



Europe Economics

Cost of Capital for Poles and Ducts Access – Post-Consultation Analysis

Final Report
September 2021

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1 Intervention and Transit Areas CEI WACC Report – Post-Consultation Analysis

1.1 Introduction

In September 2020, Europe Economics submitted its Report¹ setting out its view at that time on the appropriate weighted average cost of capital (WACC) to apply to access to civil engineering infrastructure (CEI) – in particular ducts and poles – in the Irish National Broadband Plan Intervention Area (IA) and Transit Area (TA).² The figures were as follows, broken down by the WACC building blocks.

Table 3.1: CEI Overall WACC as of March 2020

	NBP CEI
Nominal Risk-free rate	0.824%
ERP	7.21%
Asset beta	0.34
Gearing	55.00%
Equity beta at notional gearing	0.76
Nominal cost of debt	1.44%
Nominal cost of equity	6.30%
Tax	12.50%
Nominal pre-tax cost of equity	7.20%
Nominal pre-tax WACC	4.03%

In September 2020, ComReg went to consultation on these figures.³ A number of responses were received by November 2020.

In this report we set out, for each of the generic parameters (risk-free rate, ERP and tax rate) the figures consulted upon, how market data has evolved subsequently, and our updated conclusions.

Then, the CEI-specific WACC parameters and in respect of some high-level general issues, we set out

- What was consulted upon
- What responses were made in the consultation
- Our response to the issues raised in consultation responses
- Our updated values for the parameters

First, however, in this introduction, we begin by rehearsing:

¹ <https://www.comreg.ie/publication/europe-economics-report-annex-3-of-comreg-document-20-81>

² This is often referred to hereafter as the “2020 CEI WACC Report”.

³ See <https://www.ComReg.ie/publication/pricing-of-eircoms-civil-engineering-infrastructure-cei-consultation-and-draft-decision>

- What the NBP is;
- What ComReg’s objectives are;
- Why a different WACC (from the fixed line WACC) is considered appropriate for CEI for NBP;
- Why the same CEI WACC should apply to NBI in IA and for TA; and
- The approach taken in other jurisdictions and why that is not relevant here

1.2 The National Broadband Plan

The NBP is the Irish Government's plan to provide equal access to high speed broadband services to all businesses, farms and households in Ireland.

The NBP is being achieved through a combination of:

- Commercial investment by the telecommunications sector;
- Intervention in those areas (collectively referred to as the “State Intervention Area”) where it is deemed that commercial providers acting alone would not provide a service.⁴

The company chosen to provide the NBP is National Broadband Ireland (NBI). NBI has the task of building, operating and maintaining the broadband network within the State Intervention Area (SIA), over a 25 year period.

NBI will be a wholesale operator, selling services to retail operators, who in turn deal directly with home and business broadband customers. In providing those wholesale services, NBI will provide its own technical infrastructure (eg fibre-optic cables, signal transmission and reception equipment and so on) but the CEI in which the technical infrastructure will be housed will be the existing pole and duct networks in the SIA, with some potential extensions to that CEI if demand justifies them.⁵

The CEI is currently owned mainly by the fixed line operator Eircom Limited (trading as eir), though there is the potential for some use of infrastructure currently owned by the electricity network asset owner ESB Networks. For the use of that CEI, NBI will pay Eircom (and potentially ESNB) a regulated access charge. One component of that access charge will be the return on capital, a key determinant of which will be WACC.

It is relevant to note that the intention is that the government will guarantee to the CEI providers that, over the 25 year period of the plan, in the event that NBI should fail, either an alternative broadband provider will

⁴ The Irish government information booklet “What is the National Broadband Plan” (<https://www.dccae.gov.ie/documents/DCCAE%20Brochure%206pg%20DL%20NBP%20What%20is%20WE%20B.pdf>) indicates that the State Intervention Area covers around 540,000 premises; about 23 per cent of Ireland’s population; about 68 per cent Ireland’s farms; 44,000 non-farm businesses; and 674 schools. It thus covers a material portion of total Irish potential broadband demand.

⁵ A broadband value chain can be seen as consisting of three layers: passive infrastructure (of which CEI is one form), active equipment technology, and delivery of services. The main business roles can be identified for each layer, which we summarise in the below table.

Layer	Business role	Role description
Passive infrastructure (eg CEI)	Physical infrastructure provider (PIP)	Owens and maintains the passive infrastructure
Active equipment technology	Network provider (NP)	Operates (and typically owns) the active equipment such as incumbent operators, new independent operators, broadband companies.
Service delivery	Service provider (SP)	Delivers the digital services, such as home broadband to consumers.

Source: EC Digital Single Market, Broadband value chain, actors and business models [[online](#)].

replace it (again paying the access charges to which NBI commits) or, failing that, the government will itself cover the access charge payments. Thus, under this scenario, CEI providers would be insulated from non-payment risk (though they would still bear other risks, as we shall explore below).

In addition to access to CEI in the intervention area, NBI will also have access to CEI in the commercial area in cases where that it necessary for NBI to transit between the intervention area and NBI’s interconnection points. As in the case of the intervention area, NBI will pay Eircom a regulated access charge for transit access. We shall refer to the CEI used in such a case as “Transit CEI” and the associated WACC as the “WACC for transit”.

1.3 ComReg’s role and objectives

ComReg has the task of setting the CEI access ex ante price control due to Eircom’s designation with SMP in the wholesale local access market⁶. It conducts that task bearing in mind a number of key objectives, as specified in Section 12 of the Communications Regulation Act 2002, including the promotion of competition, contributing to the development of the internal market, and promoting the interests of users within the Community.⁷ ComReg must also take into consideration the requirements of Regulation 13 of the Access Regulations⁸ which enables ComReg to impose a price control obligation.⁹ In the context of this review, what is especially important is that ComReg must, when considering the imposition of a price control obligation, take into account the investment made by the operator and allow the operator a reasonable rate of return on adequate capital employed.

In this context, it is potentially relevant to note is that, by definition, it is deemed that there would not have been commercial entry into the SIA to provide broadband services. That means, for example, that the access price generally, and WACC in particular, are not required to be set at a level that would facilitate new commercial entry, by either CEI providers or alternative wholesale broadband providers. Neither does there need to be supply-chain equivalence between the wholesale access prices available in the SIA via NBI, after taking account of the CEI access charge, and wholesale access prices available outside the SIA.

1.4 How pole and duct access WACCs are set in other jurisdictions and why that approach is not appropriate here

For a number of years, European countries have been moving towards greater reliance on passive access remedies for boosting competition in national broadband markets.

It has been common in other jurisdictions, reflecting their contexts, to apply a WACC for passive access that is similar to the WACC for fixed line services. It is important to understand why the same WACC is used for passive access in other countries and why that approach would not be appropriate in the context of the NBP.

The central intuitive reasons that passive access WACCs have tended to be set at a similar level to fixed line network WACC are as follows. First, the cost-related risks of fixed line networks are low and largely non-

⁶ See ComReg Decision D10/18.

⁷ <http://www.irishstatutebook.ie/eli/2002/act/20/section/12/enacted/en/html#sec12>

⁸ <http://www.irishstatutebook.ie/eli/2011/si/334/made/en/print>

⁹ Regulation 16 of the Framework Regulations is also relevant here i.e.,

- Technological neutrality Reg 16(1) (a)
- Promotion of competition Reg 16(1) (b)
- Internal market Reg 16(1) (c)
- Interest of users Reg 16(1) (d)
- Application of objective, transparency, non-discriminatory and proportionate regulatory principles incl. (Regulation 16(2)).

systematic in nature. For example, an individual fixed line asset or asset component might fail. Indeed, it is plausible that, given the greater complexity of fixed line infrastructure relative to passive infrastructure (e.g. signal transmission and interpretation equipment¹⁰) the risks of asset failure are greater for fixed line infrastructure. But such asset failures are textbook cases of idiosyncratic, diversifiable risks that will not affect the WACC.

There will be some modest systematic component to cost risks during fixed line asset roll-out (eg there may be construction cost risks) — and the same will be true during the construction phase of passive infrastructure assets. Indeed, construction risks on the passive infrastructure may be a large portion of the total systematic cost risks of a fixed line network. There is relatively little intuitive reason to expect that the systematic component of risks associated with the non-passive-infrastructure components of fixed line asset roll-out will be materially different from the systematic component of the passive infrastructure.

So, systematic cost risks should be expected to be very low. Demand risks, on the other hand, are likely to be largely shared between fixed line and passive access assets. Demand for use of a duct is, by and large, demand for the use of the optic fibre within the duct. There could be some scope to argue for a wedge between these. For example, perhaps access to a duct to install cable creates an option value for subsequent use that does not find an exact correlate in the fixed line network.¹¹ But the judgement call that regulators have tended to take is that the evidence and reasoning that might support a wedge between passive access and fixed line WACCs has not typically been sufficiently robust to justify estimating separate WACC values, and this has been the current approach ComReg has taken in relation to Generic Access to CEI.

It is worth noting that fixed line networks typically have asset betas that are higher than those of network utilities (eg electricity or water networks) mainly because of differences in technology risks and demand risks. Indeed, network utilities asset betas are often used as one comparator for fixed line networks.¹² Indeed, as we have noted above, in the case of the NBP some of the CEI might potentially literally be the assets of an electricity network.¹³ Similarly, water ducts have clear (albeit imperfect) similarities to communications ducts. Indeed, some duct providers sell both water and communications ducts.¹⁴ That implies there may be supply-side substitutability between water-duct-production and communications-duct-production assets. High supply-side substitutability would mean water and communications ducts belong to the same market, implying that they have the same, or very similar, cost-side risks affecting WACCs.

¹⁰ CEI will still require certain technical equipment beyond the ducts and poles themselves — eg information management regarding the location of poles and duct, pole and duct identifiers, duct lengths, lengths between poles, access to poles access to duct and available capacity. There will also need to be processes to identify when assets fail (eg a duct is ruptured). But such information management equipment is likely to be less complex than the technical infrastructure specifically required for a fixed line network.

¹¹ Other examples of potential wedges between fixed line risks and passive infrastructure (by-and-large netting out) include the following:

- Pole and duct access providers may be less likely than fixed line providers to be able to reduce their costs in the short or medium term to respond to lower-than-expected demand. There will be some scope in each case (eg a fixed line provider might shut down part of a network; a passive infrastructure provider might choose to replace fewer defective ducts and poles as part of its continuous asset inventory maintenance programme). But it is at least arguable that the ability of a pole and duct access provider to mitigate demand drops will be very limited.
- As noted above, asset failure risk may be lower with passive infrastructure (though the systematic element of that will be low).
- Fixed line services may be more subject to being rendered obsolete by technological developments (since alternative technologies may still require physical housing, allowing passive infrastructure to be re-used).

¹² See, for example, https://www.ofcom.org.uk/data/assets/pdf_file/0017/111536/Draft-statement-annex-31.pdf

¹³ Indeed, Eircom itself states in its submission to ComReg Consultation 19/54: “eir is not the only supplier of network infrastructure within the NBP intervention area and the awarded company for the NBP may engage in negotiations with the ESB, eNet and other infrastructure owners in the area.” *op cit.* para 190.

¹⁴ eg see <https://www.drainagepipe.co.uk/ducting/top-tips-for-using-underground-ducting/>

1.4.1 Why the NBP CEI is different

In the case of the NBP CEI there are important differences from these international passive infrastructure WACC precedents, on both the cost risk and demand risk sides.

As regards demand risk, in the case of the NBP CEI that is almost wholly eliminated. The state guarantees that CEI providers will receive the stream of payments associated with the NBP over a 25 year period (with some possibility of extension), if not from NBI then either from another provider or, in extremis, from the state itself. Residual demand risk arises only from the upside risk that NBI may ultimately demand additional CEI, along with the remote “triple failure” risk that the Irish government might default upon its undertakings in a situation in which NBI had defaulted and the Irish government had been unable to source an alternative NBP implementer.¹⁵

On the cost risk side, our understanding is that at least some of the CEI to be deployed in the NBP would be likely to become obsolete at an earlier date than would be true of equivalent CEI in the commercial area. That means that, in a commercial setting without state intervention, that CEI would not have received an income stream throughout the technical lifetime of the asset (or at least the economic lifetime it would have had in the commercial area) and there would be no equivalent-quality new CEI entering to compete with it. That implies that, even within (very low) cost risk, the NBP CEI should be expected to have lower-than-typical cost risk.

It is, however, worth noting that this differential may be greater early in the period of the NBP than later. As Eircom states in its submission to ComReg Consultation 19/54: “as time elapses and the remaining length of the NBP contract (if awarded) is lower than the remaining asset lives (i.e., the recovery timeframe) the riskier new investments (or replacement of existing assets) by Eircom in CEI will become over time.”¹⁶ On the other hand, it is possible that over time an increasing portion of Eircom’s total CEI might be committed to the NBP as versus other wholesale access.

1.5 Implications for the relevant comparators for estimating a NBP CEI WACC

Drawing together the above reasoning, we conclude the following.

- The state guarantee for CEI implies that its risk of default will be nugatory, with the implication that its cost of debt will differ from the risk-free rate by at most some notional debt arrangement fee (an issuance and other transactions costs allowance).
- For the cost of equity, there will be limited demand risk and cost risks will be close to those of a network utility — indeed, potentially some of the NBP CEI might literally be the assets of the electricity network owner. We should therefore expect that the asset beta for NBP CEI will be akin to that of an electricity network (perhaps even towards the lower end of an electricity network’s range, since the assets in question are likely to be lower-risk assets amongst electricity network assets).

Whilst in principle it might be feasible to disaggregate the assets of electricity network asset owners between their poles and other assets, or water companies between their ducts and other assets, and whilst it is plausible that such assets might have even lower risk profiles than the average for the electricity or water network as a whole, we believe that the requirement (in line with Regulation 8(6) of the Access Regulations¹⁷)

¹⁵ We note that in its submission (*op cit*) Eircom states: “if there is a provision in the NBP contract which **guarantees** that the CEI of eir will be used (or at least paid for over the full 25 year contract) then it may suggest that the systematic risk faced by the project was significantly different from that faced by eir in its overall business.” Our understanding is that there is precisely such a provision.

¹⁶ eir *op cit*. para 188.

¹⁷ Regulation 8(6) of the Access Regulations provides that:

that ComReg’s WACC methods should be based on the nature of the problem identified and proportionate and justified suggests that, for this purpose, it should be sufficient to consider the overall asset betas for Irish electricity and water networks. We also believe that, in this context, it is proportionate to appeal to the regulatory decisions or regulatory consultation values Irish regulators have determined or proposed for electricity and water network asset betas, rather than ComReg conducting its own separate review of electricity and water network betas.

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

2 Generic parameters, gearing and tax

As noted in our 2020 CEI WACC Report, “Given that generic parameters are common across price controls, we have used the same generic parameters” as in our analysis of the Fixed Line WACC for ComReg.¹⁸ Hence, for our updated generic parameters (risk-free rate and ERP), we use (unrevised) the parameters set in the 2021 Update Report for the Fixed Line, Mobile and Broadcasting sectors¹⁹, which have been published by ComReg in Information Notice 21/68²⁰ and with the full details presented in a separate Europe Economics Report.²¹ These are as follows in the table below. Note that the comparison is with the “Adjusted European Commission” method (referred to by ComReg as the “Modified European Commission” method) values from our 2020 Fixed Line, Mobile and Broadcasting report, for the reasons set out in previous reports.

Table I-1: Generic parameters

	2021 Update	2020 Value
Inflation	1.70%	1.70%
Nominal risk-free rate	0.523%	0.824%
Nominal ERP	7.66%	7.21%
Gearing	55%	55%
Tax	12.50%	12.50%

We note that the gearing figure was reflective of the lower risk for CEI activities associated with the NBP than for fixed line activities. As we expressed it in our 2020 CEI WACC Report:

“It is common for assets with reasonably predictable streams of future revenue flows to be securitised. One hypothesis is that the government contract to lease passive infrastructure from Eircom would allow the CEI provider to treat the flow of revenue from this passive infrastructure as a ‘quasi-securitised asset’. With very stable revenue, the CEI provider is likely to be able to sustain a higher optimal gearing — i.e. its proportion of debt may be higher than would be the case for a fixed-line business.”²²

Furthermore, we argued that

- *“the CEI provider’s natural gearing might be higher than that of a fixed line services provider is that, in the event the CEI provider became bankrupt, it is likely that the CEI would be able to be sold, since it is rather unlikely that bankruptcy would be associated with the absence of a need for CEI in the future. By contrast, bankruptcy of a fixed line provider might be associated with technological change or business model change that would render a larger portion of the fibre or other technical components in the fixed line network obsolete and unrecoverable. One of the standard theories of optimal gearing is that it will*

¹⁸ 2020 CEI WACC Report, section 3.1.

¹⁹ It was noted at the time of the ComReg CEI Consultation that generic parameters were out of scope for review as part of the CEI WACC and hence ComReg was only reconsidering Asset Beta, Gearing and Cost of Debt. All other parameters would be based on fixed line WACC.

²⁰ <https://www.comreg.ie/publication/weighted-average-cost-of-capital-first-annual-update>

²¹ https://www.comreg.ie/publications?date_from=&date_to=&orderby=date__desc&limit=10&query=21%2F68a&start-month=01&start-year=1995&end-month=07&end-year=2021#results

²² 2020 CEI WACC Report, section 3.2.

be higher when the costs of bankruptcy are lower, implying that we should expect higher gearing for a CEI provider than a fixed line wholesale access provider.”²³

These arguments, in combination with the argument that the systematic risk of NBP-related CEI might be more akin to that of water and electricity assets than fixed line assets (discussed in more detail in Section 3 below), led us to use utility sector gearings as our benchmark. We noted that determined gearing levels for utilities in Ireland and the UK have lain in the 50-60 per cent range, and used the CRU-determined PR4 electricity sector gearing of 55 per cent as our proposed value.²⁴

2.1.1 Consultation submissions and our responses

With regards to inflation forecasts (of 1.7 per cent) used by ComReg in the CEI WACC, NBI made a number of observations that it believed were relevant to establishing an inflation rate as part of the WACC assessment. NBI referenced the prevailing inflation rate (and the projected rate over next few years) in the Irish economy, the CPI rate for Ireland, the latest Central Bank rate forecasted for Ireland for next 3 years, the ECB expectations on Eurozone rates as well as the European Commission's recommended on inflation rates in the "Commission's Notice Approach" and the annual BEREC assessment of WACC parameters.

In our view it is probably better for ComReg to retain a nominal WACC for NBP CEI. It would be disproportionately complex to have a nominal WACC for most communications services but a real WACC for NBP CEI.²⁵

As regards gearing, BRG expressed the view that it would not expect demand risk to be drastically different to that faced by CEI providers in other jurisdictions, noting that Ofcom has considered the lower risks faced by “passive” or CEI-like businesses, and have incorporated this lower risk into elements of the WACC calculation (e.g., by using asset betas that are averages of utility and telecoms betas) but that they have not chosen a gearing ratio as extreme as ComReg. BRG summarised the value of gearing used in recent WACC determinations, which they claimed confirms that the notional gearing of telecoms is significantly lower than that used by utilities. BRG concluded that based on their findings on the demand risk for NBI CEI services, the extent of ComReg’s proposed deviation from standard telecom gearings levels seems unwarranted.

Our view, as set out in our 2020 CEI WACC Report, is that the gearing is the natural pair of the asset beta. In other words, insofar as arguments are convincing that NBP CEI will have a utility-like character as regards the asset beta, one should assume it will, likewise, be utility-like in respect of gearing. More generally, the common expectation in finance is that when firms have more steady, certain costs and revenues they also tend to have higher gearing, as they “quasi-securitise” their steady cash flows into debt.

²³ 2020 CEI WACC Report, section 3.2.

²⁴ 2020 CEI WACC Report, section 3.2.

²⁵ See also Footnote 19.

3 Asset and Equity Beta

3.1.1 Consultation values

Asset beta figure from our 2020 CEI WACC Report: **0.34**

Equity beta figure from our 2020 CEI WACC Report: **0.76**

In our 2020 CEI WACC Report we argued that, although passive infrastructure access is typically assessed by regulators as having the same asset beta as fixed line services, in the NBP Intervention and Transit Areas a more appropriate set of comparators are water and electricity network utilities. We argued that point on a number of bases:

- that the nature of the contract with NBI created a revenue model for CEI payments such that the systematic risks to CEI provision in the Intervention and Transit areas was lower than for standard commercial activities, and that government step-in rights provided a mechanism economically akin to a government guarantee of revenues, subject only to technology risk (which was very low) and the upside risk that NBI might ultimately demand additional CEI – as expressed in our 2020 CEI WACC Report:

“As regards demand risk, in the case of the NBP CEI that is almost wholly eliminated. The state guarantees that CEI providers will receive the stream of payments associated with the NBP over a 25 year period (with some possibility of extension), if not from NBI then either from another provider or, in extremis, from the state itself. Residual demand risk arises only from the upside risk that NBI may ultimately demand additional CEI, along with the remote “triple failure” risk that the Irish government might default upon its undertakings in a situation in which NBI had defaulted and the Irish government had been unable to source an alternative NBP implementer.”²⁶

- that on the cost side some of the Eircom CEI might have become obsolete at an earlier date than in the commercial area – as expressed in our 2020 CEI WACC Report:

“That means that, in a commercial setting without state intervention, that CEI would not have received an income stream throughout the technical lifetime of the asset (or at least the economic lifetime it would have had in the commercial area) and there would be no equivalent-quality new CEI entering to compete with it. That implies that, even within (very low) cost risk, the NBP CEI should be expected to have lower-than-typical cost risk.”²⁷

- that on the demand-side there was potential and actual substitution of Eircom CEI for ESB CEI – as we noted in our 2020 CEI WACC Report:

“Indeed, Eircom itself states in its submission to ComReg Consultation 19/54: “eir is not the only supplier of network infrastructure within the NBP intervention area and the awarded company for the NBP may engage in negotiations with the ESB, eNet and other infrastructure owners in the area.”²⁸

- that on the supply-side there was potential substitution between production of water ducts and of communications ducts – as we noted in our 2020 CEI WACC Report:

“some duct providers sell both water and communications ducts.”²⁹

²⁶ 2020 CEI WACC Report, section 2.4.1.

²⁷ 2020 CEI WACC Report, section 2.4.1.

²⁸ 2020 CEI WACC Report, footnote 11.

²⁹ 2020 CEI WACC Report, section 2.4.1.

Based upon the above, we assessed the asset beta as the average determined value, drawn from the most recent values given by the CRU, for the asset betas for water and electricity networks. At the time of our 2020 CEI WACC Report those most recent values came from a 2015 determination value for electricity (0.4) and a range value being consulted upon for water (0.28-0.36). We used the full range – 0.28 to 0.4 and chose our consultation value as the mid-point (0.34).

3.1.2 Consultation submissions and our responses

A number of issues were raised in consultation responses. These included:

- The general principle of using a different WACC for CEI in the intervention and transit areas from that used for fixed line services
- Whether, and if so to what extent, Eircom faces competition or the threat of technological substitution in its provision of CEI
- What the most relevant comparators for CEI are
- Whether the use of a per-customer as versus a per-operator cost allocation model increases or decreases risk exposure
- The extent to which the step-in rights of the government shield Eircom's CEI provision from systematic risk
- Other issues potentially affecting the beta

We shall consider the points raised regarding these issues, and our responses, in turn.

The general principle of using a different WACC for CEI in the intervention and transit areas from that used for fixed line services

In our 2020 CEI WACC Report we noted that in many jurisdictions, regulatory determinations regarding passive infrastructure access use the same WACC for ducts and poles as for fixed line assets. In the case of the NBP Intervention and Transit Areas, our view was that the nature of the contract with the government and the by-definition non-commercial nature of the assets meant that a different WACC was appropriate.

NBI and Frontier supported the principle of having a different WACC for CEI in the Intervention and Transit Areas. NBI, for example, agreed with ComReg that "...the long-term rental of the vast majority of Eircom's poles in the IA is quite different than rental of wholesale telecommunications generally." NBI considered that the requirement under the NBP Project Agreement for NBI to pass all premises in the IA regardless of whether a connection is forthcoming, means that pole rental demand is likely to scale quickly and be stable and predictable for very long periods of time.

Frontier added the view that regulation insulates Eircom from other risks. According to Frontier "...the proposed [CEI] prices closely reflect actually incurred expenditure in the cost base through a Regulated Asset Base approach. (e.g. ensuring the full recovery of historical CEI investments it would expect to make in the IA absent the NBP tender), and also includes an adjustment mechanism if future CEI costs differ from that forecast by ComReg." Frontier contended that such an approach justifies a lower cost of capital for NBP CEI than for Eircom's other regulated activities.

However, Eircom and its consultants BRG, along with BT and ALTO for separate reasons (BT argued that the lower utility-akin WACC should be used for CEI in the Commercial Area as well as in the Intervention Area; ALTO simply considered the case for differentiation not compelling, though it conceded there might be an argument based on the absence of competition for Eircom CEI investment), argued that the use of a differentiated WACC was unjustified. A number of the specific points Eircom and BRG raised will be addressed under other headings below. But at a high level they noted that the presence of NBI as a customer does not and cannot insulate Eircom's CEI business from the fundamental risks it faces.

Our response to this is Eircom and BRG are quite correct that not all risk is eliminated. That is why we do not propose that the CEI WACC should be the risk-free rate. More specifically, we proposed an asset beta of above zero, which implies that CEI is indeed subject to certain non-trivial systematic risks. These risks are not, however, the same as those for fixed line assets and activities.

BT argues that the same WACC should be used for all duct and poles in the Commercial and Intervention Areas as CEI is the same product.

Our response is that, for the reasons we have set out above, we do not agree that CEI used by NBI in the IA (and indeed TA) is the same product as CEI used by generic access seekers in the Commercial Area. It has a different use (it is not being used commercially – and we note that NBI is restricted from competing in the TA whereas other users are not) and is subject to a different form of contract and different government intervention and guarantees.³⁰

Eircom also argued that ComReg proposing different WACCs (and justifying this based on the State Aid intervention) as the basis for setting prices for access products in the IA and for access in the commercial area, will significantly distort competition in the Commercial area and impact Eircom's ability to invest and achieve a fair rate of return.

Our response to this is that the potential for competition to be distorted by different regulatory WACCs arises only if the CEI WACC in the IA or WACCs for other services are set incorrectly. Insofar as they are set at the correct level, then in respect of the WACC there can be no distortion to competition. As we argue elsewhere in this document our view is that the CEI WACC we propose is the correct one.

Eircom furthermore contended that ComReg's approach to WACC would result in NBI paying much less than any other access seeker, both for access to CEI in the IA and access to CEI through Rural Commercial Areas. Eircom refers to the BRG Report, which estimates that this reduction in costs for NBI will be approximately €100m for pole access and €13 million for duct access (in net present value (NPV) terms).

Our response to this is that the lower charge to NBI reflects the lower risks associated with selling CEI access to NBI for Eircom, as explained above. These include in particular the guaranteed revenue streams and the step-in rights.

Eircom also claimed that as a risk premium for FTTC was included in WACC (as per ComReg Document 20/96) that also implies that the underlying infrastructure of CEI must also be embedded in the existing asset betas of comparator telecommunication companies.

Our response is that whilst it is true that the CEI beta is embedded in comparator betas, we note that we argue that the CEI beta outside the IA and TA should be assumed the same as the Fixed Line beta.

Whether, and if so to what extent, Eircom faces competition or the threat of technological substitution in its provision of CEI

A number of consultation responses addressed the issue of substitution. In our 2020 CEI WACC Report Europe Economics argued that

- There is some modest scope for demand-side substitution, with users of CEI already using ESB assets instead of Eircom ducts and poles in a few cases.
- There is some limited, at least theoretical and perhaps actual, potential for supply-side substitution, with suppliers of communications ducts potentially also able to supply water ducts.
- There is some outside risk that CEI in the intervention area could be replaced by a significantly technologically different solution (e.g. drone-mediated cell coverage) within the lifetime of the NBP, but we understand that this possibility is considered remote.

³⁰ We note that NBI are intending to use some of the CEI in the CA for transit purposes only (in order to access the NBP IA) but are restricted from competing with other operators in the CA because of an EC state-aid decision and the terms of the NBP contract.

We argued that, insofar as competition occurred, that was a paradigmatically idiosyncratic not systematic risk that should not affect the asset beta. An investor could choose to diversify by holding assets in firms across the relevant market, so risks associated with substitution between those firms can be fully diversified away.

Several consultation responses considered the issue of substitution in some detail. Eircom and its consultants contended that there is quite substantial scope for substitution and that this substitution creates risks that should be reflected in the asset beta. Eircom considers that there are (a) the risks of substitution to other providers' CEI (e.g., from ESB or Waterways Ireland); and (b) the risks of substitution to non-fixed-line technologies (LTE+, 5G mobile, 5G Fixed Wireless Access (FWA) and satellite broadband offerings).

BRG stated that there is evidence that other infrastructure utility providers could and are being used to support fibre and other telecom networks. BRG provided some examples of this including the joint venture between Vodafone and ESB Networks in Ireland i.e., Siro. BRG considered that the potential for leveraging alternative infrastructures is very real and that NBI may have the ability and incentive to substitute Eircom's CEI with alternative infrastructures to an appreciable and potentially significant degree. BRG believed that the degree to which it utilises Eircom's CEI is variable, and this creates riskiness in the flow of payments from NBI to Eircom. In addition, BRG stated that there is no reasonable prospect of Eircom's CEI in the IA being used for any other (i.e., non- telecommunications) purpose and so Eircom therefore faces the risk that NBI might choose not to use portions of its CEI while not having any alternative sources of revenue from which it could recover its costs.

Furthermore, according to BRG there is a risk that the demand for fixed-line services (copper and fibre) will fluctuate depending on the availability and quality of alternatives such as LTE+, 5G (mobile and fixed wireless access) and satellite broadband and that these alternative technologies may either not rely on poles and ducts at all (e.g., satellite broadband), or may do so in very different ways (e.g., 5G mobile or even 5G-based Fixed Wireless Access) than do conventional fixed-line services. BRG claimed that these substitution possibilities create direct and indirect risks for Eircom's ability to recover its CEI costs.

NBI and its consultants, by contrast, argued that there is very limited scope for substitution. Frontier argued that while the NBP subcontractor agreement does not represent a commitment to Eircom for NBI's use of CEI, there is still no material risk of NBI substituting its demand from Eircom, whether that be to alternative CEI providers (such as ESB) or through NBI deploying its own poles and ducts. Frontier contended that the cost of switching CEI provider is likely to be prohibitively costly and time-consuming.

Our interpretation of the evidence offered by the different consultation responses is that, on balance, they are contending that there may well be some potential scope for demand-side substitution – perhaps even slightly more than the modest amount we suggested at the time of our 2020 CEI WACC Report. ComReg advises us that demand-side substitution is not realistic, as once NBI has deployed its cable network, the cost of re-configuring that network to use either alternative CEI or self-supplied CEI is prohibitive. However, even if demand-side substitution were realistic it remains the case that substitution to competitors is a paradigmatically company-specific risk that should not affect the WACC because investors can diversify such risks away.

Our understanding is that the risks of technology substitution, though non-zero, are relatively low. As we noted in our 2020 CEI WACC Report, it is not fanciful that a future communications network might use no CEI. For example, Google and Elon Musk have both proposed schemes for providing broadband access in various less developed countries on the basis of drones or satellite. Eircom itself noted (in its submission to a previous round of the consultation process) that “the awarded company could change the technology from a fibre solution to a future wireless solution provided that it achieves the same level of service as fibre”.³¹ However, we do believe it is reasonable to assume that for Ireland a technological change that rendered CEI obsolete is unlikely within the timeframe of the NBP. If anything, exposure of copper to technology substitutes

³¹ Eircom, “Response to Consultation and Draft Decision 19/54”, paragraph 191.

is likely to be higher than of broadband (since it is an older technology). So the NBP is more likely to reduce Eircom's exposure to technology risk in the IA than to increase it.

What the most relevant comparators for CEI are

In our 2020 CEI WACC Report we argued that, given the nature of the NBP IA and TA, for which CEI access is by-definition non-commercial, the government contract with NBI, the modest scope for demand-side substitution to ESB assets and the at-least-theoretical scope for supply-side substitution of water assets, the most relevant comparators for NBP-related CEI were network electricity assets and water assets.

Some consultation responses agreed that CEI in the NBP IA will have a utility-like character. NBI expressed the view that as the rationale behind the NBP is to provide NGA access to areas where commercial operators have not invested and do not intend to invest, it is highly unlikely in the short to medium term that there will be overbuild of network or direct competition with the NBP for wholesale provision of NGA services and as a result NBI considers that the pole rental demand closely resembles a core utility like water.

NBI's consultants Frontier Economics agreed that there should be a differentiated WACC for CEI assets in the NBP IA for two reasons: (i) The assets required to deliver the CEI to NBI are clearly identifiable; and (ii) There are appropriate comparators that can be used to determine a separate cost of capital for these assets.

On point (i) Frontier stated that the underlying assets, i.e. ducts and poles in the IA, will in the long run be primarily used to support the NBI network, and could, in theory, be operated independently from Eircom's other activities and so can therefore be considered as a "standalone" business when considering the appropriate cost of capital. Frontier referred to a number of examples of fixed and mobile telecom operators (including Eircom) of divesting their assets and leasing them back from the purchaser for their own use. Frontier believed that separation of passive infrastructure assets appears, in large part, to reflect the fact that these assets have lower risk and can be more efficiently financed separately from the downstream activities of vertically integrated operators.

On point (ii) Frontier noted that ComReg considers Eircom's position as a long-term provider of CEI to NBI to be similar to that of a network utility such as an electricity network or a water utility, and it estimates the relevant WACC parameters on that basis.

By contrast, in its responses, Eircom contended that it is wholly and materially inaccurate for a telecommunications regulator to superimpose an asset beta based on a mid-point between the asset beta for the water sector and asset beta for the electricity sector onto part of Eircom's telecommunication business. Eircom claimed that using utility comparators is "against the advice ComReg's own consultants Europe Economics gave to the regulator on an appropriate asset beta for Irish Water." Eircom referred to a statement from Europe Economics that "Since Irish Water is not listed, its asset beta must necessarily be inferred from a set of relevant comparators—ideally, listed companies carrying out comparable activities and subject to similar economic regulation". Hence, Eircom expressed the view that it is surprising given that Eircom is also an unlisted private company that Europe Economics has departed from its own recommendations.

Eircom concluded that the comparators chosen were not relevant and there is systematic risk associated with Eircom's CEI infrastructure, both from a technology advancement perspective and overall product demand perspective, that is not evident in the asset betas inferred for either Irish Water or the asset beta inferred for Eirgrid or ESB Networks.

Our responses on these points are as follows. That telecoms company betas in general (which include the risk of a wide range of activities) are not a good comparator for water does not imply that water betas are not a good comparator for CEI, which is, by definition in our approach, not typical of the beta of communications companies – for the reasons set out in Section 1.4 above.

Eircom furthermore stated that "...there is a lack of any significant substitution possibilities in the context of water and electricity distribution networks. Eir's CEI is thus on a different footing to water and electricity networks and faces a different (i.e., higher) demand risk than those types of network." Eircom set out its view that Europe Economics' referencing a sales website for a wholesale supplier selling various different types of ducts (in various colours) implied our view was that there is "[h]igh supply-side substitutability" and that such at-best indicative evidence is a very different standard of substitutability "assessment" than used in either competition law or ex post economic regulation.

Our response on this is that our reference to supply-side substitutability was not intended to fulfil a "relevant market" test for supply-side substitutability. It was merely intended to be one amongst a number of suggestive factors implying that asset betas for electricity and water might be relevant comparators for CEI in the IA and TA.

Eircom also argued that electricity and water are poor comparators because they are regulated differently from communications businesses. They said regulation of a utility businesses is seeking a total revenue price path for a five year period to cover forecast expenditure, whereas ComReg's approach involves modelling a notional efficient hypothetical telecommunications operator building a new network whose cost recovery is based on tilted annuities projected over 25-30 years (and the recovery of those costs — even for Eircom's CEI business based - on the continued revision of price paths may never occur). Utility regulators are typically also required to ensure the applied WACC ensures financeability, whereas ComReg has stated that it does not.

Furthermore, Eircom also claimed that in setting the price path for Eirgrid and ESB Networks the energy regulator applies a fixed WACC for the duration of the period but ComReg has proposed to diverge from this practice for pricing ducts and poles. This could be seen as an additional difference undermining the relevance of electricity and water as comparators, given this different basis of regulation.

Our response is that, although of course it is true that the details of regulation differ in different sectors, the principles of economic regulation via periodic price controls are sufficiently common across sectors for our purposes here – namely the identification of a relevant asset beta comparator. Profiling revenues across a price control period is by no means unusual, even in utilities sectors, and we do not consider it a decisive objection in this context.

Eircom take issue with what they claim to be the "...completely discretionary choice to use a mid-point value between two completely different asset betas in completely different sectors ...and presenting it as some type of methodology with reasoning and justification is completely misrepresenting what ComReg has in fact done."

Our response is that the mid-point between water and electricity was chosen because there was not a strong reason to favour either. This is very standard reasoning in regulation.

BRG argues that the level of risk faced by Eircom in relation to its NBI CEI investment is not dissimilar to that of other fixed telecom operators providing CEI-like services. BRG contends that the risks faced by CEI operators are broadly similar to those typical of fixed telecoms, as they do not have many of the protections which utility networks benefit from. BRG considers that a significant portion of the risk mitigation for utilities is offered by a regulatory regime, which includes efficiency incentives but it is focused on incentivising investments and ensures companies' financeability to maintain continuity of supply. BRG concluded that an asset beta either in the range of that used by other telecom regulators or at least reflecting an average value across utility and telecom infrastructure businesses would better reflect the risk faced by Eircom in relation to the NBI CEI business.

Our response is that the argument for a WACC mid-way between a utility and fixed line might be persuasive for some general PIA analyses. But the reasons we have offered in Sections 1.4.1 and 3.1.1 above and in

Section 4 below why the CEI in the IA for NBP should be expected to be lower than in general indicate a lower WACC than for general CEI.

NBI and its consultants Frontier argued that water is a more relevant comparator than electricity. NBI claimed that water would be a better fit than other utilities such as energy, as electricity or gas distribution networks operate in an environment where end-users can switch between different energy sources, such as oil, wood, solar and so on. This concept is supported by its advisors, Frontier Economics who stated that:

- (i) The demand associated with CEI access by NBI is not affected by economic cycles and water utilities are less pro-cyclical than energy utilities;
- (ii) Water utilities also bear no technology risk, as there is no real prospect of significant structural changes in the water sector while energy utilities face uncertainty associated with reaching a "Net Zero economy".

NBI also expressed the view that water companies such as Irish Water are mainly government-funded whilst energy utilities do not typically operate with the same degree of government funding. They consider this a further reason water is a better comparator than electricity.

We regard this as "over-engineering". The utilities "analogy" generally supports a lower asset beta than for fixed line, more akin to a "utility" in some broad sense. But we do not believe CEI can robustly be seen as more akin to one utility or another.

Whether the use of a per-customer as versus a per-operator cost allocation model increases or decreases risk exposure

In the CEI Consultation ComReg proposed switching from a model in which pole costs are allocated according to the number of operators using given pole assets to one in which costs are allocated according to the share of customers serviced using poles assets for NBI broadband as versus for copper services. Taking into account respondents' submissions to the CEI Consultation ComReg has chosen not to proceed with the per customer approach, opting instead for a "per operator plus" approach for poles whereby NBI would pay the incremental costs caused by it and then the shared network costs would be allocated 50:50 between Eircom and NBI as per the previous 'per operator' approach. A similar approach was taken for ducts, whereby NBI would pay the incremental costs caused by it and then the shared network costs would be allocated according to the length or per metre of subduct. For completeness, however, we respond to the consultation submission points raised on this issue.

In its consultation responses, Eircom argued that under ComReg's proposed cost sharing rules, the flow of revenues from NBI to Eircom is only as stable and predictable as NBI's ability to acquire end-user customers and so in Eircom's view until and unless NBI's network is successful in gaining significant end-user acceptance, Eircom will rely on its legacy copper products to cover its CEI costs.

Eircom's consultants BRG argued that under a per-operator model (and per-operator plus model) for sharing network costs, the risk created by substitution to alternative technologies is that Eircom will not necessarily be able to meet its share of these costs by raising prices to copper customers, who may substitute away to other non-fixed technologies. BRG stated that even if the flow of payments from NBI is predictable, Eircom's copper business faces demand-side risk, and this residual demand-side risk has to be factored into the determination of the cost of capital for Eircom's CEI. If NBI can leverage alternative infrastructures, then this risk is even greater. Under the per-customer approach, BRG argues that the demand-side (generated by inter-technology competition) risk to NBI's fibre as well as the demand-side risk to Eircom's copper are both relevant. In this case, BRG considers that the flow of payments from NBI to Eircom depends on the number of customer connections that NBI makes, which is subject to demand-side risk. Further, Eircom's ability to meet all of its costs if NBI's contributions do not cover these costs, depends on the ability to fund these costs through raising copper prices and this too is subject to demand-side risk according to BRG.

By contrast, whilst NBI's consultants Frontier accepted that the payments Eircom receives under per customer pricing are dependent on the rate of migration to the NBI network, which can be considered

uncertain, they argued that the impact of this uncertainty on Eircom is mitigated to a large degree by the ability of Eircom to recover costs from its existing customer base, so a slower migration to NBI and hence lower payments from NBI will be offset by greater margins from its own customers. As the number of customers on the Eircom network falls toward zero and Eircom, via CEI charges paid by NBI, recovers the majority of the costs, then the variability will reduce toward zero. According to Frontier, there is a similar “off-setting” effect for NBI under this approach – as CEI prices and therefore payments to Eircom increase over time as customer migrate to the NBI network, this is offset by the wholesale access margins NBI makes on those customers.

Furthermore, Frontier claimed that the evolution of CEI prices for NBI under ComReg’s proposed per-customer cost sharing approach incentivises NBI to use Eircom’s CEI infrastructure and so NBI’s CEI price reflects only a small share of the cost of Eircom’s CEI in early years, meaning the CEI costs incurred by NBI will be relatively small during the NBI fibre deployment phase, and much smaller than the cost of deploying parallel CEI infrastructure.

Our response is as follows. In our view, the customer sharing rule would reduce volatility in Eircom’s revenues relative to the ‘per operator’ sharing rule. But under the operator sharing rule that volatility was negatively correlated with the economic cycle, to the extent broadband take-up is positively correlated with the economic cycle. If broadband take-up is not perfectly correlated with the economic cycle these effects will tend to net off. So the overall impact of the sharing rule on Eircom’s beta should be small.

Eircom refers to the issue raised by BRG relating to risks associated with per customer approach, regulatory risk in terms of reviews and risks in selecting parameters for determining the access prices.

Our response is that it is intrinsic to a price review process that regulators are entitled (though of course not obliged³²) to reconsider their approaches and the best methodology for assessing the WACC and for allocating costs. We see no evidence that ComReg’s cost allocation proposals for CEI increase regulatory risk.

According to BRG, under the per-customer approach, the level of NBI’s payments to Eircom is linked to NBI’s success in achieving customer acceptance of its products and in their views this arrangement reflects a reallocation of risk from the access seeker to the access provider. BRG stated that “The position of NBI is thus more similar to that of an investor in a project that is given the option by its co-investors to increase its stake in the project progressively as demand for the end -product becomes more certain.” Further, BRG expected that such an option would be priced in the cost of capital. BRG recognised that “...although it may be challenging or impossible to put a value on the option, the reallocation of risk as between the per-operator rule and the per-customer rule means that the appropriate cost of capital to use in setting the access charge should be linked to the allocation of risk inherent in these rules. Thus, if current cost of capital benchmarks are based on the “per operator” rule (the incumbent cost sharing rule in Ireland and in some other countries), the cost of capital used in conjunction with a “per customer” approach should be elevated above this benchmark.”

Our response is that whilst real options analysis is relevant to the WACC when there are options to wait before investing that might lead to delayed consumer access to new technologies, real options are not relevant to the re-use of ducts and poles, at least in respect of the WACC.

BRG claimed that the prolonged time horizon over which CEI costs are recovered also creates regulatory risk because Eircom’s CEI charges will be subject to periodic reviews on potentially several occasions over the payback period. According to BRG, the per-customer sharing rule results in a “backloading” of the

³² We note that ComReg will not be reviewing the methodology for WACC as part of future pricing reviews. Methodology for WACC is as per D10/20.

revenue flow from NBI to Eircom and this “backloading” leaves Eircom more vulnerable to future revisions in the underlying basis for setting access charges.

In our view there is some potential impact on the timing of payments but this is not a systematic risk.

The extent to which the nature of the contract with NBI and the step-in rights of the government shield Eircom’s CEI provision from systematic risk

NBI expressed the view that water companies such as Irish Water are mainly government-funded, which they consider can be considered comparable to the provision of CEI to NBI which is, in effect, backed by the State through the provision of the NBP subsidy and associated step-in-rights.

We broadly agree with this interpretation. However, we note that for both electricity and water the degree of explicit or implicit government support is much greater than for NBI. Electricity probably has quite strong implicit backing – it is hard to believe the government would let the lights go out. Irish Water is government funded, but to a much greater extent than NBI.

BRG claimed that there is no guarantee on the extent to which Eircom’s CEI assets will be used or the level of future payments (and whether they will be sufficient to cover Eircom’s investment in the CEI) that Eircom receives. In addition, BRG pointed to two particular concerns (i) "There is not even a guarantee—especially not under present cost-sharing proposals— of any particular level of revenue flow from NBI to Eircom." and (ii) There is "...no guarantee that Eircom will cover its costs, given that for many years, a substantial burden of cost recovery will fall upon Eircom’s copper network assets, which do face risks."

Our response is that if NBI do not use Eircom’s CEI, Eircom will have continuing copper customers unless and until alternatives substitute for them. The CEI WACC only applies to the poles and ducts NBI does use.

Frontier argued there is a "...sub-contractor agreement in place between NBI and Eircom for the use of Eircom’s CEI infrastructure to serve the IA over the length of the NBP contract period of 25 years. As a result, demand for Eircom’s CEI in the IA is almost guaranteed over the duration of the NBP contract". More generally, Frontier considered that demand from NBI is highly predictable even in the NBI network deployment phase, and Eircom bears no technology risk. In this regard Frontier referred to the NBP process and NBP contract in relation to the details on the technology used, the road map for rollout and the penalties regime for NBI. Frontier also considered that demand is not impacted by economic cycles as the deployment plan is already determined in the NBP contract.

Other issues potentially affecting the beta

In the NBP IA, Eircom claimed that once NBI is the sole tenant for Eircom's ducts and poles then asset lives for poles and ducts that are substantially in excess of the NBI contract term for use of that infrastructure represents a risk that Eircom must be allowed to pass to NBI. Eircom suggested that an appropriate mechanism for NBI to cover this risk could be addressed by an appropriate risk premium being applied to the WACC used to set duct and pole rental charges for NBI.

Our response to this is that we see no good reason costs associated with assets used to service other customers after NBI no longer uses them should be passed to NBI. The normal situation for investors in assets is that they do not have contracts for those assets that extend beyond the expected asset lives of the assets. Insofar as there is an issue here, it appears to us not to be related to the WACC. The depreciation period of the assets falls beyond our scope in this WACC report to assess and is considered by ComReg in its CEI Decision.

BRG also claimed that Eircom's "NBI-facing CEI business" (in the IA) is reliant on a single customer, whereas the other fixed line businesses (or their passive infrastructure divisions) have more options to diversify away from this customer risk. BRG noted that Europe Economics make the point that NBI further reduces risk for Eircom’s CEI business, because absent NBI, the assets would become obsolete faster while they noted that this statement seems to be based on contrasting the situation facing the CEI business in the presence of NBI

with a situation in which the existing copper services that use copper network assets are withdrawn and nothing replaces these services. In reality, they considered that in the absence of a replacement technology, Eircom would utilise the copper network assets for longer, and relative to this scenario, there may be more risk to its ability to recover costs related to the copper network if it also faces competition from NBI's fibre network.

Our response is that this discussion mischaracterises the situation. Eircom's "CEI business" does not have one customer. It has three: NBI, Eircom's Wholesale business and other generic access users of CEI, and losses of wholesale copper based revenues will be mitigated by increased CEI revenues from NBI.

According to Eircom, ComReg must consider "company specific financing". Eircom stated that for the revised WACC to be appropriate it needs to be appropriately adjusted to take into account the additional premium investors' demand for investing in private companies (referred to as the "illiquidity premium").

Our response is that there is no "illiquidity premium" in the CAPM model, nor any reason to believe inclusion of such a premium makes the CAPM a better model in terms of predicting asset prices or the cost of capital, for assets as a whole or the assets of regulated sectors. But in any event we use an ERP and Debt Premium - so any general private sector "illiquidity premium" would be automatically reflected there rather than in the returns for individual firms.

3.1.3 Updated evidence and conclusion

The beta is calculated as the mid-point of the range of the most recent asset beta determination or draft determination values from the CRU for water and electricity.

The CRU reported its PR5 Final Determination Paper in December 2020. This does not provide an explicit determined value for the asset beta. However, we can infer such a value. The CRU determination gives a range for the asset beta for the TAO³³ of 0.30-0.37.³⁴ The CRU determined a value for its WACC at the 67th percentile. Hence the implied determined value for the asset beta lies at the 67th percentile of the 0.30-0.37 range – ie 0.347.

In the 2019 CRU RC3 Decision, the asset beta for water is set at 0.3.³⁵

Reflecting these updated CRU values, we take the mid-point of these two values as our updated figure.

Updated asset beta figure: **0.324**

Updated equity beta figure: **0.72**

3.2 Nominal cost of equity and nominal pre-tax cost of equity

Nominal cost of equity figure from our 2020 CEI WACC Report: **6.30%**

Nominal pre-tax cost of equity figure from our 2020 CEI WACC Report: **7.20%**

The nominal cost of equity and pre-tax cost of equity follow by calculation from the figures above, applying the CAPM model to obtain the nominal cost of equity:

Nominal cost of equity = nominal risk-free rate + ERP x equity beta

³³ Transmission Asset Owner. Specifically, ESB.

³⁴ See <https://www.cru.ie/wp-content/uploads/2020/12/CRU20152-TSO-and-TAO-Transmission-Revenue-2021-20252.pdf>, Table 29, p84.

³⁵ <https://www.cru.ie/wp-content/uploads/2019/07/CRU19148-Irish-Water-Revenue-Control-3-Decision-Paper.pdf> See p125 where the equity beta is set at 0.6 and p130 where gearing is set at 50 per cent. Note that although the RC3 Decision involves some considerations about where within a fairly wide range of potential equity beta values the Decision should lie, that uncertainty arose from broad methodological issues that did not affect the beta.

The Nominal pre-tax cost of debt is calculated as an uplift to the nominal cost of equity, as follows:

Nominal pre-tax cost of equity = Nominal cost of equity / (1 – tax)

Updated nominal cost of equity figure: 6.04%

Updated nominal pre-tax cost of equity figure: 6.90%

4 Cost of debt

Figure from our 2020 CEI WACC Report: 1.44%

Noting the quasi-utility nature of NBP CEI access provision and that government step-in rights and other provisions of the NBP contract meant that default risk is very low and in particular lower than typical in the communications sector, we used a value for the cost of debt that lay at the very bottom end of our communication sector cost of debt range proposed in our fixed line report.³⁶ That bottom-end value corresponded to the European Commission method value for assessing the cost of debt for the communications sector.

4.1.1 Consultation submissions and our responses

Eircom agreed that the Irish state's backing of NBI reduces the risks for NBI, not for Eircom's CEI business and so in Eircom's view the Irish State's "step in" rights reduces the risk of default (though its view is that the step-in rights do not eliminate other significant risks as discussed above). Similarly, Frontier argued that there is negligible risk of reduced demand or bad debt, even if NBI falls into financial difficulties due to the Irish State's "step-in rights" within the NBP contract.

We agree.

Eircom stated that "ComReg cannot be so draconian as to consider materially different costs of debt within a short time period of determining an appropriate cost of debt for a hypothetical telecommunications operator." Eircom further stated that it is a privately owned telecommunications company and cannot raise finances for any part of its business "close to risk-free" from bondholders. Eircom claimed that in order for the operator to earn a reasonable rate of return on capital employed the relevant costs incurred year-on-year must be anchored to the relevant WACC for that investment and should not adjust over time as this provides no investment certainty or return for operators relative to the investment decisions they made on foot of a ComReg build/buy signal. Very similar objections were raised by BRG.

We agree that CEI debt is not risk-free. That is why our proposed cost of debt included a debt premium instead of being at the risk-free rate of return.

Eircom objected to ComReg taking no account of the cost of Eircom's embedded debt i.e., the debt which Eircom has already raised and that ComReg's approach ignores the fact that Eircom has to fund the cost of its existing debt, which is significantly different from the forward-looking cost of debt ComReg proposes for Eircom's "CEI business". Eircom stated that in ComReg's recent WACC decision it decided that the cost of debt should be 2.6 per cent and it seems unusual therefore, and a very quick change in ComReg's reasoning to propose a completely different approach to justify a cost of debt of 1.44 per cent. Eircom concluded that ComReg must be proportionate in its decision making and "adequate weight" should apply both ways in revising such parameters.

We note that ComReg was quite explicit that its use of a 2.6 estimate for the cost of debt for fixed line debt was not the adopting of a cost of actual debt methodology and certainly not a switch to an embedded debt approach. Furthermore, embedded debt is not ideal in regulation and often not used in the communications sector.³⁷

³⁶ 2020 CEI WACC Report, section 3.4.

³⁷ See the UK Competition Commission's determinations in the 2012 BT Appeal, where Ofcom's non-use of embedded debt was challenged in some detail but upheld.

4.1.2 Updated evidence and conclusion

The cost of debt figure for CEI is the bottom end of the range for the cost of debt for the communications sector as calculated in our fixed line analysis. That differs from the point estimate for the Fixed Line cost of debt in that the 116bps Irish Fixed Line Premium is not applied to the bottom end of the range cost of debt, which happens to correspond to how the cost of debt would be calculated under the European Commission method. As set out in our Fixed Line, Mobile and Broadcasting 2021 Update Report, the unadjusted value under the European Commission method is 1.19 per cent.³⁸

Updated figure: 1.19%

³⁸ We note that the reason for the choice of 1.44 per cent in the 2020 report or 1.19 per cent in the final report for the cost of debt associated with NBI's CEI access is that, given the arguments about the nature of NBI's access to CEI as well as the terms of NBI's contract, it seems likely that the cost of debt associated with CEI access in the case of NBI would be very low amongst communications sector debt. On this basis, the cost of debt for CEI is at the bottom end of the estimated communications sector debt range, which happens to be consistent with the cost of debt produced by applying the Commission's Notice Approach.

5 Summary of WACC update

In the table below we compare the overall WACC of the 2020 CEI WACC Report to the update values.

Table I-1: NBP CEI Intervention Area and Transit Area WACC

	2021 Update	2020 CEI WACC Report
Nominal Risk-free rate	0.523%	0.824%
ERP	7.66%	7.21%
Asset beta	0.324	0.34
Gearing	55.00%	55.00%
Equity beta at notional gearing	0.72	0.76
Nominal cost of debt	1.19%	1.44%
Nominal cost of equity	6.04%	6.30%
Tax	12.50%	12.50%
Nominal pre-tax cost of equity	6.90%	7.20%
Nominal pre-tax WACC	3.76%	4.03%

5.1 Implications for Transit WACC

As discussed in the Appendix below and explored in Section 1.4, whereas passive infrastructure access is typically assigned a WACC in line with the WACC for a fixed line network in other jurisdictions, the different nature of CEI access in the NBP intervention area means that a lower WACC, more in line with that of a lower-end-risk utility, is appropriate. That leaves the question of the appropriate WACC for transit access.

In the NBP intervention area Eircom will primarily supply passive infrastructure access services to support NBI, whereas in the commercial area Eircom will continue to invest in CEI infrastructure primarily to allow it to supply telecommunications services generally (not least, in the form of self-supply, to its own end-users).

An initial question, therefore, is whether the CEI WACC that is applicable to NBI within the intervention area could be different from that applicable to commercial users.

Let us distinguish between two types of case:

- A. The specific CEI (the specific ducts and poles) used by NBI is dedicated for its use;
- B. The CEI used by NBI is also used by commercial suppliers (potentially including Eircom) operating outside the SIA.

If we were in case A it might seem fairly obvious that the WACC applicable for NBI access could in principle differ from that for other users, since it relates to different specific assets. That is not immediate, however.

If, for example, all risk were cost risk and the poles and ducts used by NBI (even exclusively) were perfect substitutes (on the supply side) for poles and ducts used by commercial players, the WACCs would be the same since the risks would be identical.

If there is a difference it will lie on the demand side. Arguably the nature of NBP's long-term contract and the associated "step in rights" (which are close in effect to being de facto government guarantees) mean that

the demand-side risk associated with transit access is less than that of commercial access — indeed is arguably even less than that of demand within the intervention area (since transit access may vary less with demand within the intervention area). The implication would be a lower WACC for those assets used exclusively by NBI.

Let us express the point a different way. Suppose that a pole has a value X . That value is (by definition) the present value of the discounted net cash flows that pole will generate over its economic life. Two identical poles in the transit area must have the same value. Suppose pole j is used by NBI and pole k is used by a commercial vendor. Next, suppose that the nature of the contract with NBI meant that the revenue stream from pole j were absolutely certain and constant over time, whilst the revenue stream from pole k were volatile, subject to systematic risk. Then if the (undiscounted) expected value of the revenue stream from the two poles were the same, pole j would be worth more than pole k , since pole k is exposed to more systematic risk. (Think which revenue stream a firm would prefer to receive.)

In order for the two poles to be worth the same (which, as identical poles, they should be), the expected undiscounted value of the revenue stream from pole j must be less than that of pole k . In other words, in this case where there are poles and ducts dedicated to NBI it ought to be charged less than commercial CEI access-seekers, because the revenue stream from NBI is subject to less risk. (This is analogous to the price being lower for a bulk order when there are economies of scale.) NBI ought to be charged less for the same reasons the WACC associate with supplying to it is less.

Having established that this is the case when assets are separate, let us now consider how things change (if at all) if the same assets can be or are used by both NBI and commercial players. Consider a pole used solely by commercial players versus an identical pole used by both NBI and a commercial player. Once again these two poles must be worth the same, but given that the pole that is used by NBI has a less risky revenue stream, the only way they can be worth the same is if the NBI revenue stream has a lower expected value reflecting its lower systematic riskiness.

This may appear to give rise to the paradox that two identical assets with the same potential uses in fact have different WACCs. But that is a misconception. The correct way to understand this situation is as follows.

Every duct or pole in the transit area has some probability q of being used each period by NBI and probability $(1-q)$ of being used by commercial players or not used. So every duct or pole in the transit area has a WACC given by $q \times \text{WACC of NBI use} + (1-q) \times \text{WACC of commercial use}$.

Accordingly, we conclude that in the transit area the WACC used for setting the price for NBI access can be different from (in this case lower than) that associated with commercial access.

The most straightforward approach is to adopt the same CEI access WACC for NBI as applies in the SIA, even if other CEI access-seekers pay a rate reflecting the fixed line WACC (as per international precedent and the arguments of previous sections).

5.2 Likely impacts on stakeholders

The regulatory context here is not one in which the aim is to create neutrality between investment and new entry. Rather, we are considering the appropriate WACC to apply in a context of a special state intervention when, by definition, there would be no commercially viable alternative — and thus no requirement that the prices would be such as to make an investment from scratch commercially viable absent government intervention. We can think of the implications of the WACC we recommend in terms of its impacts on five classes of stakeholders:

- Eircom — the WACC implies a rate of return lower on new CEI than Eircom would be likely to be able to obtain through additional investment in new CEI outside the State Intervention Area (whether then accessed by Eircom itself or by other generic access-seekers). However, accompanying this lower rate

of return is lower risk, along with an elevated return on CEI that would become obsolete at an earlier date were it not for CEI access payments under the NBP. Over time, it is plausible that the proportion of Eircom's total CEI under economic use that was that CEI within the State Intervention Area (as opposed to outside) would rise, as technological changes rendered current access technologies obsolete. That might also favour investment in the lower-return/lower-risk/longer guaranteed-economic-asset-life CEI within the State Intervention Area even earlier in the NBP period.

- Other CEI providers — At a WACC equivalent to the WACC on an electricity network, ESNB would be neutral between providing CEI access to NBI and not doing so. By contrast, at a WACC equivalent to that for fixed line services, ESNB would have had strong incentives, to the limited extent it would find that feasible, to provide CEI infrastructure instead of using its infrastructure to support its electricity network. In this respect the recommendation here is closer to neutrality than would be the case for a CEI WACC at the fixed line WACC.
- Other communications sector wholesale access providers — By definition, no other communications sector wholesale access provider would have operated within the State Intervention Area providing fixed line or wired wholesale access services. Perhaps there is the possibility that, at the margins between the State Intervention Area and outside that area, there could be a limited number of households that could be served either by wholesale access-seekers using NBI or wholesale access-seekers using non State Intervention Area wholesale access providers. To the limited extent such rivalry existed, the use of a CEI WACC based on electricity networks would tend to favour NBI, but it is far from clear that this would be sufficient to offset the disadvantages NBI would face in other dimensions of its costs, associated intrinsically with operating within the by-definition-not-commercially-viable State Intervention Area.
- Wholesale access-seekers (ie broadband services retailers) — Whether broadband service retailers are likely to make offerings within the State Intervention Area will depend upon other elements of the price control and other elements of state intervention in the State Intervention Area that fall outside our scope to analyse here. But in respect of the WACC, lower CEI access costs (via a lower WACC) than would be the case if a fixed line WACC were applied would tend to mean, *ceteris paribus*, that wholesale access-seekers would be more likely to find it commercially viable to operate within the State Intervention Area, and so more likely to provide broadband services to final consumers at all and more likely to provide a full range of services where they do. Insofar as subsidies or other elements of the price control exist to achieve that objective anyway and flex as the CEI WACC changes, the implication is that these subsidies or other elements of the price control are not required to the same extent to achieve this objective.³⁹
- Final consumers — Whether final consumers are likely to find that they are served with broadband services within the State Intervention Area will depend upon other elements of the price control and other elements of state intervention in the State Intervention Area that fall outside our scope to analyse here. But in respect of the WACC, they are more likely to be offered broadband services and more likely to be offered a full range of broadband services than would be the case if the WACC were set at the fixed line level. Insofar as subsidies or other elements of the price control exist to achieve that objective anyway and flex as the CEI WACC changes, the implication is that these subsidies or other elements of the price control are not required to the same extent to achieve this objective.

³⁹ We observe in passing that minimising the subsidy is not a ComReg objective.

6 Appendix 1: The Regulation of Passive Access Infrastructure WACCs in Other Countries

6.1 UK⁴⁰

In the UK, Openreach, a division of BT, owns an extensive network of ducts and poles. The telecommunications regulator, Ofcom, takes the view that providing BT's competitors with improved access to the poles and underground ducts on Openreach's local access network can improve competition and therefore encourage investment in new technologies such as superfast fibre.

Openreach has been required to allow BT's competitors to rent access to ducts and poles since 2010 for laying fibre optic cables for high-speed broadband services.⁴¹ In 2016, the Communications (Access to Infrastructure) Regulations were introduced, which included the requirement for operators of telecommunications infrastructure to share physical infrastructure with competing network operators.⁴² The incumbent is also required to provide prospective service providers with maps and other records of its CEI in the area of interest.

6.1.1 Recent incumbent WACC

Ofcom's most recent WACC approach disaggregates the BT Group WACC into 'Openreach Copper Access', 'Other UK Telecoms', and 'Rest of BT'. For our purposes, the WACC determined for the Openreach Copper Access is most relevant because this division of BT is responsible for implementing BT's physical infrastructure access (PIA) remedy giving Ducts and Poles Access (DPA). In 2018 Wholesale Local Access Market Review Ofcom estimated a WACC for Openreach Copper Access of **7.90 per cent** (pre-tax, nominal) for the final year of its charge control period 2020-21.⁴³ Although this WACC figure is for BT wholesale copper (fixed line) access, as it currently stands Ofcom uses the same figure to determine prices for DPA — i.e. Ofcom treats duct and pole access as having the same WACC as the fixed line network. The components of this calculation, as well as those for the other BT divisions, is shown below.

⁴⁰ We note that the material in this section was prepared prior to Ofcom's Wholesale Fixed Telecoms Market Review of 2021.

⁴¹ Ofcom (2016), 'Initial Conclusions from the Strategic Review of Digital Communications', [[online](#)].

⁴² The Communications (Access to Infrastructure) Regulations, 2016 [[online](#)].

⁴³ Ofcom (2018), 'Wholesale Local Access Market Review' [[online](#)].

Figure 3.1: 2018 WACC components for BT Group business areas

BT Group division	Openreach Copper Access (also applies to ducts and poles access)	Other UK telecoms (includes fibre access)	Rest of BT
Asset Beta	0.59	0.73	1.25
ERP	6.30%	6.30%	6.30%
Gearing	30%	30%	30%
Cost of Debt (pre-tax, nominal)	3.90%	4.00%	4.10%
Cost of Equity (pre-tax, nominal)	9.50%	11.10%	16.70%
Corporate tax rate	17%	17%	17%
Nominal WACC (pre-tax)	7.90%	8.90%	12.90%

Source: Ofcom (2018), 'WLA Statement (2020/21), Annexes 17-27' [\[online\]](#); UKRN (2018), 'Cost of Capital – Annual Update Report' [\[online\]](#).

The approach adopted by Ofcom is kept under review and it receives feedback from industry bodies on a regular basis.⁴⁴ Ofcom is currently undertaking a consultation on its proposals to set maximum charges for unrestricted access to passive infrastructure. Ofcom also proposes to set maximum ancillary charges that relate to supplementary services or activities carried out by Openreach on behalf of a telecoms provider using PIA.

The detailed steps of Ofcom's method for allocating costs per unit of each PIA product is given in Annex 5 of its WLA Market Review.⁴⁵ It is based on the method originally adopted by Openreach to derive rental charges when the PIA regulations came into force in 2010. There are two main parts of the calculation:

First is the regulatory cost base is calculated for each type of PIA asset (single bore spine duct, lead-in duct, poles etc.). Each asset cost includes the return on capital, depreciation, and overheads. The return on capital component is calculated using the current cost accounting mean net replacement cost of the asset multiplied by the WACC for Openreach Copper business (8 per cent).

Second is the regulatory cost base of each type of PIA asset is allocated to each unit of the PIA rental product (e.g. the regulatory cost base of one bore spine duct is allocated to each metre of single bore spine duct rental). As an example, for poles this involves the following:

- The regulatory cost base of poles is divided by the total number of poles as of June 2015, to give a regulatory cost per pole.
- This regulatory cost per pole is split between cable attachments (90 per cent), cables up poles (3 per cent) and manifolds (7 per cent). Openreach was unable to confirm the basis for these specific proportions.
- Each of the regulatory cost bases of cable attachments, cables up poles and manifolds is then divided by the total number of poles as of June 2015.

6.2 Spain⁴⁶

In Spain, it was recognised early on that great savings in mass broadband deployment could be made by avoiding the replication of physical infrastructure. Infrastructure represents approximately 60-80 per cent of the costs of fibre to the home/premises (FTTH) deployment. The incumbent broadband PIP, Telefónica, owns

⁴⁴ For example, see BT's 'Response to Ofcom's consultations on the Physical Infrastructure and the Business Connectivity Market Reviews' [\[online\]](#).

⁴⁵ Ofcom (2017), 'WLA Market Review', Annex 5, page 67 [\[online\]](#).

⁴⁶ We note that the material in this section was prepared prior to the CNMC WACC decisions of 2020 and 2021.

and operates 300,000km of ducts across the country, giving it significant competitive and operative advantages over rivals.⁴⁷

Consequently, the regulator *Comisión Nacional de los Mercados y la Competencia* (CNMC; formerly the *Comisión del Mercado de las Telecomunicaciones* (CMT)) has imposed upon Telefónica a range of obligations regarding the maintenance of passive infrastructure. This includes situations in which ducts are full or broken, the provision of alternative duct routes where available (and, as a last resort, provision of dark fibre), and the expansion of passive infrastructure capacity when ducts become full. The incumbent may be requested to remove redundant cabling, for example old copper cabling or in the instance that a service provider exits a particular geographic market.

Furthermore, so-called ‘symmetrical obligations’ are imposed on Telefónica and other service providers. The first network provider to bring broadband to a building must install optical equipment that enable the subsequent use of other providers by sharing the resources. Thus, the first provider bears the cost of constructing the necessary equipment to enable the installation of not only its own cabling but also the cabling of other providers. This cost is recovered by 1) payments for making a duct access request and installation; and 2) a fixed cost for installation and a variable per-metre fee. The various prices proposed by the incumbent were individually scrutinised by the regulator, with the regulator making changes to the proposed prices to ensure they properly reflected costs.⁴⁸

6.2.1 Recent incumbent WACC

The 2018 WACC for Telefónica and its components are provided in the table below.

Figure 3.2: 2018 WACC components for Telefónica

	Telefónica 2018
Asset Beta	0.61
ERP	6.79%
ERP adjusted for QE*	6.25%
Gearing	36.04%
Cost of Debt (pre-tax, nominal)	2.09%
Cost of Equity (pre-tax, nominal)	7.11%
Corporate tax rate	25%
Nominal WACC (pre-tax)	6.82%

Source: CNMC (2018), ‘Verificación contabilidad analítica y WACC’ (WACC/DTSA/018/18/WACC 2018 OP INTEGRADOS) [\[online\]](#).

Note: * when the ERP is adjusted for QE it means that the risk-free rate is reduced to reflect the quantitative easing programme of the ECB which keeps Spanish bond yields low by historical standards (CNMC, 2018, page 7).

For duct access, the price per metre per month is calculated either by the cross-sectional area taken up by the infrastructure or the operator is charged for a whole sub-duct or duct.⁴⁹

⁴⁷ Comisión Nacional de los Mercados y la Competencia (CNMC) (2014), ‘Infrastructure sharing for NGA deployment’ [\[online\]](#).

⁴⁸ Comisión Nacional de los Mercados y la Competencia (CNMC) (2009), ‘Agreement which Approves the Decision Regarding the Analysis of the Offer for Access to Ducts and Junction Boxes of Telefónica de España, S.A. and their Adequacy to the Requisites of the Comisión del Mercado de las Telecomunicaciones’ [\[online\]](#).

⁴⁹ Allen, J. and C. Tinine (2015), ‘International case studies’, final report for Ofcom by Analysys Mason [\[online\]](#)

6.3 Portugal⁵⁰

The Portuguese regulator ANACOM has imposed access obligations on the passive duct infrastructure of the incumbent, MEO (formerly Portugal Telecom), to allow rival providers to deploy their own networks.⁵¹ Similarly to the symmetric obligations in Spain, ANACOM also requires the first provider to connect a building to provide sufficient vertical infrastructure to enable the entry of others.

Additional obligations are imposed on MEO, referred to as ‘asymmetric obligations’ and referenced in Article 73 of the EECC. For example, as the incumbent, MEO had to develop an automated mapping tool to assist other service providers to plan their network deployments in connection with duct access.⁵² This was to make available an infrastructure information system showing the available ducts, their locations and associated facilities in accordance with Article 73 of the EECC.⁵³ By providing such information, the cost incurred by prospective service providers of acquiring information is lowered, which may in turn make them more likely to take-up duct access to reach consumers.

Along with that of Spain, Portugal’s regulatory context is regularly hailed in the literature as being close to the regulatory gold standard of passive access broadband networks. A 2015 report by Analysys Mason suggested that the involvement of non-incumbent operators in building FTTH networks is directly linked to the existence of passive access.⁵⁴ Vodafone has been particularly engaged in competition with MEO deployment as a result of the high quality and comparatively low expense of regulated duct and pole access.

6.3.1 Recent incumbent WACC

The most recent WACC for MEO was determined by ANACOM in August 2019.

Figure 3.3: 2018 WACC components for MEO

	MEO 2019
Equity/Levered Beta	0.762
ERP	6.54%
Gearing	39.53%
Cost of Debt (pre-tax, nominal)	4.06%*
Cost of Equity (pre-tax, nominal)	7.43%
Corporate tax rate	22.5%
Nominal WACC (pre-tax)	7.40%

Source: ANACOM (2019), ‘SENTIDO PROVÁVEL DE DECISÃO SOBRE a taxa de custo de capital da MEO – Serviços de Comunicações e Multimédia, S.A. (exercício de 2019)’ [\[online\]](#); Europe Economics calculations.

Note: * - the source did not specify the cost of debt (Kd) but provided the formula for the pre-tax WACC:

$$WACC_{pre-tax} = [K_e \times (1 - G) + K_d \times G \times (1 - tax)] \times 1 / (1 - tax)$$

ANACOM publishes its regulated recurrent prices for access to ducts and poles infrastructure. On a monthly basis, in 2018 the price to use existing ducts was set at €0.0314 per cm² per metre, and the price to use poles €1.25 per pole.⁵⁵

⁵⁰ We note that the material in this section was prepared prior to the ANACOM WACC decision of 2021.

⁵¹ Allen, J. and C. Tinine (2015), ‘International case studies’, final report for Ofcom by Analysys Mason [\[online\]](#).

⁵² CSMG (2010), ‘Economics of shared infrastructure access’, report for Ofcom [\[online\]](#)

⁵³ European Commission (2018), ‘European Electronics Communications Code’, Article 73, l, k: ‘National regulatory authorities may require undertakings to provide access to associated services such as identity, location and presence service.’

⁵⁴ Allen, J. and C. Tinine (2015), ‘International case studies’, final report for Ofcom by Analysys Mason [\[online\]](#).

⁵⁵ BEREC (2018), ‘Report on pricing for access to infrastructure and civil works according to the BCRD’ [\[online\]](#).

Prices are ‘cost oriented’ and take into consideration:

- costs derived from the construction, maintenance, repair and improvement of the CEI;
- administrative costs incurred with the treatment of the requests, namely the requests for installation, repair or removal of cables;
- costs related to follow-up of interventions.

6.4 France

The French regulator, ARCEP, has been involved in passive remedies for duct access, vertical (within-building) access, and dark fibre.⁵⁶ The incumbent firm, Orange, is the owner of the copper infrastructure in the country, and since 2008 it has been required to provide access to its CEI to other service providers.

6.4.1 How passive infrastructure access prices are determined

ARCEP’s pricing model for duct access is cost-based. However, ARCEP does not set specific prices for access, and instead it relies on ‘pricing principles’, namely: non-discrimination, objectivity, relevance, and efficiency.⁵⁷

With regards to vertical access and dark fibre, ARCEP has taken an approach to pricing that stands in contrast to those of other national telecommunications regulators. Instead of setting specific wholesale access prices itself, it has constructed a ‘shell’ price calculation model with working calculations and fields that are populated by the service provider. To use the model and produce a price, an operator needs to specify the parameters and costs of its own broadband deployment and input them into the calculations.⁵⁸

⁵⁶ Allen, J. and C. Tinine (2015), ‘International case studies’, final report for Ofcom by Analysys Mason [\[online\]](#).

⁵⁷ Ibid.

⁵⁸ Ibid.