

Report

End of Period Assessment for the Nemo Link electricity interconnector to Belgium

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Contact:	Lucy Bond
Team:	Interconnector Delivery
Email:	Lucy.Bond@ofgem.gov.uk

The Nemo Link interconnector between Great Britain (GB) and Belgium is the first electricity interconnector to be regulated under Ofgem’s cap and floor regime. Nemo Link started commercial operations on 31 January 2019.

This report provides an update on the operation of the interconnector and its financial position against the cap and floor at the end of Nemo Link’s first five-year assessment period that concluded on 31 December 2023.

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Executive Summary

The Nemo Link interconnector between Great Britain (**GB**) and Belgium is the first electricity interconnector to be regulated under Ofgem’s cap and floor regime. Nemo Link started commercial operations on 31 January 2019, which is also the cap and floor Regime Start Date for the project. This report provides an update on the operation of the interconnector and its financial position against the cap and floor at the end of Nemo Link’s first five-year assessment period that concluded on 31 December 2023.

The cap and floor regime was designed to incentivise further interconnector development in GB. At the time of publication, the cap and floor regime has led to four interconnectors becoming operational, with two in the construction phase and a further two holding cap and floor regimes in principle.

Ofgem granted Nemo Link Limited (**NLL**), the company licensed to operate the Nemo Link interconnector, the cap and floor regime in December 2014 and subsequently set the cap and floor levels for the project in 2019.

Having operated the interconnector through highly volatile energy prices, NLL have reported high operational availability and efficient commercial operations. This has resulted in cumulative above-cap revenues for the period between 2019 and 2023 of £185.0 million.

Ofgem approved a request from NLL in 2022 for a Within Period Adjustment (**WPA**), which resulted in £58.5 million being returned to consumers in GB during the network charging cycle 1 April 2023 to 31 March 2024. Taking this into account, NLL’s current position results in an above-cap level of £68.0 million at the end of the first Relevant Assessment Period¹ on 31 December 2023, which will be paid on a 50/50 basis to GB and Belgian consumers. The payment to GB consumers will begin from 1 April 2025.

¹ As defined in Part J Special Condition 3, each Relevant Assessment Period shall be five consecutive Relevant years and the first Relevant Assessment Period shall commence on the Regime Start Date.

1. Background

- 1.1 The cap and floor regime is the regulated regime for electricity interconnector development in GB. It sets a minimum and maximum return that interconnector developers can earn during the operational period (25 years), with this return being evaluated every 5 years after the regime start date for the default regime.
- 1.2 In the case of Nemo Link, revenue earned above the cap in any relevant assessment period is returned to the GB System Operator and Belgian System Operator (the SOs) on a 50/50 basis. The SOs then reduce the network charges for network users in their relevant countries. If revenue falls below the floor in any relevant assessment period, then Nemo Link would be compensated by the SOs up to the floor level, who would recover costs through their respective network charges.
- 1.3 Nemo Link is a 1GW electricity interconnector between Zeebrugge in Belgium and Richborough, Kent in Great Britain. The interconnector is the first project to be developed under our cap and floor regime, which was developed jointly for Nemo Link by Ofgem and the Belgian energy regulator, the Commission de Régulation de l'Électricité et du Gaz (**CREG**).
- 1.4 The project developers are National Grid Interconnector Holdings (**NGIH**) Limited and Elia Transmission Belgium NV/SA (Elia), the Belgian transmission system operator. Each owns 50% of the shares in Nemo Link, and the revenue is split as such.
- 1.5 The interconnector began commercial operations on 31 January 2019 and it reached the end of the first 5-year assessment period on 31 December 2023. Its revenue is evaluated against the cumulative cap and floor for the 5-year period as part of an End of Period Assessment (**EPA**).
- 1.6 Every year, the licensee must submit the relevant revenue information through the Regulatory Instructions and Guidance (**RIGs**). These revenues are then periodically assessed by Ofgem. The EPA takes place every five years after the regime start date in the default cap and floor regime.
- 1.7 For the EPA, we determine whether, for the relevant assessment period, there is a cumulative revenue excess (above the cap) or shortfall (below the floor) and, therefore, whether any payments need to be made to or from GB and Belgian consumers.
- 1.8 We also determine the amount of any required payments and pass-through payments (outlined in section 6) required to reconcile different levels of actual and baseline non-controllable operational costs or other requested adjustments.

- 1.9 The equations used to determine the cap and floor assessment values are found in Special Condition 3 of Nemo Link’s licence² and the pass-through adjustment term relating to non-controllable operational costs (**NCOC**) is found in Special Condition 7.

² [Schedule 3 – Modifications to the special conditions of the electricity interconnector licence held by Nemo Link Limited \(ofgem.gov.uk\)](#)

2. End of Period Assessment Methodology

- 2.1 We have conducted our assessment using a mechanistic approach, whereby the information that is shared with us by NLL in accordance with the licence requirements is used to inform our evaluations.
- 2.2 We used a variety of data sources, including the developer-submitted annual RIGs, accompanying narrative documents and publicly available external sources, such as NLL’s statutory accounts. Where there has been corresponding publicly available data, we have conducted comparisons between that and the information provided to us.
- 2.3 Nemo Link provided all figures in euros, with values converted to GBP through the Cap and Floor Financial Model 2 (**CFM2**) using the XUMAERS exchange rate. Any figures originally reported in nominal figures are converted to a net present value (**NPV**) basis, using a Purchasing Power Parity Index (**PPPI**) factor and the project-specific operational discount rate (**ODR**).³ The PPPI factor applies a mixture of UK RPI inflation and Belgian CPI inflation, adjusted to reflect changes in the exchange rate during the relevant reference period.

³ The operational discount rate is the average of the cap rate and floor rate for the interconnector project. For Nemo Link, this is 3.88%.

3. Narrative

- 3.1 The Regime Start Date and the start of operations occurred on 31 January 2019. During the first five-year operational period, there were a range of specific market factors that had both positive and negative effects on the overall revenue performance. The following factors are seen as the key drivers of revenue.
- 3.2 In 2019 and 2020, revenues were relatively stable with a large proportion of value generated in the Day-Ahead electricity wholesale market. More broadly, both 2019 and 2020 saw a drop in gas prices driven by an oversupply, which resulted in reduced revenues. However, this was partially offset in 2020 by COVID-19 affecting demand levels, leading to depressed power prices with a disproportionate effect on continental prices, leading to an increase in price differential (increased revenue). 2020 also included preparations for the United Kingdom leaving the European Union (EU), such as the go-live of non-Internal Energy Market (IEM) Access Rules⁴ and successful transition to Day-Ahead explicit auctions.
- 3.3 At the start of 2021, Nemo Link transitioned to Day-Ahead explicit auctions as part of the process of leaving the EU. This required a modification to NLL's Access Rules.⁵ Generally, 2021 saw a significant increase in revenues driven by increases in commodity prices (particularly gas and carbon). These increases resulted in associated growth in market price spread between Belgium and GB (increased interconnector revenue). Additionally, driven by growing solar and wind generation in the markets, there was an increase in weather-related volatility, leading to some extreme and volatile energy prices and price decoupling (and associated increased revenue).
- 3.4 Revenues significantly increased in 2022, which was heavily driven by the Russian invasion of Ukraine. The collapse of Russian gas flows to Europe caused unprecedented increases and volatility in gas and power prices leading to a significant increase in the absolute market price spread between Belgium and GB (increased revenues). A strong inflow of liquified natural gas to the UK to replace Russian pipeline gas caused decoupling between UK and continental gas price indices, with continental trading at a significant premium over the year compared

⁴ The Access Rules set out the terms and conditions for access to, and including the use of, the interconnector.

⁵ [Approval of the modified Access Rules for the Nemo Link interconnector to apply only in the event the UK leaves the EU without a deal \(ofgem.gov.uk\)](https://www.ofgem.gov.uk/consult/condocs/nemo-link/nemo-link-access-rules-2021/nemo-link-access-rules-2021-consultation.pdf)

to UK. This contributed to increased energy flows towards Belgium (mixed impact on revenues).

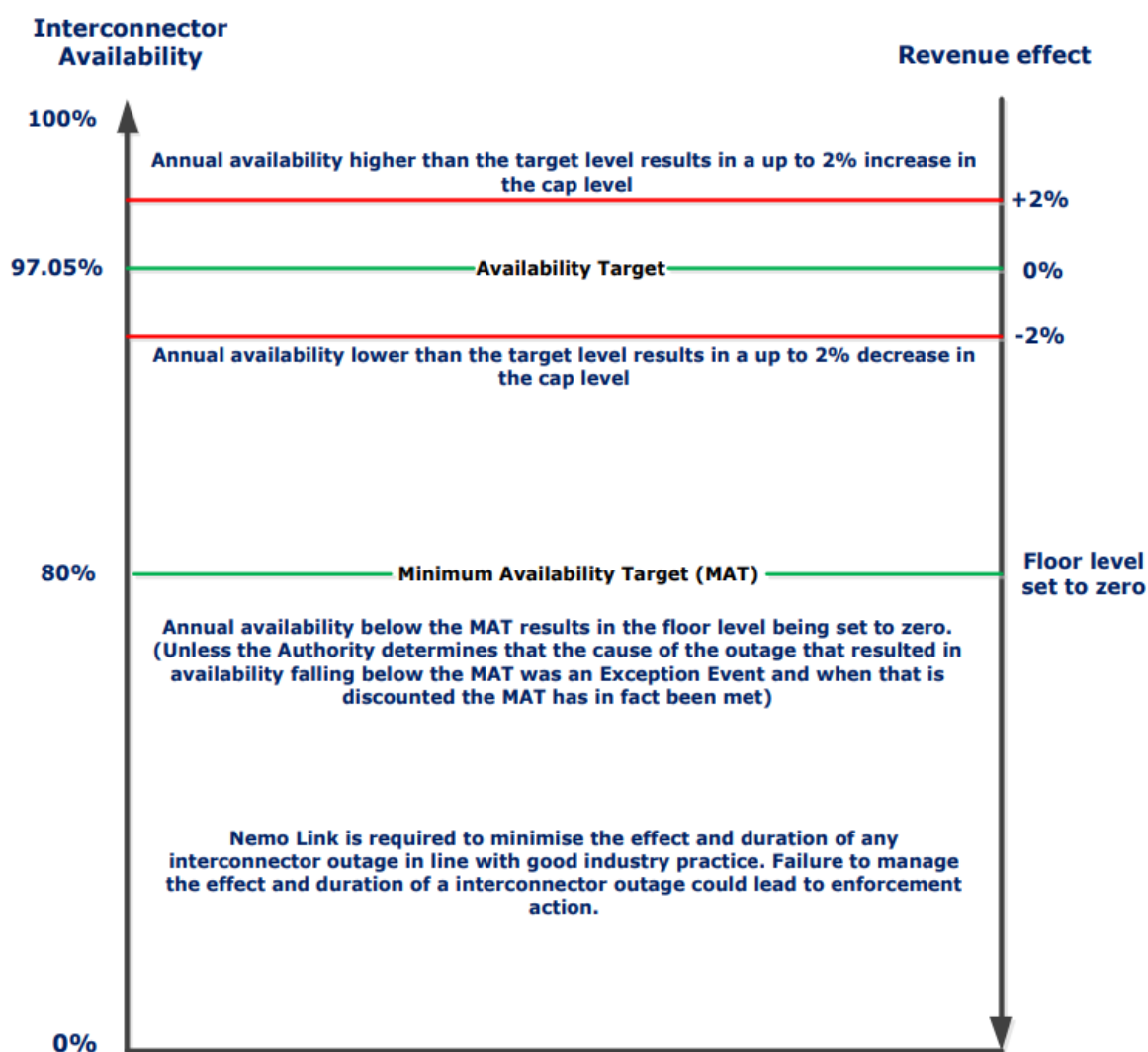
3.5 2023 saw a revenue decrease driven by a stabilization in gas and power prices compared to the exceptional prices seen in 2022.

3.6 Throughout the five years there has been record low nuclear availability in France, which has increased continental power prices (reduced revenues), however, these levels increased in 2023, back to pre-pandemic levels.

4. Availability

4.1. The availability incentive target set for Nemo Link is 97.05%, and the Minimum Availability Target (MAT) for floor protection is set at 80%. The mechanics of how availability affects the cap and floor regime is represented in Figure 1, below.

Figure 1: Dependency of the cap and floor on the operational availability of the interconnector



4.2 For the first five years of operation, Nemo Link achieved an average of 97.78% availability, including planned and unplanned outages. Annual breakdowns of availability and the availability incentive application are shown in **Table 1**.

Table 1: Figures for the operational availability for Nemo Link for the first 5 years of its cap and floor regime

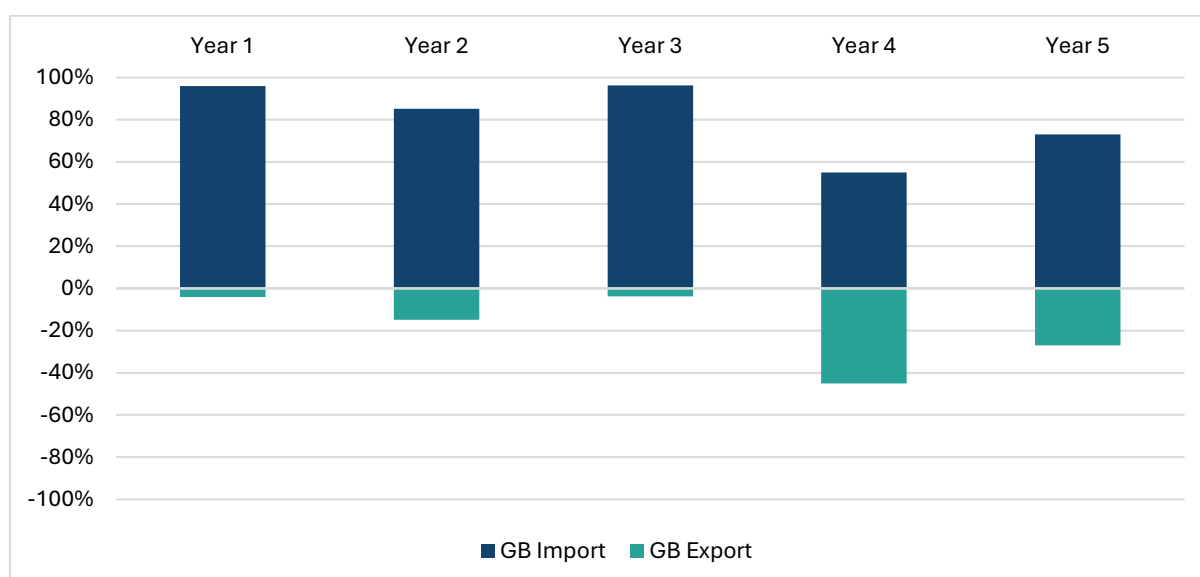
	Maximum possible availability (GWh)	Actual availability for Cap (GWh)	Availability
2019	8,041.000	7,703.714	95.81%
2020	8,784.000	8,693.833	99.18%
2021	8,760.000	8,681.450	99.03%
2022	8,760.000	8,657.000	98.76%
2023	8,760.000	8,420,500	96.12%

- 4.3 The availability incentive is applied annually and its application is broken down in Table 5 in Section 9.
- 4.3 When excluding planned outages Nemo Link operated at an availability of 99.4%.

5. Electricity Flows

- 5.1 Nemo Link has predominantly imported electricity to GB⁶, which, in general, has the effect of lowering the wholesale price in the importing country. This is reflected in the annual values in Figure 2, where every year showed NLL to be a net importer from Belgium to GB.
- 5.2 According to National Grid’s analysis, the interconnector has saved 1.4 million⁷ tonnes of carbon since it began operating, with around 29 TWh of power transported across the cables. The connecting market, Belgium, benefits from a mix of renewable power sources, with nuclear energy being a main production source. Exports of electricity from the GB market enable the reduction in renewables curtailment and allows this electricity to be utilised in other markets.

Figure 2: Percentage of import and export on the Nemo Link interconnector to and from Belgium (excluding zero flow data)



⁶ This data has been collated from the ELEXON BMRS Half Hourly Interconnector Flows. [Average Half Hourly Interconnector Flows | BMRS \(bmreports.com\)](https://www.bmreports.com/average-half-hourly-interconnector-flows)

⁷ [National Grid celebrates five years of its Nemo Link interconnector | National Grid Group](https://www.nationalgrid.com/uk/news/national-grid-celebrates-five-years-of-its-nemo-link-interconnector)

6. Pass-through costs

- 6.1 An additional component of the evaluation for the cap and floor levels is the pass-through adjustment term. This pass-through adjustment term is a method by which both Ofgem and the developer can account for costs that are outside of the developers' control. If a developer is particularly efficient with these costs, they are given an additional revenue allowance. The inverse is true if the developer is inefficient.
- 6.2 The Pass-Through Adjustment term for the Assessment Period (**PTA_{ap}**), as defined within Special Condition 7, is a revenue adjustment component that adjusts the licensee's Interconnector Revenue as a consequence of changes in the licensee's determined non-controllable operational costs and are made on an NPV neutral basis.
- 6.3 The NCOC items are defined as the following:
- Crown Estate Lease Fees;
 - Network And Property Rates;
 - Licence Fees.
- 6.4 For each Relevant Year, the Baseline Non-Controllable Operational Costs⁸ (**BNCOC_t**) is assessed against the Outturn Non-Controllable Operational Costs (**ONCOC**) value provided by the licensee as part of the RIGs submission. The difference in these terms is annually evaluated by us for approval, resulting in the Difference in Non-Controllable Operational costs term (**DNCOC_t**). The BNCOC is determined within the Post Construction Review⁹ (**PCR**) and is fixed for the regime period.
- 6.5 Table 2 details the outturn, baseline, and difference in non-controllable operational costs for the first Relevant Assessment Period for the Nemo Link interconnector.

⁸ The baseline allowance is the costs assumed in the cap and floor levels set at PCR

⁹ [Decision on the Post Construction Review of the Nemo Link interconnector to Belgium | Ofgem](#)

Table 2: The values of Nemo Link's outturn and baseline non-controllable opex, and the difference, (£million, nominal)

	ONCOC	BNCOC	DNCOC
2019	1.240	1.274	-0.034
2020	1.527	1.415	0.112
2021	1.245	1.438	-0.193
2022	1.407	1.584	-0.176
2023	1.496	1.711	-0.215

6.6 Included in the Pass-Through Adjustment terms are an Income Adjusting Event term (**IAT_t**) and Decommissioning Cost Adjustments at Cap (**DCC_t**) and at Floor (**DCF_t**). During the first 5 years of operations, Nemo Link has not given notice of an IAT_t, and the DCC_t and DCF_t are unchanged from PCR.

6.7 Therefore, the total PTA_{ap} for the first Relevant Assessment Period is -£0.6 million. This is added to the initial End of Period Cap and Floor as a revenue adjustment to result in a final End of Period adjustment.

7. Controllable Operational Costs

- 7.1 Controllable Operational costs (**Opex**) are set ex-ante through the Final Project Assessment (**FPA**) and PCR processes. These account for all the main operating costs that are defined as being within the control of the developer. Opex relates to the activities that the developer will undertake to manage, operate and maintain the interconnector during its operational phase. This is to maximise the availability of the interconnector and to minimise unplanned outages.
- 7.2 We expect controllable opex to include, but are not limited to, aspects such as:
- The main service agreement for the maintenance of the projects assets;
 - Resourcing costs associated with the ongoing management and operations of the interconnector;
 - Commercial cost elements associated with the interconnector’s market access and electricity trading; and
 - Insurance costs for the interconnectors operational phase.
- 7.3 Through the PCR, we carry out a detailed and comprehensive cost assessment of operational costs, ensuring developers have undertaken appropriate processes to manage the efficiency of these costs.
- 7.4 This enables us to set a controllable opex baseline, which is set for the duration of the 25-year regime, unless a request for an opex reopener is submitted after the tenth year of operation.
- 7.5 For Nemo Link’s PCR, a controllable opex baseline of £84.2 million in nominal terms was set for the first 5 years of operations. During the first relevant assessment period, NLL presented controllable opex that was £11 million below this baseline. The only substantive cost escalations identified were the insurance costs, which have increased for all interconnectors since 2022, and personnel costs, both of which resulted in NLL exceeding the PCR-determined value in 2022 and 2023.

Table 3: Actual controllable Opex costs against forecasted PCR baseline (£millions, nominal)

Year of Operation	2019	2020	2021	2022	2023
Incurred Cost	11.7	13.1	11.7	16.7	19.0
PCR forecasted Opex Allowance¹⁰	15.0	15.3	15.6	16.0	16.4
Difference	-3.3	-2.2	-3.9	0.7	2.6

7.6 Opex costs have increased over the five years, driven by the following:

- Inflationary increases year on year, with significantly high inflation levels in 2022 and 2023;
- Personnel cost increases year on year, driven by a rise in headcount;
- Significant CACM¹¹ cost recovery, included within 'Commercial Cost Elements' in 2021, of c.€400k (£340k); and
- Significant increases in insurance costs in 2022 and beyond, driven by market conditions including a higher volume and value of interconnector claims in the insurance market and higher replacement value for converters.

Table 4: Year-on-year evolution of operational cost elements for Nemo Link

Opex	% Change 2019- 20	% Change 2020-21	% Change 2021-22	% Change 2022-23
Personnel	13.5	3.3	10.0	22.6
Operations and Maintenance - Converters	-8.0	-22.0	53.4	-13.8
Operations and Maintenance - Cables	-64.5	271.4	-45.1	-45.0
Commercial Cost Elements	48.9	-58.3	99.4	-22.3
Insurance Cost Elements	33.5	-0.5	91.7	28.8
Property & Route Related Costs	11.7	-32.5	41.7	-24.6
Business Services & General Administration	62.7	-75.6	484.0	28.2
Total controllable cost elements	10.5	-8.0	44.7	11.0

¹⁰ The PCR forecasted values have been reprofiled since the published PCR decision and uplifted using the joint UK/Belgium RPI inflation as used in the CFFM2.

¹¹ CACM costs are costs incurred in relation to compliance with the Capacity Allocation and Congestion Management network code.

- 7.7 Market related costs¹² were not included within the PCR assessment of the cap and floor levels. They are treated as partial pass-through costs and, as such, these costs are netted off Nemo Link’s gross congestion revenues on an annual basis. Net congestion revenues are assessed against the cap and floor levels through the EPA process. Where net congestion revenues are between the cap and floor levels or above the cap, market related costs are borne by Nemo Link.
- 7.8 Additionally, there were also supplementary opex costs that occurred during Nemo's operating period that were not captured within the PCR due to a change in legislative requirements.

¹² Market related costs include firmness costs (the cost of compensating parties who have purchased interconnector capacity that cannot be provided), error accounting costs and trip contract costs.

8. Within Period Adjustment

- 8.1 An interconnector’s revenue is normally assessed against its cap and floor levels at the end of a Relevant Assessment Period (five years for standard cap and floor regime). However, where the project believes its revenues may be significantly above the cap or significantly below the floor by that time, the project may request a WPA to be made (whether upwards or downwards) to its Interconnector Revenue.
- 8.2 A project can request a WPA¹³ if it has:
- a cumulative NPV shortfall of Assessed Revenue against the Floor Level for the Relevant Partial Assessed Period pap (including taking in to account any previous WPA in the Relevant Partial Assessment Period); or
 - a cumulative NPV excess of Assessed Revenue against the Cap Level for the Relevant Partial Assessed Period pap (including taking in to account any previous Within Period Adjustment in the Relevant Partial Assessment Period); and
 - the licensee considers a WPA to be required on the grounds of:
 - financeability; and/or
 - pre-empting a material Cap and Floor Adjustment at the end of the Relevant Assessment Period (5 years).
- 8.3 In 2022, NLL submitted a WPA request to Ofgem and CREG, in which it reported a cumulative NPV excess of Assessed Revenue against the Cap Level of £116.9 million. Nemo Link proposed a WPA value of -£116.9 million (where the negative value indicates a downwards adjustment to Nemo Link’s Interconnector Revenue) on the grounds of pre-empting a material Cap and Floor Adjustment at the end of the five-year assessment period. Following due diligence on behalf of both regulatory authorities, this WPA value was accepted.¹⁴
- 8.4 The WPA values are split 50/50 between GB and Belgian consumers, and GB consumers therefore received £58.5 million. The other 50% of the WPA (+-67.8 million€, converted at 1.16€/£) was transferred by end of 2022/early 2023 to Elia Transmission Belgium.

¹³ [schedule 3a - nemo specials- final.docx.pdf \(ofgem.gov.uk\)](#)

¹⁴ [Determination of the Within Period Adjustment request made by Nemo Link Limited | Ofgem](#)

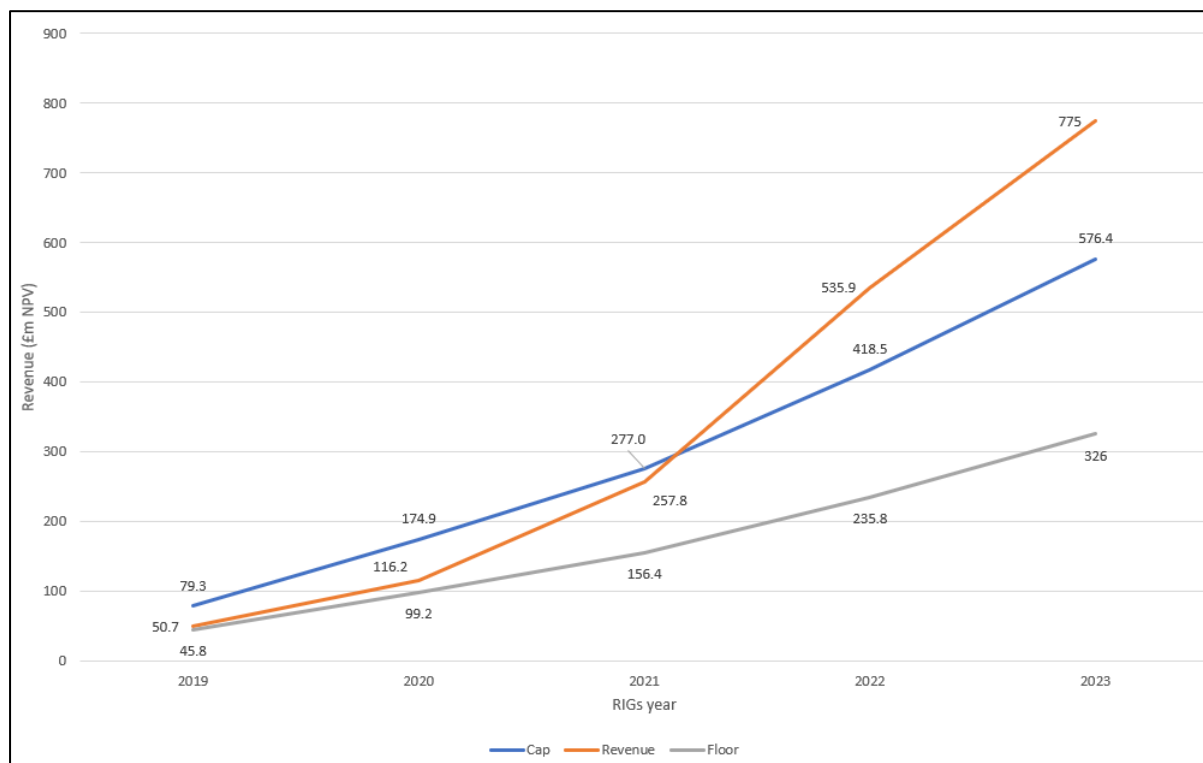
9. Total Cumulative assessed revenue

- 9.1 Assessed Revenue, as defined in Special Condition 5, are all sources of revenue earned (or received) from:
- the allocation of interconnector capacity;
 - participation in the GB capacity market;
 - the provision of ancillary services in GB and Belgium;
 - constraint payments received from the GB or Belgium SOs; and
 - insurance receipts (such as business interruption insurance).
- 9.2 To account for the five years over which the revenue is earned, Nemo Link’s total cumulative revenue is expressed in NPV terms, where the revenue is uplifted by a combination of inflation and a project-specific ODR. At the end of the first Relevant Assessment Period Nemo Link’s cumulative NPV assessed revenue is £775.03 million. This value is a representation of the total revenue for the period of 2019 to 2023. When accounting of the WPA value that has already been paid back to consumers, the above cap position results in an additional £68.0 million being returned to consumers, split 50/50 between GB and Belgium.
- 9.3 As shown in Figure 3, during the first three years of operation, Nemo Link’s revenue was between the cumulative cap and floor levels. For the successive years, it was above the cumulative cap. The cap has a $\pm 2\%$ ¹⁵ variation year-on-year based on the availability incentive (97.05%), which increases or decreases the cap level based on this target figure.¹⁶

¹⁵ One-for-one percentage point increase/decrease in the cap level

¹⁶ Visual representation in Appendix 1

Figure 3: Cumulative NPV Cap, floor and revenue



9.4 Below, Table 5 shows the year-on-year nominal assessed revenues figures, not accounting for any WPAs.

Table 5: Figures for the yearly and cumulative total assessed revenue, as well as the cap and floor levels (£million, nominal)¹⁷

	Total assessed revenue	Cap (post availability incentive)	Cap Availability incentive rate¹⁸	Floor
Year 1	50.71	79.32	0.987	45.78
Year 2	62.57	90.97	1.020	50.81
Year 3	135.21	92.43	1.020	51.63
Year 4	240.86	101.57	1.018	56.87
Year 5	173.74	106.79	0.990	61.43
Cumulative total	663.08	471.08	-	266.52

¹⁷ All values in this table have been rounded for clarity

¹⁸ More details in availability section

Next steps

Nemo Link reached the end of its first regime period on 31 December 2023 and through the End of Period Assessment process it has been determined that Nemo Link Limited achieved cumulative 5-year revenue of £185.0 million above the cap. Part of this above-cap revenue (£116.9 million) was returned to GB and Belgian consumers through a within period adjustment in 2022, at the height of the energy crisis.

We have therefore determined that NLL's End of Period position at 31 December 2023 is a cumulative revenue excess of £68 million above the cap, resulting in additional payments due to GB consumers of £34 million. These will be paid into GB's tariff setting system in the next applicable window, in line with the approved methodology.¹⁹ These monies will then be passed onto consumers through charge reductions.

Nemo Link's next EPA for Relevant Years 6 to 10 is expected to take place in 2029.

¹⁹ [Nemo Link - Approval of an updated ICFT methodology | Ofgem](#)
