

Public version of report for TDC NET

Assessment of the updated version of the DCCA's LRAIC model

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1 Executive summary

This report sets out our findings regarding the Denmark Competition and Consumer Authority (DCCA)'s draft updated model underpinning its draft pricing decision applicable to TDC NET. Now that the model is being used to set wholesale prices, rather than assess commitments on a broad basis, Analysys Mason considers that the requirement for accurate and TDC NET-specific parameterisation and calculation of the model has increased. Analysys Mason continues to find significant issues and shortcomings in the model. These points are summarised in Figure 1.1 below.

Figure 1.1: Summary of comments presented in this report [Source: Analysys Mason, 2026]

Modelling assumption	Section	Why the DCCA's modelling approach is flawed	How the DCCA's modelling approach can be corrected
WACC ¹ parameter (Debt premium)	3.1	BEREC average used by DCCA understates TDC NET's actual borrowing costs	Use TDC NET bond spreads versus Danish government bonds
WACC parameter (Asset beta)	3.2	Peer group unrepresentative; beta estimates volatile and temporarily depressed	Revert to 2025 benchmark asset beta of 0.36.
WACC parameter (CoE ² adjustments)	3.3	Parameters omit the impact of being an unlisted operator and having illiquidity risk	Apply explicit size and illiquidity premium adjustments
WACC value	3.4	Current value materially understates an efficient cost of capital	Incorporate all three proposed WACC corrections
Use of short-term WACC in a long-run model	3.5	Approach misprices costs across the modelled network lifetime time horizon	Apply either a long-term average or appropriate time-varying cost of capital
Historical fibre risk premium	4.1	Past approved fibre investment risk premium currently omitted	Capture historical premium using either a long-term average or appropriate time-varying values
XX	4.2	XX	Add temporary additional premium to XX
Future fibre risk	4.3	Ongoing demand and capital risks remain under-compensated in current approach	Apply the 2% fibre risk premium that has been considered in previous years
Geotype design	5.1	Geotypes are heterogeneous, distorting the calculation of generic benchmark digging costs	Use TDC NET actual costs and reflect the unique geotypes which TDC NET operates in
Road-crossing cable	5.2	Road-crossing cables are not included in the cost base of the modelled fibre and coax	The R model should be corrected to include this cable

¹ Weighted-average cost of capital.

² Cost of equity.

Modelling assumption	Section	Why the DCCA's modelling approach is flawed	How the DCCA's modelling approach can be corrected
		networks (although the trench is captured)	
Fibre final-drop reduction	5.3	Input is outdated and should be refreshed	Update factor using final footprint data
Generic cost benchmark	6.1	Generic benchmark costs fail to reflect deployment realities in the Capital Area, since costs of operators that do not build in the Capital Area are being incorporated	Use the efficient TDC NET-specific cost inputs previously provided by TDC NET
Inflation treatment	6.2	Future inflation changes affect historical model results i.e. a new future leads to an update of the past, which is not intuitive	Use alternative inflation treatment to avoid backward-looking distortions e.g. running model in real-terms currency

2 Introduction

Analysys Mason has been commissioned by TDC NET to review the updated version of the long-run average incremental cost (LRAIC) model of fixed networks and associated documentation developed and released by the Denmark Competition and Consumer Authority (DCCA) in July 2026 (the “draft 2026 model”).

In 2019, the Danish Business Authority (DBA) engaged Axon Partners (Axon) to develop LRAIC models of fixed networks in Denmark, covering both access network infrastructures and a national IP core network. The output of this final model was used to assess the prices agreed in the Commitments process organised by the DBA for the current regulatory period (2022–2026). As the new regulatory period (2027–2031) is approaching, the DCCA undertook an update of the LRAIC model in 2025, with a final version released in December 2025. A subsequent update of the model specifically for TDC NET has been released for consultation in July 2026, for further comments from industry parties.³

The LRAIC model comprises two main components: a service costing calculation in a single standalone Excel workbook (the “2026 updated model”) and a geospatial analysis of Denmark developed using the open-source software R (the “R model”). The files referenced in this report are set out in Figure 2.1.

Figure 2.1: Files referenced in this consultation response [Source: Analysys Mason, 2026]

Filename	Name in this document
Adjusted version of "Fixed LRAIC model FINAL - TDC (CONFIDENTIAL).xlsb" ⁴	2021 Commitments model
TDC Fixed LRAIC Final model v58.0.xlsb	2025 final model
TDC - Fixed LRAIC Final model v58.4.xlsb	2026 updated model
R model manual.pdf	R manual
Excel model manual.pdf	Excel manual
Udkast til prisafgørelse over for TDC for fiber og coax.pdf	Draft pricing decision

The remainder of this document is laid out as follows:

- Section 3 describes our comments on the assumptions concerning the weighted average cost of capital (WACC)
- Section 4 describes our comments on the setting of an appropriate fibre risk premium
- Section 5 describes our comments on the assumptions concerning network design
- Section 6 describes our comments on the cost assumptions.

³ <https://kfst.dk/tele/igangvaerende-markedsundersoegelser>

⁴ TDC NET has implemented several revisions to the original model as finalised by the regulator in late 2020/early 2021. These revisions include updating the average unit capex for “Access fibre.Internal installation.# of installations” to DKK1513 on the “1B INP UNIT COSTS” sheet and setting “Limit delayed drop installation to 30m in recurrent fee?” on the “COVER” sheet to “No”.

3 WACC assumptions

The DCCA's market decision has set a pre-tax nominal WACC of 5.50% for TDC NET.

Whilst the DCCA has adjusted the calculation of the risk-free rate (RFR) in a way that respects the Body of European Regulators for Electronic Communications (BEREC) methodology but (rightly) uses discretion to exclude distortive inputs, there are other substantive issues with applying the BEREC methodology to estimate the WACC for TDC NET in the specific Danish context.

This has resulted in a WACC estimate that should be considered materially below the cost of capital faced by TDC NET on a factual basis, which will have the effect of depressing returns to levels below TDC NET's actual cost of capital and hence negatively affecting TDC NET's incentives to invest in its networks. The European Union (EU)'s stated objectives to accelerate investment in gigabit networks and 5G underpin the need for setting regulated wholesale access prices in a way that reflects the realistic cost of the capital invested.

In the document submitted to the DCCA in May 2026⁵, Analysys Mason identified four main changes to the BEREC methodology in order to derive a WACC for TDC NET that, on the basis of clear and objective reasoning, better reflects the actual cost of capital in the specific market context in Denmark. These were as follows:

- **RFR:** shorten the time period over which to average observations from 5 to 3 years to avoid Covid-era distortions and more accurately reflect forward-looking expectations.
- **Debt premium:** the benchmark average from the BEREC peer group is unrepresentative as it mostly consists of large (in some cases multinational) operators, which operate at national scale within larger markets. The actual cost of TDC NET's corporate bonds (applied using the BEREC methodology) better reflects TDC NET actuals than generic benchmarks.
- **Asset beta:** the BEREC methodology produces a benchmark set of asset betas for the peer group operators that are sensitive to (somewhat arbitrary) modelling choices and may currently be reflecting a temporary low point, whilst the peer group average again does not seem the right approach to best represent TDC NET. In the context of the relatively stable value of the asset beta in recent years, prior to the sudden drop in 2026, we consider that a value around the consistent level seen in previous years (i.e. approximately 0.40) should be applied in place of the 2026 peer group average of 0.27.
- **Cost of equity (CoE) adjustment - Size and illiquidity premium:** in light of the BEREC peer group being unrepresentative for determining CoE for TDC NET, we observed that a size premium adjustment would be appropriate. XX include this at a rate of 0.95%, but academic research supports a higher adjustment (3.3% average) to also account for illiquidity.

⁵ *Deriving an appropriate regulatory WACC for TDC NET in Denmark (Ref: 846867097-210).*

We acknowledge that the DCCA's market decision has accepted our findings on a more appropriate RFR (and has also made a more minor change to average all 14 operators in the BEREC peer group, rather than the subset of 9 of them that it previously relied upon).

However, of the four changes listed above, the change in RFR has little impact on the final WACC estimate. The other three have not been implemented, and the market decision documents provides no explanation as to why TDC NET's proposed approach to these parameters is not appropriate.

As such, we reiterate below the three remaining changes. As previously demonstrated, these changes are important to ensure that the WACC appropriately reflects TDC NET's circumstances in the Danish market. We also set out the rationale for why they should be implemented.

Aside from the WACC calculation itself, we also conclude in this section that the DCCA should set a long-term WACC that applies consistently over the whole modelling period. This would be conceptually more consistent with the long-run nature of the DCCA's model than the current approach, under which a short-term estimate of the cost of capital is applied over the full economic life of the network.

Finally, we still conclude that, if the DCCA continues to apply a short-term view of WACC in the model, its calculation should be updated using the most recent datasets available according to our approach, as close as practicable to the start of the price control period.

The remainder of this section is structured as follows:

- Section 3.1 sets out our views on how a more appropriate debt premium should be calculated
- Section 3.2 summarises our concerns with the representativeness of the BEREC peer group and the methodology used to calculate asset beta benchmarks
- Section 3.3 focuses on how the cost of equity can be made more representative by applying a size and illiquidity premium
- Section 3.4 summarises the impact on calculated WACC of our proposed changes
- Section 3.5 describes how a long term WACC is more appropriate than a short-term WACC in this long-run cost model.

In the next section (Section 4), we explain why the DCCA should apply a fibre risk premium on top of the WACC. Such a premium is allowable within the BEREC methodology and reflects the higher risk associated with fibre investment along with the overly optimistic demand and unit cost assumptions in the DCCA's model (which are not reflected in TDC NET's actual costs of borrowing).

3.1 Debt premium

As set out above, Analysys Mason has previously pointed out that the debt premium from the BEREC peer group materially understates TDC NET's actual cost of debt. However, we have not

observed any change⁶ in the DCCA's approach to the calculation of the debt premium, nor any explanation as to why the concerns raised have been disregarded.

Our concerns are twofold:

- The BEREC peer group mostly consists of large (in some cases multinational) operators, which operate at national scale within larger markets, for example Deutsche Telekom, Orange and Vodafone Group.⁷ The debt premia for these operators are not representative of TDC NET in the Danish context.
- The debt premium estimates for the individual BEREC peer group members appear to be systematically understated.

To mitigate these issues and calculate a realistic debt premium for TDC NET, the interest rates on TDC NET corporate bonds should be compared to prevailing Danish government bond rates at the time of issuance (i.e. the Danish RFR) following the BEREC methodology, which would constitute a more factually accurate approach.

Below we provide a detailed summary of the BEREC methodology, its weaknesses, our proposed approach and relevant precedent. For further details on this matter, please refer to our previous submissions to the DCCA.⁸

BEREC methodology

To estimate the debt premium, BEREC looks at the yield on long-term corporate bonds issued by companies in the BEREC peer group, measured above the RFR (through pairing corporate bonds with comparable government bonds). BEREC seeks to align the debt premium methodology with the RFR framework. This implies the use of a 5-year averaging period and a focus on long maturities, targeting a 10-year duration where possible.

Debt premia calculated by BEREC may be systematically understated

For the BEREC methodology, the debt premium is added to the RFR to derive the cost of debt, which enters the WACC using the appropriate debt weighting.

⁶ That is, no change beyond the general change noted above that parameter values, including the debt premium, estimated by averaging of individual estimates for the BEREC peer group, now average across all 14 peer group members rather than the subset of 9 previously used by the DBA. In the specific case of the debt premium, the average is calculated across 12 peer group estimates since BEREC has not been able to derive estimates for Telekom Austria and NOS.

⁷ Other operators in the BEREC peer group are Digi, Elisa, KPN, NOS, Proximus, Tele2, Telecom Italia, Telefónica, Telia, Telekom Austria and Telenor.

⁸ *Deriving an appropriate regulatory WACC for TDC NET in Denmark* (Ref: 846867097-210).
Also *Recommended approach in relation to the BEREC 2026 WACC parameters report* (Ref: 8884687679-243).

Page 30 of the BEREC 2026 report acknowledges a potential limitation of the methodology, meaning that the debt premia calculated may be systematically understated.⁹

Given that the mid yield to maturity of the corporate bonds have been compared with the mid yield to maturity of the domestic government bonds, this may not fully reflect the international investor perspective and will be dependent on how the capital market assesses the value of the government bonds. This means that the debt premiums for international companies based on high RFR countries are significantly lower compared with what would have been if the calculations had been based on benchmark bonds regularly used by Bloomberg, this is, German government bonds..

In other words, BEREC calculates debt premia for peer group members based on the in-country RFR, but investors using Bloomberg may base these calculations on the (lower) German RFR. This means that the debt premia calculated by BEREC will be understated compared to investors' views for all countries with higher RFR than Germany, which is all countries with operators in the BEREC peer group (and Denmark). This effect is illustrated in Figure 3.1 below.

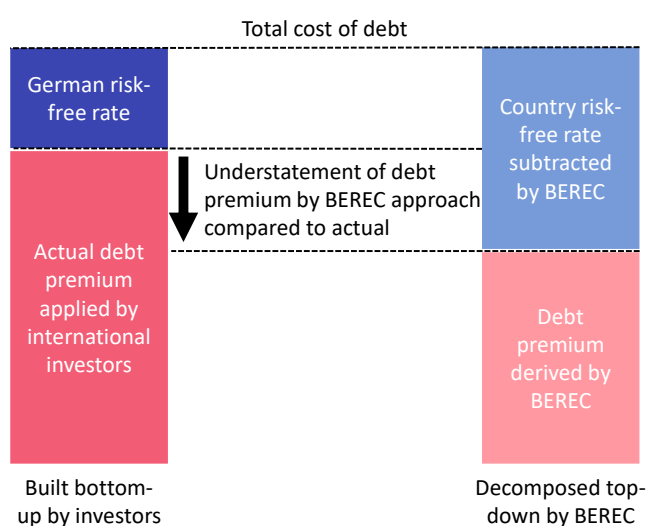


Figure 3.1: Illustration of how a cost of debt could be built bottom-up by an investor, compared to its derivation top-down by BEREC peer group
[Source: Analysys Mason, 2026]

Since the DCCA applies an average debt premium derived based on an average of peer group members, it is likely that this debt premium is being underestimated based on this effect.

However, the more substantive issue remains that even if the debt premium estimates calculated by BEREC were accurate for its peer group members, this would not make an average of such estimates a realistic estimate for TDC NET in the Danish market context.

Proposed approach

We have proposed that the DCCA calculates a debt premium specific to TDC NET, rather than applying a benchmark value derived from a peer group of other telecoms companies. As per the BEREC methodology, the debt premium should be based on the delta between interest rates on

⁹ We note that this paragraph has been in all seven releases of BEREC's WACC Parameter reports.

TDC NET corporate bond issues and 10-year Danish government bond issues made in the same month (i.e. the risk-free rate at the same point in time).

TDC NET does issue corporate bonds and, therefore, it is appropriate to use these as inputs to a TDC-specific value.¹⁰

We note that TDC NET bonds are in EUR rather than DKK (as preferred by BEREC) and are 5–8 years in duration (rather than 10 years). Nevertheless, this approach allows the debt premium to reflect operator-specific credit risk and prevailing financing conditions more accurately. In particular:

- The DKK is pegged to the EUR, so consideration of corporate bonds issued in EUR is unlikely to result in any distortive effects; and
- There is no correlation between the debt premia on the TDC NET corporate bonds versus 10-year government equivalents and the duration of the TDC NET corporate bond
 - in other words, the XX corporate bond issues by TDC NET have a duration of 5–8 years but the debt premium is not correlated with the duration within this range, and so the same debt premium would be expected had these bonds been of a 10-year duration.

The objective is to better align the debt premium with TDC NET's specific financing conditions, while remaining consistent with the 2019 EC WACC Notice. An alternative would be to derive the cost of debt from overall interest payments and debt levels; however, this represents a greater departure from BEREC methodology, and the vast majority of TDC NET's debt is captured through bond issuances.

The proposed approach would see the debt premium increased from the BEREC benchmark of 1.10% to TDC NET's actual value of 3.07%, based on the bonds detailed in Figure 3.2.

Figure 3.2: TDC NET bond issuance [Source: TDC NET, 2026]

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Precedents

In addition to the DBA and DCCA in Denmark, we note that other national regulatory authorities (NRAs) have applied differentiated approaches to the estimation and application of the debt premium, where deviations from the BEREC methodology have been justified by national market characteristics or operator-specific financing conditions (see Figure 3.3).

Figure 3.3: Country-specific adaptations for the debt premium [Source: BEREC reporting, 2025]

Country	Description
Ireland	Continues to update the cost of debt annually using a modified methodology that predates the 2019 EC WACC Notice, reflecting national regulatory practice and data availability

¹⁰ Section 4.1 of the BEREC 2026 report (page 26) BEREC itself says that *The debt premium is the additional return lenders or investors require for a company above the risk-free rate. The level of the debt premium depends to a large degree upon the perceived credit risk and credit rating.*

Country	Description
Sweden	Has previously applied a debt premium specific to operators designated as having significant market power (SMP), notably in the case of Telia, rather than relying on a uniform peer group-based value

Impact on WACC calculation

The impact of the above change (in isolation) would be to increase the WACC from 5.5% to 6.4%.

3.2 Asset beta and BEREC peer group

Like the debt premium, the DCCA's approach (prescribed by the BEREC methodology) to determining an asset beta for TDC NET is to take an arithmetic average of BEREC's asset beta estimates for each of its 14 peer group operators. We hold analogous concerns with the asset beta to those we set out for the debt premium, namely:

- the derivation of asset betas for peer group members does not appear to be robust
- the peer group members are not representative of TDC NET,¹¹ and hence an average of estimates for peer group operators cannot result in a realistic estimate of asset beta for TDC NET.

In addition, we are also concerned in this case that the very sharp drop in asset betas among the peer group that has been observed from 2025 (and relatively consistent pre-2025 levels) to 2026 may only be a temporary effect. Relying only on the most recent calculated asset beta from the BEREC 2026 report, which appears to have destabilised compared to historical values, is inconsistent with the concept of setting a forward-looking asset beta for a stable multi-year price control.

We examine each of these points in turn in the remainder of this section. The analysis in this section is not new and was provided in a similar form to the DCCA prior to its market decision. However, we repeat the points here since they have not been addressed by the DCCA in coming to its market decision (noting that in this case there was a short period of time available to the DCCA since the BEREC 2026 report was only released one month before the DCCA's market decision and our response to that publication less than three weeks before the market decision).

The calculation of the peer group benchmarks for asset beta is volatile

Whilst the methodology used by BEREC to estimate equity betas is reasonable, the resulting estimates appear to exhibit a high degree of volatility and sensitivity to relatively minor changes in modelling assumptions. This raises questions as to whether the calculated asset beta benchmarks

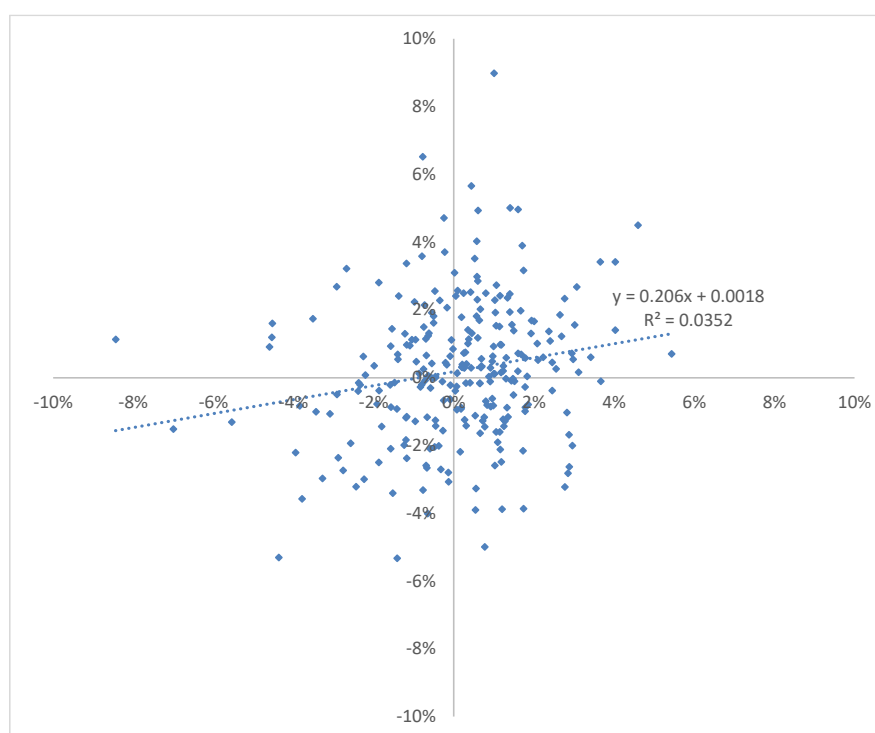
¹¹ Section 3 of the BEREC 2026 report describes that "BEREC also considers that NRAs, in order to reflect national specificities should, where necessary, amend the companies included in the peer group by selecting those that are most reflective of their national specificities". This section sets out justifiable reasons for finding a peer group company to not be representative of the SMP operator. These include the scale and scope of the company, as well as the competitive conditions it faces and the mix of regulated versus unregulated areas of its business.

(derived from the equity beta estimates) provide a sufficiently robust basis for setting a forward-looking regulatory WACC.

A key observation is the scale of change in estimated asset betas over a short period. As noted above, the average asset beta for the BEREK peer group has decreased materially between the 2025 and 2026 reports (from 0.36 to 0.27).¹² At the level of individual operators, the magnitude of change can be even more pronounced. For example, for KPN, the estimated asset beta falls from 0.37 (based on a 5-year window ending in 2025) to 0.17 (based on a 5-year window ending in 2026), with the corresponding equity betas falling from 0.51 to 0.20.

This significant change in beta is remarkable given that 80% of the underlying observations (4 out of 5 years of weekly data) are common between the two estimation windows. In the absence of a material change in the fundamental risk profile of the operator over this period, such a large shift in estimated beta suggests that the output is highly sensitive to the specific time-period included within the sample, rather than reflecting a stable underlying measure of systematic risk (which would have been the intention of using a 5-year period).

The statistical properties of the regression further support this interpretation. Figure 3.4 illustrates the regression used to estimate the 2026 equity beta for KPN. The dispersion of observations relative to the fitted line indicates that most of the variation in returns is not explained by market movements.



*Figure 3.4: Weekly returns for KPN plotted against STOXX Europe 600 index (2021–2026), with fitted regression line used to estimate equity beta
[Source: Analysys Mason, Yahoo, 2026]*

The regression produces an equity beta of 0.20 and an R^2 of 0.035. This implies that only around 3–4% of the variation in weekly returns is explained by movements in the market index. In other words, the estimated beta is derived from a very weak statistical relationship, where only a small

¹² Specifically, these values are the average across all 14 members of the BEREK peer group.

proportion of observed movements is explained by the market. In such circumstances, the estimated slope (and therefore the beta) can be materially influenced by a relatively small number of observations or specific periods within the sample; and other explanatory factors which are not considered.

The sensitivity of the results to modelling choices is further illustrated by variations in sampling window and data frequency. For example, for Proximus:

- using a 5-year window with weekly observations results in an equity beta of approximately 0.41
- reducing the sampling window to 3 years or 1 year lowers the beta to approximately 0.31 and 0.17, respectively.

Similarly, holding the 5-year window constant but moving from weekly to monthly observations (approximated by selecting every fourth weekly observation) produces materially higher beta estimates in the range of 0.53 to 0.82, depending on the precise starting point used when selecting observations. In the case of Vodafone, an estimate of 0.66 with weekly observations could lie within the range of 0.33 to 0.74 if switching to monthly observations, the top of the range being over 220% of the bottom of the range.

The fact that such a technical choice can materially affect the output highlights the sensitivity of the results to what are, to a degree, arbitrary modelling (mathematical calculation) decisions.

A methodology for assessing a parameter that has both a weak explanatory power for that parameter and also exhibits high variance for other “dummy” variables such as the choice of day/month used for the dataset is not a good methodology. Alternative methodologies are possible and should be explored by the DCCA before relying only on the BERC method with the clear weakness in explanatory power.

Taken together, these observations indicate that:

- estimated equity betas (and hence asset betas) are highly sensitive to the choice of time window, even when a large proportion of observations are common
- results are materially affected by how frequently the data is sampled (e.g. weekly versus monthly) and how the underlying data is selected
- the underlying regression often exhibits low explanatory power (low R^2), implying that the estimated relationship is statistically weak.

These characteristics imply that the resulting beta estimates should be interpreted with caution. In particular, short-term movements in estimated beta, such as the reduction observed between the BERC 2025 report and the BERC 2026 report, may reflect the influence of specific periods within the sample (e.g. high-volatility episodes), rather than a persistent change in underlying systematic risk.

In the context of a regulatory WACC that is intended to apply over a multi-year horizon, this sensitivity demonstrates that the latest calculated asset beta values do not represent a stable and appropriate forward-looking estimate of risk.

The BEREC peer group is unrepresentative of TDC NET operating in Denmark

As stated above, the peer group used by BEREC is not representative of TDC NET's operations, since it mostly consists of large (in some cases multinational) operators that are operating at national/international scale within larger markets than Denmark. In this section, we identify further shortcomings in the peer group with respect to the comparability to TDC NET in terms of credit rating.

We observe that the TDC NET company credit rating of BB is lower than that of all but two of the 14 operators in BEREC's peer group (and is lower than all those within the subset of the peer group previously used by the DCCA), as shown below in Figure 3.5.¹³

Credit rating (S&P/Fitch)	DCCA peer group members (S&P)	Other BEREC peer group members (S&P)	TDC company ratings (Fitch)
A			
A–	Telekom Austria	Telenor	
BBB+	Deutsche Telekom, Elisa, Orange, Telia Company, Proximus		
BBB	KPN, Tele2, Vodafone Group plc		
BBB–		NOS, Telefónica	TDC NET Senior Secured Debt ¹⁴
BB+			
BB		Telecom Italia ¹⁵	TDC NET
BB–		DIGI Communications	
B+			
B			TDC Brands

Figure 3.5: Comparison of company credit ratings, as of 2026 [Source: BEREC 2026 report, Fitch, 2026]

DIGI Communications, NOS, Telecom Italia and Telefónica are the four peer group members with the most similar credit rating to TDC NET. However, all other peer group members have credit ratings significantly higher than TDC NET.

The two peer group companies with the closest credit rating to TDC NET (Telecom Italia and DIGI Communications) both experienced increasing asset beta values in the latter part of 2025 and early 2026, as can be observed in Figure 3.6 (indicated by red arrows).

¹³ The BEREC 2026 report states Fitch ratings where available for peer group companies (see page 96 at the start of Annex 3). These ratings appear to correspond to the Fitch Issuer Default Rating (IDR) for that company. The Fitch rating for a company is largely the same as the S&P rating, although there can be minor variations (e.g. for NOS the S&P rating is BBB–, whereas the Fitch rating is BBB).

¹⁴ TDC NET Senior Secured Debt has a separate rating by Fitch, so we include this for completeness.

¹⁵ [Telecom Italia](#) has had its credit rating increased to BB+ by both S&P and Fitch since mid-May 2026.

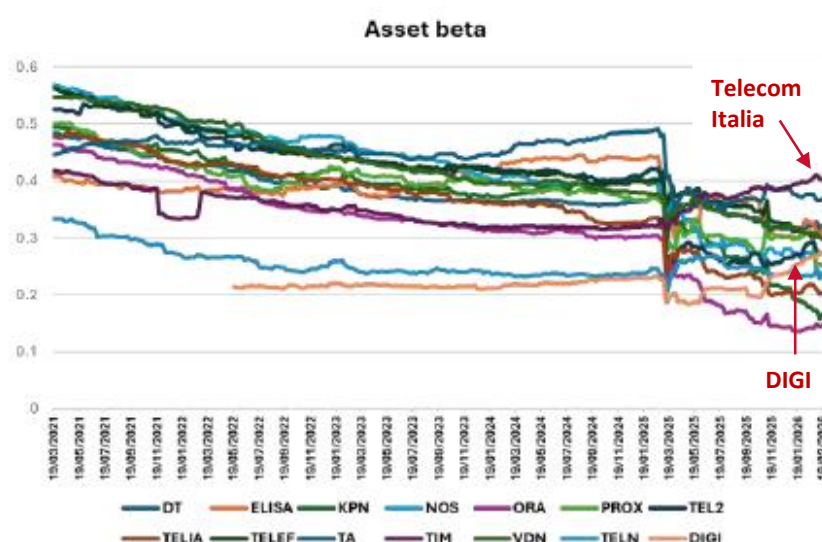


Figure 3.6: Rolling asset beta calculated for each member of the BEREC peer group¹⁶
[Source: BEREC 2026 report, 2026]

In our view, the reduction in asset beta that is observed on average across the BEREC peer group operators is unlikely to apply to TDC NET. Instead, it is more likely that a hypothetical asset beta for TDC NET would behave more similarly to the operators within that peer group with the most similar credit rating – i.e. the asset beta could have actually increased over the past year.

The fact that TDC NET has a credit rating below the DCCA peer group is not a new phenomenon, but has been the case since at least 2022, as can be seen below in Figure 3.7. This figure also shows that the credit ratings for peer group members have in general been largely stable since 2020.

Figure 3.7: Distribution of the nine peer group companies used by the DCCA by credit rating over time
[Source: BEREC reporting, 2020–2026]

Credit rating ¹⁷	2020	2021	2022	2023	2024	2025	2026
A	1	1	1				
A–				1	1	1	1
BBB+	5	4	4	4	5	5	5
BBB	3	4	4	4	3	3	3
BBB–			Fitch rating for TDC NET Senior Secured Debt				
BB+							
BB			Fitch Long-Term IDR for TDC NET				
BB–							
B+							
B			Fitch Long-Term IDR TDC Brands/Nuuday				

¹⁶ This is a reproduction of Figure 4 from the BEREC 2026 report, with the value of the line shown for each operator on the chart being the value reported in Table 8 of the BEREC 2026 report.

¹⁷ Credit ratings are as per both Standard & Poor's (S&P) and Fitch. Both credit agencies use the same rating designations. In the case of the nine peer group companies used by the DCCA, where both agencies have assigned consistent ratings over time according to the BEREC WACC Parameter reports for the years 2020–2026.

This importance of comparable credit ratings is not just an artefact of the BEREC methodology, but is a central part of it. In Section 4.3 (page 28) of the BEREC 2026 report, it is described how the debt premium is estimated for peer group companies that do not have qualifying corporate bond issues. BEREC describes how it uses the interest rates on corporate bonds issued by other peer group companies with the same credit rating as a proxy. This step is applied for Elisa, Tele and DIGI Communications. BEREC determines that this step cannot be applied for Telekom Austria and NOS due to a lack of other peer group operators with the same credit rating, meaning that there is no suitable proxy.

In particular, BEREC considers that the credit rating needs to be identical (not similar) in most cases.¹⁸ Applying this principle, as used by BEREC, means that almost none of the peer group can be seen as comparable to TDC NET (only DIGI Communications and Telecom Italia have a BB(±) rating) and therefore the peer group used by the DCCA is not comparable to TDC NET.

Therefore, we conclude that applying peer group averages of asset beta and debt premium to TDC NET cannot be considered representative and is an error on the part of the DCCA.

The asset beta may have decreased, but this is not likely to be a permanent realignment

Our understanding of the BEREC 2026 report is that the methodology, the peer group and the source for the input data all appear to be unchanged between 2025 and 2026. The calculated rolling asset beta by operator over time (shown in Figure 3.6 above) nonetheless exhibits a very sharp drop for many peer group operators in 2026.

The DCCA should ensure that any reduction in asset beta is a persistent change, otherwise the LRAIC model will be calibrated using an unrepresentatively low asset beta for an extended period. Even if the current asset beta reflects market conditions today, telecoms operators have faced materially higher levels of risk over significant parts of the modelled period of the LRAIC model. As a result, a temporarily low asset beta may lead to a WACC that is understated for short-term reasons but nonetheless applied across the entire modelling period.

This leads to two important observations:

- 1) Asset betas have, on average, declined following the market disruption caused by the introduction and subsequent increase of US tariffs in March 2025, but this decrease is not universal.
- 2) Examination of the rationale for these decreases (in cases where there has been a decrease) suggests that they may be temporary reactions to a macroeconomic shock rather than a permanent realignment of asset betas.

We have described the implication of Point 1 in the sub-section above in the context of the (lack of) representativeness of the BEREC peer group for TDC NET. In particular, we observe that the

¹⁸ For example, BEREC takes the view that a company with a BBB rating must be approximated with companies that also have a BBB rating. The exception is for the lowest credit ratings, where BEREC assumes Digi Communications (rated BB-) can be approximated using Telecom Italia (rated BB).

trend in asset betas for operators with more similar credit ratings to TDC NET is very different from the decrease observed for peer group operators with higher credit ratings.

In this sub-section, we focus on Point 2. BEREC argues that during times of macroeconomic volatility and geopolitical turbulence, investors perceive telecoms operators as defensive stock with a reduced beta.

It is possible that this hypothesis is correct, but it is not clear to us how widespread such a 'defensive stock sentiment' may be, nor how persistent any such sentiment might be.

Impact on WACC calculation

Unlike the debt premium, an asset beta directly applicable to TDC NET cannot be calculated since TDC NET is not a listed company. In these circumstances, benchmarking against the BEREC peer group may therefore represent the most appropriate way to estimate an asset beta. Nonetheless, account should be taken of the volatility and sensitivity of the calculation methodology, as well as the likely temporary nature of the sharp average decreases observed in 2026. Given the relative stability of the measure over the last few years, prior to 2026, we find that the 2025 benchmark average asset beta should be reverted to in order to avoid an unrepresentative distortion in the WACC calculation.

The impact of reverting the asset beta estimate from 0.27 to 0.36 (in isolation) would be to increase the WACC from 5.5% to 6.1%.

3.3 Size and illiquidity premium

In this section, we describe how the DCCA's CoE calculation does not factor in an Illiquidity or size premium and why we find that such an adjustment should be applied to determine a more realistic WACC for TDC NET.

Again, this issue has previously been raised by Analysys Mason. However, we have again not observed any change in the DCCA's approach to the CoE calculation, nor any justification as to why the points previously raised have been disregarded. As such, we provide below a detailed summary of the BEREC methodology, its weaknesses, our proposed approach and relevant precedent. For further details on this matter, please refer to our previous submissions to the DCCA.¹⁹

BEREC methodology

In line with the 2019 EC WACC Notice, the CoE is estimated using the Capital Asset Proxy Model (CAPM) framework, defined as the RFR plus the equity beta multiplied by the equity risk premium.

The standard CAPM framework does not explicitly provide for separate or additional adjustments to the CoE beyond these parameters. Accordingly, BEREC does not include an explicit size or illiquidity adjustment in its reference WACC calculations.

¹⁹ These submissions are referenced in footnote 8.

At the same time, the 2019 EC WACC Notice does not explicitly preclude deviations from the BEREC methodology where the CAPM parameters are considered insufficient to reflect the relevant risk profile. Such deviations may be considered on a case-by-case basis, provided they are well justified and that double counting of risks is avoided.

Application of CoE adjustments in the case of TDC NET

In the Danish context, the CoE applied to TDC NET is too low because it does not factor in a size or illiquidity premium, while relying on an asset beta that is the average of BEREC peer group benchmarks.

Financial theory and empirical evidence indicate that both liquidity and liquidity risk should be captured within required returns (on equity).²⁰ As the notional (asset) beta and gearing used to derive the CoE is currently still estimated from a peer group of listed companies with liquidly traded shares, illiquidity-related effects relevant for unlisted operators are unlikely to be reflected in standard CAPM inputs. This would lead to an understatement of the CoE assumed for unlisted operators, such as TDC NET.

Proposed approach

To enable the application of the BEREC methodology and 2025 peer-group average asset beta to TDC NET, we propose that adjustments to the CoE are required to reflect size and illiquidity effects.

► *Size premium*

XX

We therefore propose that a 0.95% pre-tax CoE adjustment should be applied to act as a size premium on the BEREC peer group asset beta.

► *Illiquidity premium*

The DCCA should consider an explicit illiquidity adjustment when calculating the WACC for TDC NET. This is because illiquidity-related effects are not captured in the BEREC methodology, as all the companies in the peer group are listed entities. Therefore, while the BEREC methodology and its peer group may be appropriate for large-scale listed companies, this adjustment is required when considering smaller-scale unlisted companies (like TDC NET).

The Danish regulator has for many years assumed efficiency improvements in TDC NET's fixed network infrastructure operations (in the most recent model developed in 2019–2020, this is already captured through assumptions such as the opex productivity time series on the 1D INP NW EVO worksheet). Since taking ownership of TDC NET, Macquarie Asset Management (MAM) has

²⁰ See, for example, Amihud and Mendelson (1986) on liquidity level (bid–ask spreads) and expected (i.e. required) returns; Pástor and Stambaugh (2003) on liquidity risk being priced; Amihud (2002) and related work on liquidity co-movement and predictability of returns (e.g. Chordia et al., 2001; Jones, 2001; Bekaert et al., 2003).

overseen efficiency improvements that in some way respond to this implicit expectation of the regulator.

However, delivering such efficiencies (i.e. the regulator's anticipated savings for end users) involves risk that is borne primarily by shareholders, as prices are set *ex ante* and do not adjust if efficiencies prove harder to achieve. For an illiquid, concentrated investor such as MAM, this risk is magnified by the inability to diversify or exit. It is therefore economically consistent that, where regulation embeds persistent efficiency gains for the benefit of customers, the permitted return on equity reflects the higher liquidity and execution risks faced by the shareholders delivering them.

In relevant academic literature, Professor Damodaran²¹ shows that the difference between the bid price and ask price ('bid-ask spread'), which is a proxy for company liquidity, varies widely across firms. He documents that the bid-ask spread, expressed as a percentage of the share price, is approximately 0.5% for shares of large companies and above 6% for shares of small companies, underscoring that liquidity costs can be economically significant. Empirical asset-pricing evidence also indicates that higher bid-ask spreads are associated with higher required returns.²²

Investors expect extra return for assets that are hard to trade. A 2021 study by Amihud and Noh shows this 'illiquidity premium' stays clearly positive even after accounting for temporary mispricing, market mood and seasonal patterns.²³ Implicitly, the BERE peer group, made up of very liquid listings, can understate conditions faced by unlisted operators.

The magnitude of any adjustment for illiquidity is a judgement. We summarise evidence we have identified in Figure 3.8.

Figure 3.8: Overview of studies related to adjustments for illiquidity [Source: Analysys Mason, 2026]

Literature	Range of values	Midpoint
Barick (2024), <i>Pricing the Illiquidity Premium for Private Market Assets</i> ; available here	2.60–2.73% ²⁴	2.67%
Mackenzie Investments (2024), <i>Illiquidity: your hidden superpower</i> ; available here	3.10–3.40%	3.25%
Crystal Capital (2025), <i>Illiquidity Premium: How Much Is It Worth in Private-Equity Returns?</i> ; available here	2.00–6.00%	4.00%
Arithmetic mean	2.57–4.04%	3.31%

²¹ A. Damodaran (Stern School of Business) (2005), *Marketability and Value: Measuring the Illiquidity Discount*; available [here](#). See page 6, which itself cites T. Loeb (*Trading Costs: The Critical Link Between Investment Information and Results*, Financial Analysts Journal, 1983).

²² This is stated in, for example, the paper by Y. Amihud and H. Mendelson (1986), *Asset Pricing and the Bid-Ask Spread*.

²³ Y. Amihud and J. Noh, The Review of Financial Studies (2021), *Illiquidity and Stock Returns II: Cross-section and Time-series Effects Get access Arrow*; available [here](#).

²⁴ We rely only on Experiment II (observed private-market hydropower data) and do not use Experiment I (Damodaran industry dataset), to prioritise evidence from actual private-market observations over a generic industry average.

As shown in Figure 3.8, the arithmetic mean of the lower bounds across the cited literature is 2.57%, while the arithmetic mean of the upper bounds is 4.04%. This implies a central estimate (midpoint) of 3.31%, which is equivalent to the arithmetic mean of the study midpoints. Rounded to the nearest 0.1 percentage point, this gives a 3.3% post-tax illiquidity adjustment that can be applied to TDC NET, as an unlisted SMP operator.

Precedents

There is limited direct precedent in telecoms regulation in the EU for an explicit size or illiquidity adjustment. However, this is related to the fact that, historically, very few unlisted SMP operators in the EU have required consideration of illiquidity in the regulatory WACC. We note that some NRAs have still applied national adaptations adjusting the CoE within their WACC calculations, as shown in Figure 3.9 below.

Figure 3.9: Country-specific adaptations for the CoE [Source: BEREC reporting, 2025]

Country	Description
Ireland	Annually updates the CoE through a specific adjustment applied to the 2020 estimation
Serbia	Adjusts the overall CoE methodology to reflect national circumstances

Impact on WACC calculation

The impact of the above change (in isolation) would be to increase the WACC from 5.5% to between 6.0% and 7.3%.

3.4 Summary of the impact of proposed changes

The combined impact of the three changes set out above (increased debt premium, reversion to 2025 benchmark average asset beta and incorporation of a size and illiquidity premium) would be to increase the WACC from 5.5% to between 7.5% and 8.8%.

3.5 Use of short-term WACC in a long-term model

In the single-year LRAIC models used by the regulator up until 2020, the WACC was used only to annualise modelled capex through the tilted annuity formula. As a result, the WACC for a given year affected only that year's annualised capex, whilst modelled opex was recovered through in-year charges and was not exposed to under-recovery risk. A nominal WACC was therefore calculated for each year independently, with no impact on past or future costing calculations.

By contrast, in the multi-year model developed in 2019–2020, the nominal WACC is used in the economic depreciation calculation for both capex and opex on the "6D CALC ECO DEP" worksheet. This requires net present values (NPVs) for capex, opex and demand to be calculated across the full 2005–2079 modelling period. As a result, the WACC is applied not only to capex in a single year, but to capex, opex and demand over a 75-year period.

The central objective of economic depreciation is to ensure incurred costs are recovered in an economically rational manner, so that total cost-oriented revenue over the lifetime of the business equals incurred costs (including cost of capital), in NPV terms. This is expressed as the following formula:

$$NPV(\text{cost oriented revenue per unit} \times \text{service demand}) = NPV(\text{capex}) + NPV(\text{opex})$$

Since the calculation of the cost recovered needs to reflect the time value of money, the discount factor on cashflows used is the assumed WACC of the modelled operator. The calculation is carried out for each individual asset class, rather than in aggregate, in order to allow any variation in asset cost trends to be reflected.

The key element of the calculation is a whole-lifetime ratio calculated for each asset, which is:

$$\frac{NPV(\text{capex incurred over time}) + NPV(\text{opex incurred over time})}{NPV(\text{asset output over time, weighted by unit capex over time})}$$

It is this step of the calculation that demonstrates that a more long-term view needs to be taken on the WACC, since capex, opex and service demand (weighted by routeing factors to derive asset output, referred to as production factors in the LRAIC model) are all key parts of the calculation.

We previously conducted several tests in our September 2025 report to demonstrate the impact of applying a short-term WACC in a long-term model. XX shows how capex, opex and demand vary over time for a selected fibre asset in the LRAIC model as of August 2025 (the asset "Civil infrastructure.Fibre trenches (SDP-FDP) – Urban.length"). It shows that:

XX

The assumed WACC therefore needs to reflect business risk across the full modelling period.

XX displays the split of the NPV across all fibre-related assets in the LRAIC model as updated in August 2025.

XX

In Figure 3.10 below, we compare the NPV values in the economic depreciation calculation for the 'Civil infrastructure.Fibre trenches (SDP-FDP) - Urban.length' asset in the draft updated LRAIC model under a range of WACC assumptions:

- 4.50% (value used in the 2021 final LRAIC model)
- 4.90% (value used in the 2025 draft updated LRAIC model)
- previous values imposed over the period 2005–2026,²⁵ and the arithmetic average of those values for all future years (5.98%).

²⁵ The WACC values for 2005–2020, based on models previously released by the DBA, are 10.85%, 8.50%, 8.60%, 8.85%, 8.00%, 7.70%, 6.90%, 6.40%, 5.40%, 4.70%, 5.34%, 4.76%, 4.28%, 5.04%, 4.72% and 4.56%, with the value imposed by the DBA for 2021–2026 effectively equal to 4.50%.

This final test can be implemented in the LRAIC model with some simple changes to allow the WACC to vary over time. We think this would solve the issues described above, since it:

- reflects past regulatory WACC decisions and a long-term view of the future WACC
- would still be consistent with BERC's recent approach to spot-rate WACC calculations.

Figure 3.10: Comparison of the NPV values in the economic depreciation calculation under different WACC assumptions [Source: Analysys Mason analysis, 2025]

Test	Values	NPV of expenditure	NPV of unit capex-weighted output	Ratio
1	4.5%	XX	XX	0.000245
2	4.9%	XX	XX	0.000260
3	Regulated values to 2026: 5.98% thereafter	XX	XX	0.000289

These tests demonstrate the importance of the WACC across all years. When comparing tests 1 and 2, the higher WACC values reduce the NPV of expenditure, however, they reduce the NPV of output by a larger percentage (since a higher proportion of all demand occurs in the future years compared with all expenditure). This leads to the net-overall increase in the ratio of the two NPVs and therefore a higher economic-cost-per-unit output (in all years, not just 2027 onwards, but also 2005–2026).

Where we assume a higher WACC in future years in our test, future demand is therefore discounted more heavily (this implicitly means that future demand is given less weight in the economic depreciation calculation, which would be prudent given its greater uncertainty), and therefore leads to a higher value of economic cost per unit output.

4 Setting an appropriate fibre risk premium

Analysys Mason has described issues with the fibre risk premium in previous reports submitted to the DCCA in 2025 concerning the LRAIC model.

The issue can be split into three parts:

- capturing the fibre risk premia in the model that have already been permitted through past regulation, in Section 4.1
- XX an additional WACC premium, in Section 4.2
- capturing future risk in the fibre networks business, in Section 4.3.

We describe these in turn below.

4.1 Capturing past fibre risk premia

No fibre risk premium was considered in the DBA's original fibre cost modelling and price regulation applied to TDC NET in 2010–2014. However, a fibre risk premium of 1% for new fibre network deployments by TDC NET was applied in the cost models used for regulatory pricing in 2015–2017, which was increased to 2% for the period 2018–2020. This premium did not apply to the fibre network that TDC NET acquired from DONG Energy in 2009.

No fibre risk premium was included in the 2021 final LRAIC model. In the final hearing note for the 2021 final LRAIC model, the DBA stated:²⁶

“Regarding the risk premium, as stated in previous consultations, it is a matter that will be finally decided in the case of pricing decisions.”

However, no such decision was taken, at least according to the documentation of the pricing decisions. It was merely stated that:²⁷

“calculated LRAIC spreads for TDC, whereas for Norlys and EWII the figures are based on the estimated costs of building a fibre network using either passive optical network (PON) or point-to-point (PTP) technologies (with or without a risk premium [risikopræmie] of 2%). Based on this range, the DBA has assessed the Commitment prices.”

The DBA's view of the fibre risk premium is therefore unclear since it was used to assess prices for the Commitments but was not included in the final model's base case. Given that it was used as part of the assessment, we would conclude that the DBA still considered the fibre risk premium applicable during the Commitment period of 2022–2026.

²⁶ See page 33 of the third DBA consultation report, available [here](#).

²⁷ See page 33 of Appendix 3 of the DBA decision for TDC NET, available [here](#).

Given that this premium should not be applied to the fibre infrastructure acquired from DONG Energy, the past fibre risk premium values can be scaled by the following ratio in each year.

$$1 - \frac{\text{DONG fibre premises passed}}{\text{Total TDC NET fibre premises passed}}$$

The DBA has previously used the assumption that the DONG Energy footprint passed 112 334 premises as of 2015, which can be used as an input to this calculation.²⁸

In previous submissions, Analysys Mason has averaged the resulting premiums over the period from 2005 to 2038 (which is only nonzero in the period 2015–2026) to give an average fibre risk premium value of 0.43%.

During the latest Commitment process, the DCCA did not accept a nonzero fibre risk premium. For the 2026 updated model, the DCCA has not taken an explicit position on the fibre risk premium.

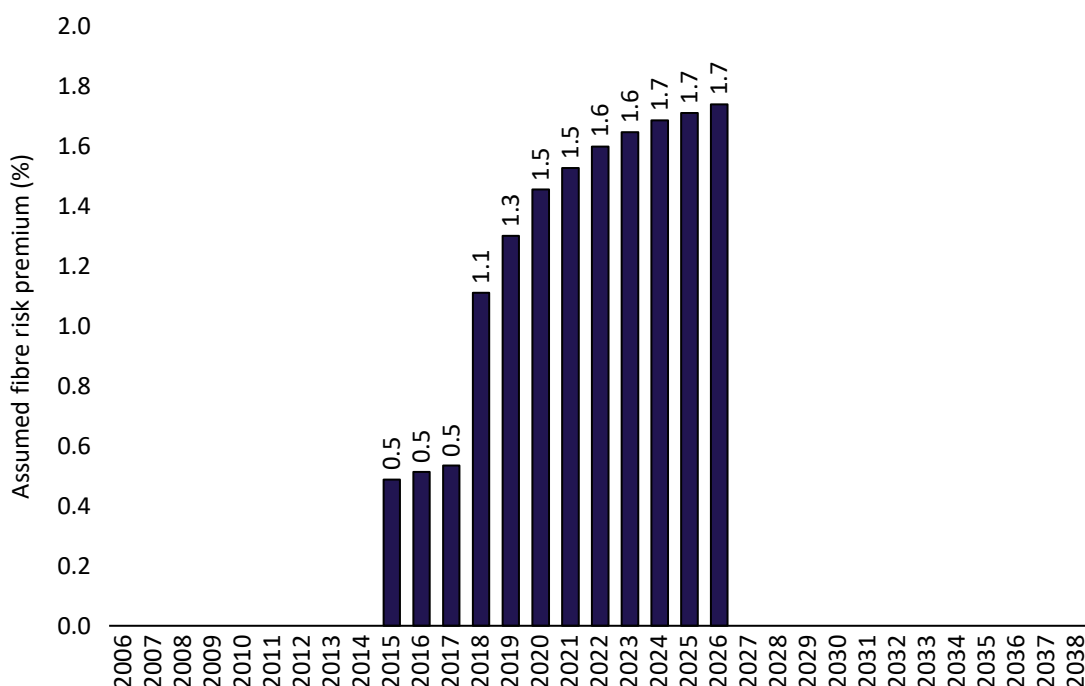
It is our understanding of the model implementation that the fibre risk premium applies over all modelled years. The past fibre risk premium should be reflected in the current version of the LRAIC model, otherwise it will not capture the permitted cost recovery of past TDC NET investments made at the time when a fibre risk premium explicitly applied.

This is an example of the limitations arising from the chosen structure of the DCCA's LRAIC model: in particular, a single-value fibre risk premium entered on the COVER worksheet is applied. In our view, the averaging approach that Analysys Mason has previously put forward is a pragmatic way to incorporate the minimum required level of fibre risk premium within the confines of this model structure.

As an alternative mode of implementation, we have modified the calculations in cells '6D CALC ECO DEP'!F16:CB265 of the latest model to allow the testing of a fibre risk premium that is nonzero only in the years 2015–2026, with the adjusted values as shown Figure 4.1 below.

²⁸ See page 20 of the previous model documentation, available [here](#).

Figure 4.1: Assumed fibre risk premium over time [Source: Analysys Mason, 2026]



Our finding is that the model produces almost identical cost per line results using either: (a) the single value of 0.43%, applied across all years; or (b) the time series as shown above in Figure 4.1.²⁹

A fibre risk premium was explicitly applied to TDC NET in the past and therefore should be captured in the LRAIC model. The DCCA should reflect the past fibre risk premium in multi-year terms using either of the modelling approaches we have proposed, but its impact should not be ignored (as it currently is).

In particular, this fibre risk premium being excluded affects the discounting of the capex, opex and demand in the economic depreciation over all modelled years. Its exclusion means that future demand and costs are given excessive weight in the NPV calculation, leading to underestimated economic cost per unit output for the modelled services, meaning that final cost results are too low.

4.2 Additional premium for XX

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²⁹ For the POI2 fibre BSA service, the model produces a cost per line of DKK2687 in 2027 in case (a) and DKK2681 in 2027 in case (b).

4.3 Capturing future risk in the fibre networks business

As described in Section 4.1, the assumed fibre risk premium should be set to 0.43% to reflect the impact of past fibre risk premia. We also maintain that it remains appropriate and necessary for the DCCA to apply a fibre risk premium.

In our previous submission of September 2025, we identified six countries (Belgium, Czechia, Croatia, Italy, Poland and Slovenia) that have applied a risk premium for 7 years or more and that in the case of Croatia, Italy, Poland and Slovenia, the premium was still being applied even though fibre coverage in the country was over 70% in terms of premises passed.

It is also the case that EU Member States are still introducing a fibre risk premium for the first time as part of the continued evolution of fibre markets (recognising that such a risk premium is a reasonable assumption to make). In particular:

- the Greek regulator used a risk premium of 1.86% for the first time in its most recent decision (Case EL/2026/2629, March 2026)
- the Luxembourg regulator used a risk premium of 1% for the first time in its most recent decision (Case LU/2026/2630, April 2026).

The specific multi-year, nominal-terms modelling approach chosen and used by the Danish regulator exposes TDC NET to more risk compared to the approaches taken by other EU Member States, which tend to be single-year calculations. This increased risk arises because:

1. Economic depreciation spreads cost recovery over time, meaning that since the previous hypothetical growth in active lines too aggressive (and the assumed WACC too low), this has real-world impacts on TDC NET in terms of XX.
2. Moreover, the continued uncertainty in future demand gives rise to similar risks going forward.
3. Applying a short-term WACC to a long-term model that is lower than the longer-term average WACC causes the model to underestimate cost recovery over time, by (among other effects) placing excessive weight on the assumptions of future demand.
4. Assuming no risk premium has ever occurred in the modelling period, even though it is known to have occurred for years in the past, distorts the cost recovery profile of the multi-year model.

We have already demonstrated these effects in this response and the DCCA can see that under-recovery will occur if these effects are not addressed. The DCCA should therefore apply a fibre risk premium to mitigate these known effects, as well as any future demand/capital risk that may arise as fibre roll-outbuild is completed and the network enters a more mature phase during the next regulatory period.

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Based on the analysis conducted in Sections 4.2/4.1, a risk premium of $0.91\% + 0.43\% = 1.34\%$ should be applied to mitigate the first and fourth effects above.

For the second and third effects described above XX. To mitigate XX, a risk premium of 1.49% can be applied.

The table below summarises our approach to determining all of these effects. The total impact is higher than 2% and means that retaining the historical 2% risk premium for the next regulatory period would be reasonable.

Figure 4.2: Calculation of risk premium components [Source: Analysys Mason, 2026]

Effect	Model in factual case	Model in counterfactual case	XX	Additional premium for 2027–2031
1	2021 Commitments model	2021 Commitments model with XX	XX	0.91%
2 and 3	July 2026 model	July 2026 model with XX	XX	1.49%
4	See above	See above	XX	0.43%
TOTAL				2.83%

5 Network assumptions

In this section, we describe issues with the network assumptions in the 2026 updated model, including consideration of the geospatial modelling of the coax network. This includes:

- shortcomings in the modelled geotypes, in Section 5.1
- modelling of cabling in road crossings, in Section 5.2
- outdated fibre final-drop inputs, in Section 5.3.

5.1 Heterogeneity across geotypes

In the original model development in 2020, three geotypes were defined (urban/suburban/rural) based on TDC NET's central office (CO) areas in order to differentiate digging costs. In that model, since TDC NET's actual cost inputs were used, the definition of these geotypes was not of particular importance. However, in the 2026 updated model, now that a generic cost benchmark approach is being applied, the degree of homogeneity within each geotype is of significant importance as it ensures that the geotype-specific digging costs derived for the model (and other geographically different aspects such as cable installation costs, planning complexities etc.) are not distorted.

We demonstrate in this section that the geotypes are in fact not at all homogeneous, meaning that the DCCA's approach to deriving digging costs is flawed. Furthermore, the unique characteristics of Hovedstaden (Capital Area) mean that the assumption of geotype homogeneity led to specific impacts on TDC NET (the same issues may not affect operators whose network deployments are predominantly located outside Hovedstaden).

In the original model development in 2020, three geotypes were defined (urban/suburban/rural) based on TDC NET central office areas. These were defined in order to differentiate digging costs

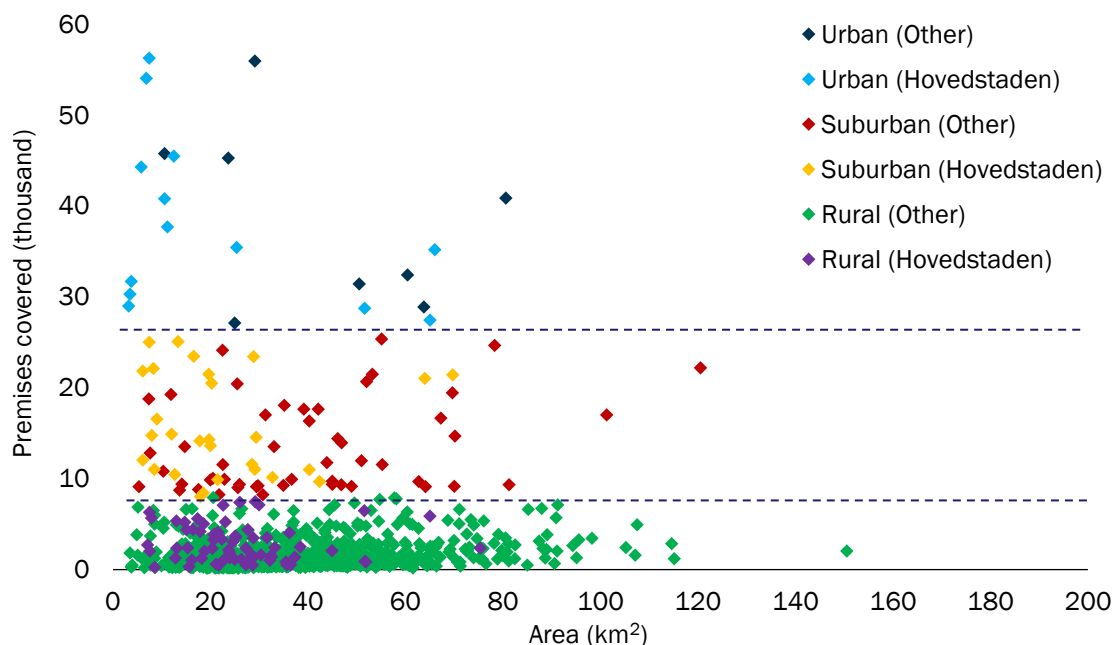
Using the building locations from the R model and TDC NET's actual CO polygons, Analysys Mason has been able to back-calculate the definition of the geotypes within the model and then subdivide the geotypes into those areas inside Hovedstaden and outside Hovedstaden. This has allowed Analysys Mason to effectively define six 'subgeotypes':

- urban (Hovedstaden)
- urban (other)
- suburban (Hovedstaden)
- suburban (other)
- rural (Hovedstaden)
- rural (other).

The three Hovedstaden subgeotypes are therefore highly relevant to TDC NET's fibre footprint, whilst the other three subgeotypes are more applicable to the other operator footprints (and much less relevant to TDC NET).

We have been able to recreate Exhibit 6.1 from the R model manual, but differentiating between TDC NET COs in Hovedstaden versus elsewhere. This is shown below in Figure 5.1.

Figure 5.1: Recreation of Exhibit 6.1 from the R model manual, but distinguishing between COs located within and outside Hovedstaden [Source: Analysys Mason, 2025]



We have then compared the distribution of COs based on building density for these six geotypes, using the R model building locations (mapped to the CO polygons) and area of TDC NET's CO polygons. We consider building density to be a much better proxy (and best practice for network geotyping in telecoms network cost models)³⁰ for the average surface distribution (and therefore average digging cost) rather than just the number of premises in the COs as used in the R model. A higher building density will imply a higher proportion of non-Earth surfaces, given that the closer average proximity of premises will imply a greater concentration of connecting roads, adjacent pavements, paved precincts, and therefore a greater likelihood of having to dig through higher-cost surfaces (rather than Earth).

Figure 5.2: Comparison of modelled geotypes [Source: Analysys Mason, 2025]

Geotype	Building density per km ² (current modelled geotypes)	Building density in Hovedstaden subgeotype (A)	Building density in other subgeotype (B)	Ratio (A/B)
Urban	XX	XX	XX	XX
Suburban	XX	XX	XX	XX
Rural	XX	XX	XX	XX

³⁰ For example, the model developed by TRAFICOM, the Finnish regulator, used geotypes defined by building density and de-averaged trench costs by geotype group. The cost models developed and used by the Danish regulator during 2003–2014 also used geotypes defined by line density and de-averaged digging costs by these geotypes (Storby, By, Land A and Land B).

Scatter plots of the urban/suburban/rural COs are provided below. These demonstrate that:

- densest COs (with a density of >828 buildings per km²) only occur in Hovedstaden
- there are no suburban Hovedstaden central offices with a density <180 buildings per km².

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Figure 5.3: Scatter plots of the COs by building density for the urban, suburban and rural geotypes respectively
[Source: Analysys Mason, 2025]

Our analysis shows that the Hovedstaden subgeotypes each differ greatly on average from the remaining areas within the geotypes of the LRAIC model.

Therefore, we do not consider that the DCCA's derivation of generic digging costs by geotype, with a simple 10% uplift and 5% downlift for each of the Hovedstaden/Other subgeotypes, is appropriate. It is clear from these charts that the geotypes as currently modelled are not homogeneous. Consequently, applying a simple averaging adjustment across geotypes introduces distortions and does not yield representative estimates of deployment costs by area.

Fundamentally, only TDC NET's actual costs in the Hovedstaden area can be considered representative of the costs of TDC NET. Put another way, the current DCCA approach assumes that urban areas in Hovedstaden exhibit the same cost characteristics as urban areas in other parts of the country. This assumption is not supported by the evidence – these urban areas have very different characteristics and the densest areas are unique to TDC NET's network and actual cost base.

A diagram of how the premises would be split under our building density geotypes is shown below.

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Figure 5.4: Distribution of premises according to our definition based on building density
[Source: Analysys Mason, 2025]

As this definition clearly shows, TDC NET is the only operator with a significant network presence in the densest part of the country (namely the Capital Area). As a result, it is disproportionately exposed to the highest digging costs per metre, while having comparatively limited network coverage in the least dense areas, where digging costs per metre are lowest.

When comparing the modelled geotypes with respect to the Hovedstaden areas versus other areas, clear differences are apparent in terms of building density. In our view, the geotypes as currently defined cannot be used for costing different network footprints since they are not homogeneous. To minimise the uncertainty in this part of the cost calculation, we therefore

conclude that TDC NET's own access network deployment costs should be applied in the TDC NET model.

5.2 Road-crossing cable

Based on our review of the latest model, road-crossing trenches appear to be dug without any associated cable deployment. We consider this to be a material omission of cabling assets from the modelled network, particularly given its use for price-setting purposes, and therefore believe it should be corrected.

Figure 5.5 provides an example of part of the coax network in which the R model assumes that buildings on both sides of road sections (Section ID: 455895 and 455896) are connected to the network. However, the corresponding road crossings are not currently included. To reflect the assumed service coverage and maintain network continuity, road crossings should be added for both road sections.



Figure 5.5: Example of part of a coax cable network [Source: Analysys Mason, 2026]

When reviewing the R model's intermediate output for coax cable length by road section (by adding code "write.xlsx(T_B_CMC_Route, "Final Coax cables.xlsx")" after line 169 in the "OJ_FUN_COAX" script in the R model), we found that only the cable length associated with the

road sections themselves is reflected in the final calculation for these two road sections. The R model does not appear to include any additional cable length for road crossings, resulting in an understatement of the coax cable required to serve premises on both sides of the road (see Figure 5.6).

Figure 5.6: Coax cable length for the road sections (Section ID: 455895 and 455896) exported from the R model [Source: Analysys Mason, 2026]

A	B	C	D
Node_CO_ID	Section_ID	Distance_by_Road	
82802	163	455895	237.7763141
277460	163	455896	234.4607735

However, road crossings were added for these two road sections in the coax trench network calculation in the R model. Figure 5.7 shows the coax trench network length by road section exported from the R model by inserting the code "write_xlsx(p_Sections_Trenches_sup, "Coax trenches house to CMC.xlsx" after line 276 of the "OK_FUN_COAX_PASSIVE" script. The output table shows that road crossings of 70 metres and 84 metres have been included for road sections 455895 and 455896, respectively. This creates an inconsistency between the trench and cable calculations, as the road-crossing lengths appear to be captured in the trench network but omitted from the corresponding cable network.

Figure 5.7: Coax trench length for the road sections (Section ID: 455895 and 455896) exported from the R model [Source: Analysys Mason, 2026]

A	B	C	D	E
Section_ID	Node_CO_ID	Final_Distance	trench_add	Distance_by_Road
455895	163	237.7763141	70	237.7763141
455896	163	234.4607735	84	234.4607735

5.3 Outdated input regarding the reduction of fibre final drops

In our consultation response of November 2025, Analysys Mason identified one further error in relation to the reduction of final drops when applying a 30 metre limit on final drops being admitted to the cost base.

The cell "inp.nw.drop.limit" is a proportion used to reduce the final-drop lengths for the modelled fibre-to-the-home (FTTH) networks if the cell "selection.30m.limitation" on the COVER worksheet is set to Yes. Specifically, the average final-drop lengths allocated to the recurring charge are adjusted by this factor to reflect a maximum final-drop length of 30 metres in the recurring charge cost base (any additional drop length is assumed to be recovered through separate one-off fees).

A value of 18.78% is used for the proportion, meaning that the final-drop lengths are multiplied by 81.22%. This value has been in place since the third draft model developed in 2020.

Additionally, an input called “inp.nw.year.drop.limit” on the “1C INP NW” worksheet is intended to lift the 30 metre final-drop restriction after this input year (assumed to be 2019). However, this input does not appear to be used in any formula in the model. Since the input “inp.nw.year.drop.limit” is not being used, if the input “selection.30m.limitation” is set to “Yes,” then the final-drop length reduction is applied in all modelled years for the FTTH network. We presume that this is an error, since the 30 metre limitation has not always been in place, and the model should be turning off the final-drop restriction after the correct year.

Regardless of whether the reduction in modelled final-drop length is appropriate, we consider that the input is out of date. We have estimated a more up-to-date value using the FTTH footprint in the current version of the R model (XX million buildings). To do this, we have estimated the final-drop lengths for these buildings using the straight-line lengths derived from the co-ordinates (Origin_Coordinate_X, Origin_Coordinate_Y) and (Destination_Coordinate_X, Destination_Coordinate_Y) in T_Buildings, marked up by 20%. We then calculate the following ratio:

$$1 - \frac{\text{Total final drop length, capped at 30 metres}}{\text{Total final drop length}}$$

This leads to a lower proportion of XX%, which should be updated in the model.

The fact that the input is outdated is unsurprising given that it was derived in 2020 and the modelled footprint has been revised on at least two occasions since.

The DCCA was informed of this issue in November 2025, but did not address it.

Given that the model is now being used to set wholesale prices for TDC NET, rather than just to carry out a broad assessment of commitment prices, the DCCA should take utmost account of all potential errors and correct those that are found to be genuine errors.

6 Cost assumptions

In this section, we describe issues with the cost assumptions in the 2026 updated model:

- use of a generic cost benchmark, in Section 6.1
- treatment of inflation, in Section 6.2.

We describe these in turn below.

6.1 Use of a generic cost benchmark

It is not appropriate for the DCCA to switch to adopting 'generic' cost inputs, rather than using actual cost data provided by the operators, as it has done historically.

As mentioned on page 22 in the October 2025 consultation documents, the DCCA has retained the generic approach with the objective that it "ensures consistency and transparency across operators, provides greater transparency for service providers, and aligns with the objective of modelling efficient forward-looking costs".

However, the DCCA did not first demonstrate that TDC NET's own-network unit capex values, which largely formed the basis for the 2021 Commitments model, were considered to be incorrect and/or unrepresentative and/or inefficient, before the change in approach was undertaken. Therefore, there appears to have been no factual or methodological basis to change costing approach.

The generic values as derived by the DCCA are not applicable to the Capital Area, because even though they have adapted the digging costs, there is a complicated and arbitrary post-processing stage being applied (as described by the DCCA: it includes exclusion of some values deemed outliers, as well as weighting of some of the remaining values, but not all of them). This processing stage means that the generic benchmark cost values are highly arbitrary, and that arbitrariness is not reasonable in the light of regulatory cost orientation and the LRAIC approach as a whole.

The unit costs used in the LRAIC model should be reflective of efficient costs. What the DCCA has calculated are not "efficient" costs but rather oblique, arbitrary averages using a variety of inputs from multiple stakeholders. In particular, this is not an efficiency assessment, but a gross homogenisation that cannot be a fair representation of the efficient costs that TDC NET faces in the Capital Area.

In any event, it is contradictory to reflect each operator's deployment and investment portfolio by using a single generic set of cost inputs for all operators. The DCCA's stated aims for consistency and transparency (across operators and to service providers) is not relevant to deriving cost-oriented results of different SMP operators in Denmark. By definition, there is no consistency for the network costs in the residential areas of Hovedstaden, Jutland, Zealand and Fyn, and so seeking 'consistency and comparability' is not a relevant regulatory principle.

Such an approach is incompatible with principles of fair competition economics, and would not be adopted in an ex-post competition situation (i.e. the DCCA would not argue one operator abused its dominance as a result of the costs an operator in another part of the country incurred). The DCCA's aim for transparency is fair for other industry players to understand the costing situation (broadly and without access to confidential data), but it should not come at the expense of accuracy in reflecting the costs that an operator actually faces. Such transparency, as the DCCA and Axon know, is usually applied using the best practice of rounding/randomising inputs. Transparency and consistency are not achieved by:

- homogenising actual costs across demonstrably non-homogeneous parts of Denmark (including the non-SMP regions)
- blending Danish costs with the costs found in international benchmarks (whether European or not), as those other country costs are evidently not accessible to any Danish network operator
- removing outliers without objective justification with respect to reality, nor considering the mix of costs incurred by an operator (for example, one operator pays for fibre 'at factory gate price,' while another bears the cost of warehousing and delivery to the street, including the install truck team)
- (barring a simplistic percentage adjustment for Hovedstaden) imposing the same costs on all operators, even though roll-out conditions and deployment/contractor opportunities differ in each region of Denmark.

The use of a generic operator cost base invalidates the model's purpose and reliability, since averaged or hypothetical costs differ significantly from the actual operators' costs in terms of network topology, scale, technology mix and efficiency. These differences will therefore have an impact on the modelled long-run incremental costs. By relying on generic costing, the model will be producing results that are not representative of TDC NET's actual, and efficiently incurred (since the DCCA has not advanced any argument or evidence that TDC NET's actual costs are inefficiently incurred) cost structures.

Moreover, the DCCA's cited objective of achieving comparability across operators is not the purpose of the regulation. Publishing one average cost in the name of transparency does not provide real insight, as it only shows the average costs across different operators while the deployment performance varies (for example, in terms of geographical characteristics and chosen technologies). If needed, such an average could be published separately, while actual operator data is used in the model to accurately reflect the actual costs and investment conditions of that operator.

The use of generic cost inputs could be seen as appropriate for a public version of the model, which is transparent and accessible for public use. However, it is not suitable for an operator-specific LRAIC model used for price-setting purposes rather than high-level assessment of commitment proposals.

In the context of an operator-specific model to be used to set wholesale prices, the DCCA should rely on cost inputs submitted by operators deploying wide-scale networks in the specific footprint. This approach ensures that the model outputs are grounded in real-world representative deployments and accurately reflect actual costs.

Moreover, the approach of using TDC NET's cost inputs is also consistent with the model reference paper (MRP) finalised in 2019,³¹ which states:

"Where considered reasonably efficient, the model's total capex and opex should reflect those of the modelled operator."

As the DCCA is aware, TDC NET is actively rolling out a new fibre network (and has been doing so for several years), and is using multiple contractor agreements to facilitate this roll-out. TDC NET's cost submission reflects these contractor agreements. TDC NET is incentivised to be efficient in its roll-out since there are competing network builders in Denmark that could also roll out networks in its place. Since the DCCA's cost inputs in the October 2025 LRAIC model do not reflect TDC NET's costs (which can be considered efficient as they are market-tested), the DCCA is contravening the MRP.

Again, the DCCA should accept that the application of the model has now changed from its purposes in 2025, when it was a tool to assess the level of proposed prices in a commitments process. Now, it is being used to derive specific wholesale prices for one operator, meaning that the accuracy of the inputs applied must be as high as possible, and specific to the operator where possible (and efficiently incurred).

Simply put, the DCCA is using a fundamentally flawed approach to costing access networks in the Capital Area, since it is calculating benchmarked average unit costs with a high weight given to deployment costs incurred by operators that are not building networks in the Capital Area.

6.2 Treatment of inflation

In the 2025 updates, the DCCA updated the inflation rate to use the harmonised index of consumer prices (HICP), which led to revision of past inflation values. However, having run a test on the 2021 LRAIC model, we noticed a concerning behaviour in the LRAIC model. Even if the 2021 LRAIC model only has the inflation values adjusted from 2019 onwards, then cost results for all years are affected. Figure 6.1 below indicates the assumed inflation time series in the original 2021 Commitments model (purple line) and our tested update (blue line).

³¹ See page 79 (Section 7.1) of the final MRP, available [here](#).

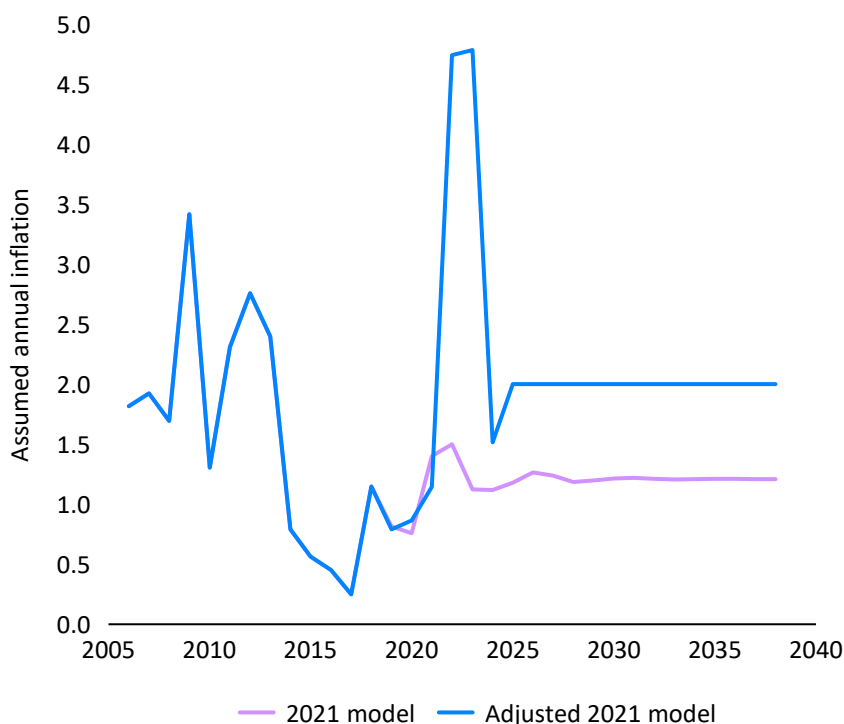
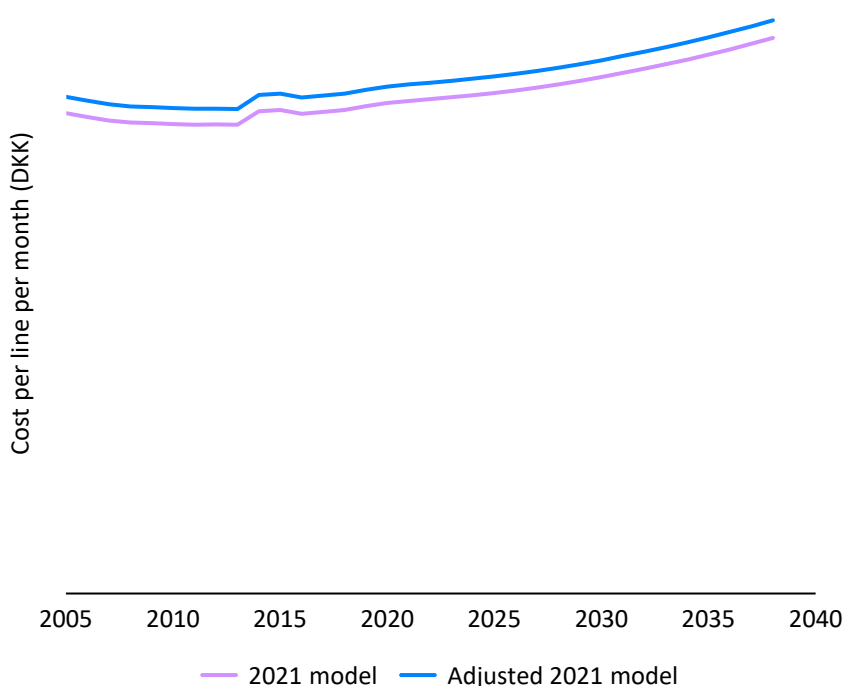


Figure 6.2 illustrates that the cost per line in the updated model increases by more than 3% in all years (2005–2938), even though only values from 2019 onwards have been updated.



The implication is that, if costs in the model increase due to a future increase in inflation, then the model considers that the cost per line must increase in all past years prior to the inflation increase. We believe that this is a consequence of the model being in nominal currency terms and do not consider this to be a sensible behaviour for a model that is supposed to be forward-looking.

