urban Commercial Area are as set out in Table 1 – VUA Costs below.

TABLE 1 – FTTC-BASED VUA COSTS (€)		
Year 1	[…] – 30 June 2021	18.67
Year 2	1 July 2021 – 30 June 2022	18.62
Year 3	1 July 2022 – 30 June 2023	18.62
Year 4	1 July 2023 – 30 June 2024	19.08

7 COST-ORIENTED PRICE FOR BITSTREAM

FTTC-based Bitstream

7.1 For the purpose of Section 4.1 of the WCA Price Control Decision Instrument, ComReg hereby directs that the costs per month of providing FTTC based Bitstream and/or EVDSL in the FTTC Bitstream Footprint are as set out in Table 1 – FTTC Bitstream below.

TABLE 1 – FTTC-based Bitstream Costs (€)					
		National Handover		***Regional Handover***	
		Per Port	*Per Mbps*	*Per Port*	*Per Mbps*
Year 1	[…] – 30 June 2021	22.45	0.34	20.50	0.13
Year 2	1 July 2021 – 30 June 2022	22.47	0.29	20.47	0.11
Year 3	1 July 2022 – 30 June 2023	22.59	0.27	20.51	0.11
Year 4	1 July 2023 – 30 June 2024	23.22	0.27	21.05	0.11

Current Generation Bitstream and Bitstream Managed Backhaul

7.2 For the purpose of Section 4.4 of the WCA Price Control Decision Instrument, ComReg hereby directs that the costs per month of providing Current Generation Bitstream including Bitstream Managed Backhaul and Bitstream IP in the Regional WCA Market are the costs set out in Table 2 – Current Generation Bitstream below.

TABLE 2 – Current Generation Bitstream Costs (€)					
		Bitstream Managed Backhaul			
		National Handover		*Regional Handover*	
		Per Port	*Per Mbps*	*Per Port*	*Per Mbps*
Year 1	[…] – 30 June 2021	7.74	0.54	6.33	0.23
Year 2	1 July 2021 – 30 June 2022	7.89	0.44	6.35	0.19
Year 3	1 July 2022 – 30 June 2023	8.07	0.37	6.41	0.16
Year 4	1 July 2023 – 30 June 2024	8.30	0.33	6.52	0.14
		Bitstream IP			
		National Handover		*Regional Handover*	
Year 1	[…] – 30 June 2021	8.16		6.51	
Year 2	1 July 2021 – 30 June 2022	8.23		6.50	
Year 3	1 July 2022 – 30 June 2023	8.36		6.53	
Year 4	1 July 2023 – 30 June 2024	8.55		6.63	

PART III – OPERATION AND EFFECTIVE DATE

8 STATUTORY POWERS NOT AFFECTED

8.1 Nothing in this Direction shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it under any primary or secondary legislation in force prior to or after the Effective Date of this Direction.

9 MAINTENANCE OF OBLIGATIONS

9.1 Unless expressly stated otherwise in this Direction, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to Eircom and in force immediately prior to the Effective Date of this Decision Instrument, including all obligations specified in the WLA Price Control Decision Instrument and the WCA Price Control Decision Instrument, continue in force and Eircom shall comply with same.

10 PUBLICATION, NOTIFICATION AND EFFECTIVE DATE

10.1 This Direction shall be notified to Eircom and published on ComReg's website (www.comreg.ie) on the same day.

10.2 Further to Section 10.12(i) of the WLA Decision Instrument, ComReg hereby determines that Eircom shall publish on its publicly available website the price changes arising from the direction set out in Section 5.1 of this Decision Instrument within one month of the Effective Date.

10.3 Further to Section 10.11 of the WCA Decision Instrument, ComReg hereby determines that Eircom shall publish on its publicly available website the price changes arising from the directions in Section 6.1 and Section 6.2 of this Decision Instrument within one month of the Effective Date.

10.4 The Effective Date of this Decision Instrument shall be the date of its notification to Eircom.

10.5 This Decision Instrument shall remain in force until further notice by ComReg.

GARRETT BLANEY
COMMISSIONER
THE COMMISSION FOR COMMUNICATIONS REGULATION
THE […]TH DAY OF […] 2020

Q. 24 Do you consider that the draft text of the proposed Decision Instrument and Direction (in relation to ComReg Decision D11/18) is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

Annex: 3 DRAFT – Decision Instrument: Price control for PSTN WLR

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") for the purpose of specifying the price control obligation set out in the [2020 FACO] Decision Instrument at Annex ● of ComReg Decision D…/….

1.2 This Decision Instrument is made:

(i) Pursuant to Regulation 13(2) and Regulation 13(4) of the Access Regulations;

(ii) Pursuant to Regulation 18 of the Access Regulations;

(iii) Pursuant to, and having regard to, the significant market power (SMP) designation of Eircom as provided for in Section ● of the [2020 FACO] Decision Instrument;

(iv) Pursuant to, and having regard to, Section [14.6] of the [2020 FACO] Decision Instrument;

(v) Pursuant to and having regard to the 2020 WACC Decision;

(vi) Pursuant to Section 12.10 of the [2020 FACO] Decision Instrument;

(vii) Having had regard to Sections 10 and 12 of the Communications Regulation Act 2002 (as amended); Regulation 16 of the Framework Regulations; and Regulations 6, 8, and 13 of the Access Regulations;

(viii) Having, pursuant to Section 13 of the Communications Regulation Act 2002 (as amended), complied with Ministerial Policy Directions where applicable;

(ix) Having taken utmost account of the European Commission's 2010 Recommendation and 2013 Recommendation;

(x) Having regard to the provisions contained in the European Electronic Communications Code;

(xi) 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 account of any comments made by these parties;

(xii) Having had regard to the analysis and reasoning set out in ComReg Decision [FACO DECISION];

(xiii) Having had regard to the analysis and reasoning set out in ComReg Document No. […/…] 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 [ANM Consultation];

(xiv) Having had regard to the analysis and reasoning set out in ComReg Decision […/…]. [ANM Final Decision]

1.3 This Decision Instrument shall, where appropriate, be construed consistently with the provisions of ComReg Decision [FACO DECISION], ComReg Document No. …/…, and ComReg Decision […/…], ComReg Document No. […/…] [ANM Final Decision].

PART I - GENERAL PROVISIONS

2 DEFINITIONS

2.1 In this Decision Instrument, unless the context otherwise suggests:

"(the) 2010 Recommendation" the European Commission's Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (C(2010) 572 final);

"(the) 2013 Recommendation" means the European Commission Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (C(2013) 5671 final);

"Access Regulations" means the European Communities (Electronic Communications Networks and Services) (Access) Regulations 2011 (S.I. No. 334 of 2011);

"Access Network Model" means the cost model developed by ComReg for the purpose of assessing the efficient costs of an access network in the State using both BU-LRAIC+ including all LRIC/LRAIC/LRAIC+ variants and TD-HCA (on a Fully Allocated Cost basis) cost methodologies, described in [this ANM Decision];

"Active assets" means electronic equipment in particular line cards;

"Bottom Up Long Run Average Incremental Cost Plus" or **"BU-LRAIC+"** means the average efficiently variable and fixed costs derived from the economic and/or engineering model of an efficient network that are directly attributable to a particular activity over the long-run, including an apportionment

of joint and common (shared) costs (including by contrast with Long Run Average Incremental Cost, an apportionment of common corporate costs);

"ComReg Decision D…/…" means ComReg Document No. …/…; [FACO DECISION]

"ComReg Decision D…/…" means ComReg Document No. …/…; [ANM DECISION];

"Effective Date" means the date specified in Section 12 of this Decision Instrument;

"Eircom" means Eircom Limited, a company incorporated in Jersey (Number 116389), registered as a Branch in Ireland (Number 907674), with an Irish registered Branch Office at 2022 Bianconi Avenue, Citywest Business Campus, Dublin 24, D24 HX03;

"European Electronic Communications Code" means Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code;

"Fully Allocated Costs" or "FAC" means an accounting method to distribute all costs, including common corporate costs, among Eircom's various products and services in line with the allocation methodologies set out in Eircom's HCA regulatory accounts;

"FTTC-based services" means FTTC-based Bitstream and FTTC-based VUA;

"FTTC-based Bitstream" means the product which Eircom is required to make available and provide in the WCA Regional Market in accordance with Section 7.2(ii)(a) and Section 7.2(ii)(c) of the WCA Decision Instrument;

"FTTC-based VUA" means the product which Eircom is required to make available and provide in accordance with Section 7.2(i)(a) and Section 7.2(i)(c) of the WLA Decision Instrument;

"Framework Regulations" means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No. 333 of 2011);

"HCA" means the Historical Cost Accounts published by Eircom further to the obligation imposed on Eircom by ComReg Decision D08/10;

"LL-FACO Regional Market" means the Regional Low-Level Fixed Access and Call Origination Market as defined in [Section 5.2.1 of the FACO Decision Instrument];

"Non-reusable Assets" means passive local loop assets and Non-Reusable Civil Engineering Infrastructure, including the network termination unit ('NTU'),

final drops, D-side cables, E-side cables, cabinets, and main distribution frames ('MDFs');

"PSTN WLR" means Wholesale Line Rental as defined in [Section 2.1 of the FACO Decision Instrument] provided by means of the Public Switched Telephone Network;

"POTS-based FTTC" means PSTN WLR provided in the LL-FACO Regional Market together with either FTTC-based VUA or FTTC-based Bitstream;

"Top-Down HCA" means the costs calculated using Eircom's HCA and network information, adjusted for efficiencies;

"WACC" means the regulated Weighted Average Cost of Capital for fixed telecommunications set by ComReg in accordance with the 2020 WACC Decision;

"WCA Decision Instrument" means the Decision Instrument included at Annex 21 of ComReg Decision D10/18;

"WCA Regional Market" means the market defined in Section 4.2(ii) of the WCA Decision Instrument;

"WLA Decision Instrument" means the Decision Instrument included at Annex 20 of ComReg Decision D10/18;

"2020 WACC Decision" means ComReg Decision No. D10/20 entitled "Review of Weighted Average Cost of Capital", ComReg Document 20/96, dated 14 October 2020.

2.2 Capitalised terms which are not defined in Section 2.1 shall have the meaning set out in [Section 2.1 of the FACO Decision Instrument].

3 SCOPE AND APPLICATION

3.1 This Decision Instrument specifies the price control obligation imposed on Eircom by [Section 14.6 of the FACO Decision Instrument] in respect of the provision of PSTN WLR in the LL-FACO Regional Market defined in ComReg Decision D…/….

3.2 This Decision Instrument shall apply to Eircom and its subsidiaries and any related companies, and any Undertaking which it owns or controls, and any Undertaking which owns or controls Eircom, and its successors and assigns, and the terms "subsidiary" and "related company" shall have the meanings ascribed to them in the Companies Act 2014.

3.3 The prices specified in Part II of this Decision Instrument shall apply from the first day of the third month following the Effective Date of this Decision Instrument.

PART II – SPECIFICATION OF THE PRICE CONTROL

4 COST ORIENTATION

4.1 Further to [Section 14.6 of the FACO Decision Instrument], Eircom shall ensure that the price charged by Eircom to any Undertaking in respect of PSTN WLR in the LL-FACO Regional Market is cost-oriented.

5 FURTHER SPECIFICATION OF THE PRICE CONTROL FOR PSTN WLR

5.1 Save where Section 6.1 applies, for the purpose of Section 4.1, Eircom shall ensure that the monthly rental price per line charged by Eircom to any Undertaking in relation to PSTN WLR in the LL-FACO Regional Market is equal to the average cost per line per month of providing access to PSTN WLR calculated in accordance with Section 5.2.

5.2 For the purpose of Section 5.1, the average monthly cost per line of providing access to PSTN WLR in the LL-FACO Regional Market shall be calculated using the Access Network Model as follows:

5.2.1 The costs used for the calculation shall be the costs of Exchanges in the LL-FACO Regional Market adjusted to account for the lower level of copper costs recovered from FTTC-based services and ensure full cost recovery;

5.2.2 The TD HCA (calculated on a Fully Allocated Cost basis) cost methodology shall be used in respect of the costs of the copper loop component, and the BU LRAIC+ cost methodology in respect of the costs of Active Assets;

5.2.3 A rate of return shall be allowed that is equal to the WACC applicable on the Effective Date.

5.3 For the purpose Section 5.2, in the period [202X – 202Y], the average monthly cost per line of providing access to PSTN WLR is as set out in Table 1 – PSTN WLR, which includes an uplift of €0.30 in respect of the adjustment referred to in Section 5.2.1, subject however to Section 5.4.

TABLE 1 – PSTN WLR: Monthly Costs for PSTN WLR Access (€)

Year 1	[…] – 30 June 2021	16.07
Year 2	1 July 2021 – 30 June 2022	15.77
Year 3	1 July 2022 – 30 June 2023	15.41
Year 4	1 July 2023 – 30 June 2024	15.35
Year 5	1 July 2024 – 30 June 2025	14.80
Year 6	1 July 2025 – 30 June 2026	15.67

5.4 ComReg may, from time to time, update or require Eircom to update the Access Network Model and direct amendments to Table 1 at Section 5.3 as appropriate.

6 FURTHER SPECIFICATION OF THE PRICE CONTROL IN RESPECT OF POTS-BASED FTTC

6.1 For the purpose of Section 4.1, where Eircom provides PSTN WLR as part of POTS-Based FTTC, Eircom shall only charge per month, in addition to the applicable regulated monthly price for the relevant FTTC service, an amount equal to the additional costs per month of providing a voice service calculated in accordance with Section 6.2.

6.2 For the purpose of Section 6.1, the additional cost per month of providing of a voice service shall be calculated by reference to costs in the LL-FACO Regional Market using the Access Network Model relying on the TD HCA (calculated on a Fully Allocated Cost basis) cost methodology for the copper loop component and the BU LRAIC+ cost methodology for the Active Assets involved, allowing for a rate of return equal to the WACC applicable on the Effective Date.

6.3 For the purpose of Section 6.2, in the period [202X – 202Y], the additional cost per month of providing of a voice service is set out in Table 2 – Supplemental POTS costs below.

TABLE 2 – Supplemental POTS Costs (€)

Year 1	[…] – 30 June 2021	2.48
Year 2	1 July 2021 – 30 June 2022	2.39
Year 3	1 July 2022 – 30 June 2023	2.31
Year 4	1 July 2023 – 30 June 2024	2.24
Year 5	1 July 2024 – 30 June 2025	2.18
Year 6	1 July 2025 – 30 June 2026	2.09

6.4 ComReg may, from time to time, update or require Eircom to update the Access Network Model and direct amendments to Table 2 at Section 6.3 as appropriate.

7 ENTIRE PRICE CONTROL

7.1 For the avoidance of doubt no charges other than those provided for under either of Section 5.1 or Section 6.1 as applicable may be raised by Eircom on an Undertaking in respect of access to PSTN WLR, save as otherwise explicitly allowed for by ComReg.

PART III – OPERATION AND EFFECTIVE DATE

8 STATUTORY POWERS NOT AFFECTED

8.1 Nothing in this Decision Instrument shall operate to limit ComReg in the exercise and performance of its statutory powers or duties conferred on it under

any primary or secondary legislation in force prior to or after the Effective Date of this Decision Instrument.

9 MAINTENANCE OF OBLIGATIONS

9.1 Unless expressly stated otherwise in this Decision Instrument, all obligations and requirements contained in Decision Notices and Directions made by ComReg applying to Eircom and in force immediately prior to the Effective Date of this Decision Instrument, including all obligations specified in the WLA Decision Instrument, continue in force and Eircom shall comply with same.

10 SMP OBLIGATIONS

10.1 For the avoidance of doubt, any obligations under Part II shall apply to Eircom only to the extent that a relevant SMP Designation is extant.

11 CONFLICT

11.1 For the avoidance of doubt, to the extent that there is any conflict between a ComReg Decision Instrument or ComReg document dated prior to the Effective Date and Eircom's obligations now set out herein, this Decision Instrument shall prevail.

12 SEVERANCE

12.1 If any Section(s), clause(s) or provision(s), or portion(s) thereof, contained in this Decision Instrument, is(are) 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(those) Section(s), clause(s) or provision(s), or portion(s) 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(s) thereof, of this Decision Instrument, and shall not in any way affect the validity or enforcement of this Decision Instrument or other Decision Instruments.

13 PUBLICATION, NOTIFICATION AND EFFECTIVE DATE

13.1 This Decision Instrument shall be published on ComReg's website (www.comreg.ie) and on the same day, notified to Eircom.

13.2 Further to [Section … of the FACO Decision Instrument], ComReg hereby determines that Eircom shall publish on its publicly available website the price changes arising from the amendments made in Part II of this Decision Instrument within one month of the Effective Date.

13.3 The Effective Date of this Decision Instrument shall be the date of its notification to Eircom.

13.4 This Decision Instrument shall remain in force until further notice by ComReg.

GARRETT BLANEY
COMMISSIONER
THE COMMISSION FOR COMMUNICATIONS REGULATION
THE […]TH DAY OF […] 2021

Q. 25 Do you consider that the draft text of the proposed Decision Instrument for the Regional Low-Level FACO Market, in the context of this Consultation, is from a legal, technical and practical perspective, sufficiently detailed, clear and precise with regards to the specifics proposed? Please explain your response and provide details of any specific amendments you believe are required.

Annex: 4 Consultation Questions