BI Volatility

Presented by:

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2 November 2021

The issue

- Under declaration seemed to be endemic in the energy market
- Frequently resulting in a ‘dislocation’ between Sums Insured and indemnity payments
- Limited incentive for declarations to be accurately prepared
- No protection for insurers historically

Historic reasons for under declaration

- Confusion around insurance gross profit and incorrect declaration
  - Accounting vs. insurance gross profit e.g. fixed or variable utilities
  - Take or pay contracts
  - Maximum indemnity period - 24 months MIP but declared values represent 12 months
  - Multiple business units / divisions - e.g. refining margin has been declared, but the whole business incl. distribution has been insured
- Not accounting for planned volume increases
- Unforeseen market impacts

Business Interruption is what keeps risk managers awake at night

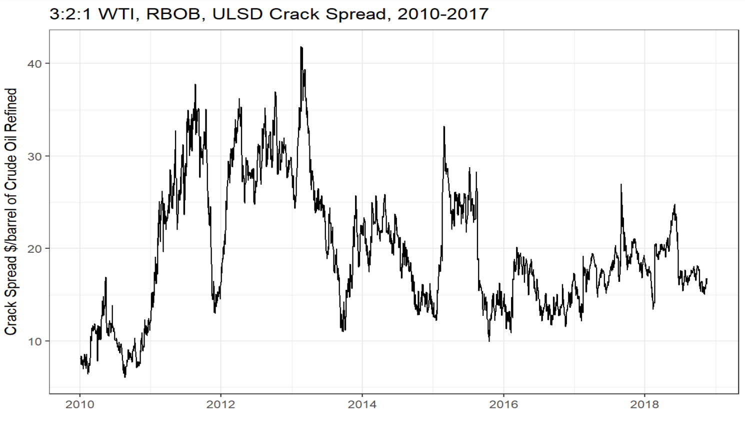
Paris roundtable 2019

1 What keeps you awake at night?

Business interruption and supply chain	70%	7 answers
Cyber	0%	0 answer
Political violence	10%	1 answer
A major man-made physical loss	40%	4 answers
A major natural catastrophe	20%	2 answers
Loss of reputation	20%	2 answers
Environmental liability	40%	4 answers
Macro-economics	10%	1 answer
Regulation	30%	3 answers

Business Interruption challenges haven't changed

- Business interruption is known major concern to risk managers
- BI represents 70% of Onshore Claim payments
- Providing BI values solely for insurance purposes is not straightforward which can lead to errors or misunderstandings
- BI Values which have been produced months ahead of inception date might be completely out of date by the end of the period
- Complexity of onshore BI claims (interdependencies, non-linear…) leading to longer time to settle claims
- Supply chain exposures remains complex to assess
- Profitability in the downstream Oil & Gas industry can be volatile, especially for activities with profits highly correlated to crude oil prices variations such as refining.
- In most cases, there was nothing in policy wordings limiting BI recoveries as long as they are within the policy limit



SCOR

Volatility of BI values became a hot topic in 2019

- In recent losses, especially 2018, we experienced BI claims being multiples of declared values, due to market fundamentals
- Onshore Energy market underwriting losses in 2017 and 2018 caused the market to harden, making the transfer of uncertainty more difficult

- Increased Focus on Business Interruption values and coverage
- BI studies and BI worksheets becoming more frequent
- **Resurgence of Volatility Clauses in 2019**

Business Interruption Volatility Clauses - Mining and Power

Mining

- For mining most of the caps come in the form of **commodity price caps:** the client declares a Gross Profit figure based on a budgeted declared commodity price (for instance USD 1300 per ounce of gold), and this commodity price is capped usually at **+10-20%.** The indemnity in case of loss is then capped by using the lowest figure between the cap and the spot price.
- The main difference with Onshore Energy is that there is not a large volatility in the cost of production for mining because there is **no purchase of feedstock** (the feedstock is the ore found in the ground), so the volatility of the margin is directly linked to the volatility of the price of the **product**. In downstream there is volatility impacting margins for both the price of crude and for the price of refined products.
- Detailed Worksheets on a monthly basis are common

Power

- Only one « Product » : MW
- BI monthly Worksheets per location are common
- Typical wordings include:
  - *« Business interruption limited to a **monthly** cap of **110%** of declared on the quarterly gross margin forecast spreadsheet »*
  - *« Business Interruption limited to **110%** of **Average Daily Value** of declared BI »*

Upstream - Loss of Production Income (LOPI) - No volatility

Upstream forms are very standard

JR 2005/003A standard form

Limit of Liability per Insured's Premises:

Insured's Premises	**Unit Volume**	**Volume Measure**	**Unit Price**	**Daily Value**	**Waiting Period** (days)	**Maximum Recovery Period** (days)
Platform ABC	USD/bbl	4,000 bbl/day	50 USD/bbl	200,000 USD/day	60	365

Occurrence Limit: **200,000 USD/day x 365 Days = USD 73,000,000**

Standard Period 180 days preceding inception

Dependency Premises **Platform XYZ**
Crude storage 123

Sublimit for unscheduled Dependency Premises (if not $250,000)

Claim = (Standard Production* - Actual Production during recovery period in bbl/day) x Unit price (USD/bbl) x Recovery Period (days)

Simple formula, but it's not actual loss sustained

- **During standard period not just before the loss ie what could have been achieved (base wording)**

Could this be used as a model for onshore Energy ?

SCOR

Business Interruption Onshore volatility clauses are not new

But there's wasn't any standard before the LMA clause was published

- *"**Max daily business interruption** amount of 335,000$ to apply to any insurable losses hereon."*

- *"**Leeway** Clause*
  The insurers undertake to indemnify the Insured up to a maximum of 130% of the declared amount in respect of Business Interruption"

- *"It is stipulated and agreed that this coverage is not subject to the application of under-insurance or **average** unless the real twelve month business interruption value is greater than 120% of the declared business interruption value in the schedule. If the real twelve month business interruption value is greater than 120% of the declared business interruption value, claims will be indemnified applying total under-insurance"*

- *"Business Interruption **Cap***
  In respect of Section 2 the actual loss sustained shall be capped at 150% of the average monthly declared values, but not exceeding 120% of the annual values declared at inception"

- ***"Average Daily Value** Indemnity Cap*
  The maximum indemnity on each Business Interruption and Contingent Business Interruption at any individual plant from loss of Gross Profit or loss of Gross Earnings (as applicable to the coverage at the Insured location) shall be 100% of the reported average daily value of the entire plant (not unit) sustaining the physical loss or damage and any other unit(s) unable to fully or partially operate as a direct result of the physical loss or damage (based on budgeted annual loss of gross profit or other basis of indemnity as declared and on file with the Insurer for the location involved in the loss)."

- *Actual Loss Sustained coverage hereon shall be capped at 150% of the average **monthly values**, but not exceeding 130% of the annual values for each annual period as calculated or declared and agreed hereunder.*

LMA Onshore Energy Volatility Clauses

- LMA Onshore Energy Business Panel, recognising the need to come up with a standard, created a working group in May 2019 and published 2 volatility clauses in September 2019

- Principles of the LMA volatility clauses

  - Allows fluctuations and some volatility, recognizing the difficulty to predict values, of up to XX% for each location

  - Clarifies the basis being 100% of the values of the location, even if the loss is partial and doesn't shutdown the whole plant

  - Allows for seasonality with a higher monthly %

  - Allows insured the flexibility to re-declare values, anytime before loss, in which case the premium is adjusted pro-rata

  - Turnarounds or other scheduled shutdowns can be taken into account, when calculating average monthly values

Business Interruption Volatility Clause - monthly

For use on Oil, Gas and Petrochemical Contracts

1. Subject to the other terms, conditions, and limitations of this (Re)Insurance:
    1. the Annual Cap for business interruption indemnity shall be ______% of the declared annual business interruption value of the Location(s) suffering Damage; and
    2. the Monthly Cap for business interruption indemnity shall be ______% of the declared monthly business interruption values of the Location(s) suffering Damage. In the absence of declared monthly business interruption values, monthly business interruption values used to calculate the Monthly Cap shall equal the declared annual business interruption value of the Location(s) suffering Damage divided by twelve; and
2. If the values are declared for a period which is more, or less, than one year, then the annual value shall be calculated on a pro-rata basis.
3. For the avoidance of doubt, for interruptions of greater than 10 months following Damage, the Annual Cap shall apply. For interruptions greater than 12 months the Annual Cap shall apply on a pro-rata basis.
4. Notwithstanding the other terms, conditions, and limitations of this (Re)Insurance, business interruption values can be updated by the (Re)Insured and agreed by the (Re)Insurers in writing at any time during the Period of Insurance. Premium will be adjusted in proportion to the change in values declared either at expiry or at the time of re-declaration, in accordance with the terms of this (Re)Insurance. However, in the event that the Location(s) suffer Damage, the business interruption indemnity caps under paragraphs 1.1 and 1.2 shall be based on the declared values agreed at the time of the Damage.

Definitions

1. Where not otherwise defined in the (Re)Insurance, for the purposes of this endorsement:
    1. Business shall mean the entities stated as insured in the schedule.
    2. Damage shall be defined as per the original policy.
    3. Location(s) shall mean the location or locations listed in the schedule.

LMA5383
11 September 2019

Business Interruption Volatility Clause - ADV

For use on Oil, Gas and Petrochemical Contracts

1. Subject to the other terms, conditions, and limitations of this (Re)Insurance the indemnity for business interruption shall be capped at ______% of the Average Daily Value of the Location(s) suffering Damage multiplied by the number of days, net of deductible/waiting period, the Business has been interrupted.

2. 2.1 For the purposes of this endorsement, Average Daily Value (ADV) of a Location is calculated by dividing the 100% declared annual business interruption value for that location by 365.

   2. If the values are declared for a period which is more, or less, than one year, then the annual value shall be calculated on a pro-rata basis.

   3. If business interruption values are declared on a monthly or quarterly basis, then the ADV will be calculated separately for each month or quarter respectively.

2. Notwithstanding the other terms, conditions, and limitations of this (Re)Insurance, business interruption values can be updated by the (Re)Insured and agreed by the (Re)Insurers in writing at any time during the Period of Insurance. Premium will be adjusted in proportion to the change in values declared either at expiry or at the time of re-declaration, in accordance with the terms of this (Re)Insurance. However, in the event that the Location(s) suffer Damage, the business interruption indemnity caps under paragraph 1 shall be based on the declared values agreed at the time of the Damage.

Definitions

2. Where not otherwise defined in the (Re)Insurance, for the purposes of this endorsement:

   1. Business shall mean the entities stated as insured in the schedule.

   2. Damage shall be defined as per the original policy.

   3. Location(s) shall mean the location or locations listed in the schedule.

LMA5384
11 September 2019

Illustrative example

Background:

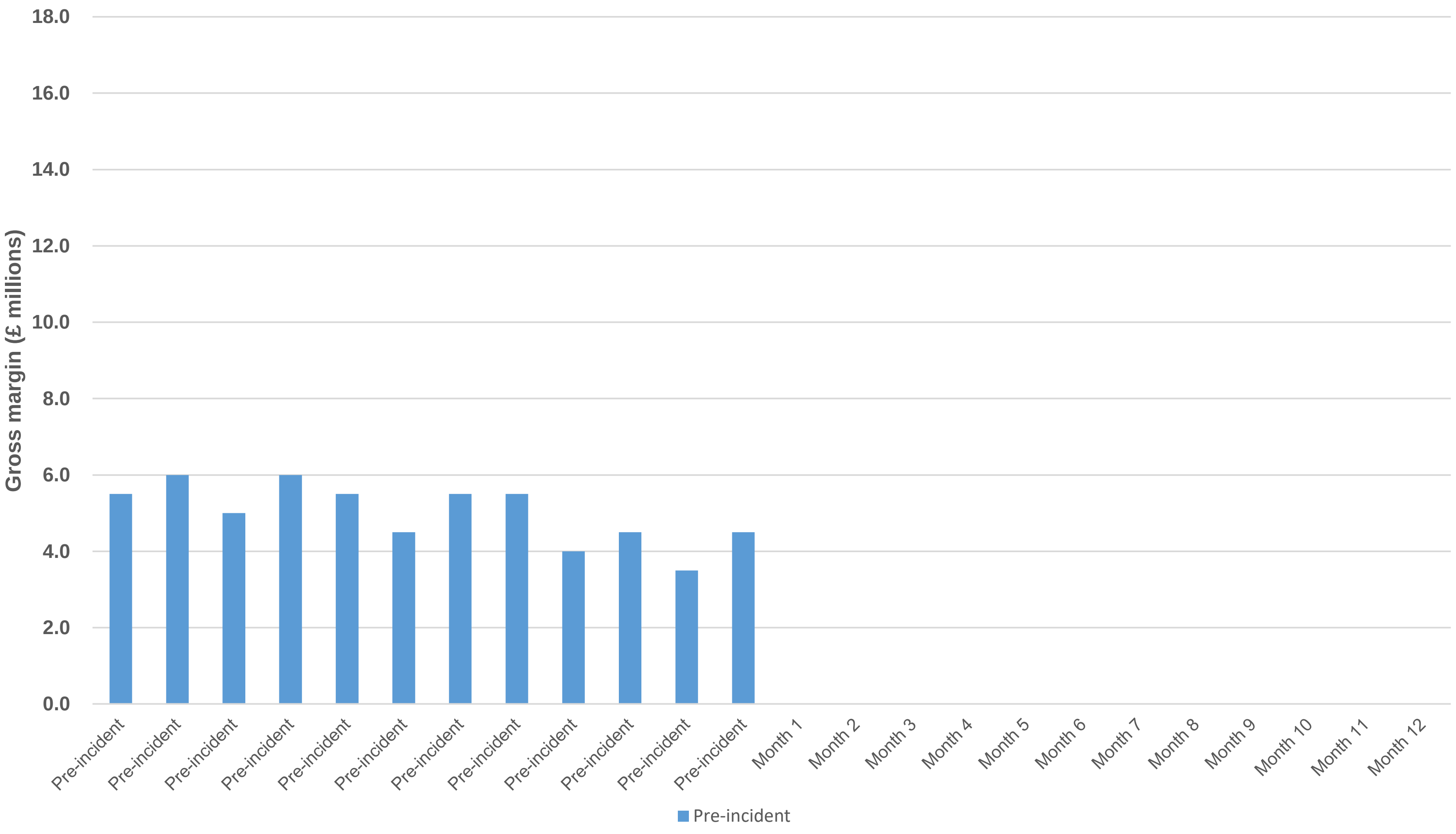
- *“The Annual Cap for business interruption indemnity shall be **130%** of the declared annual business interruption value of the Location(s) suffering Damage; and*

  *The Monthly Cap for business interruption shall be **150%** of the declared monthly business interruption values of the Location(s) suffering Damage….”*

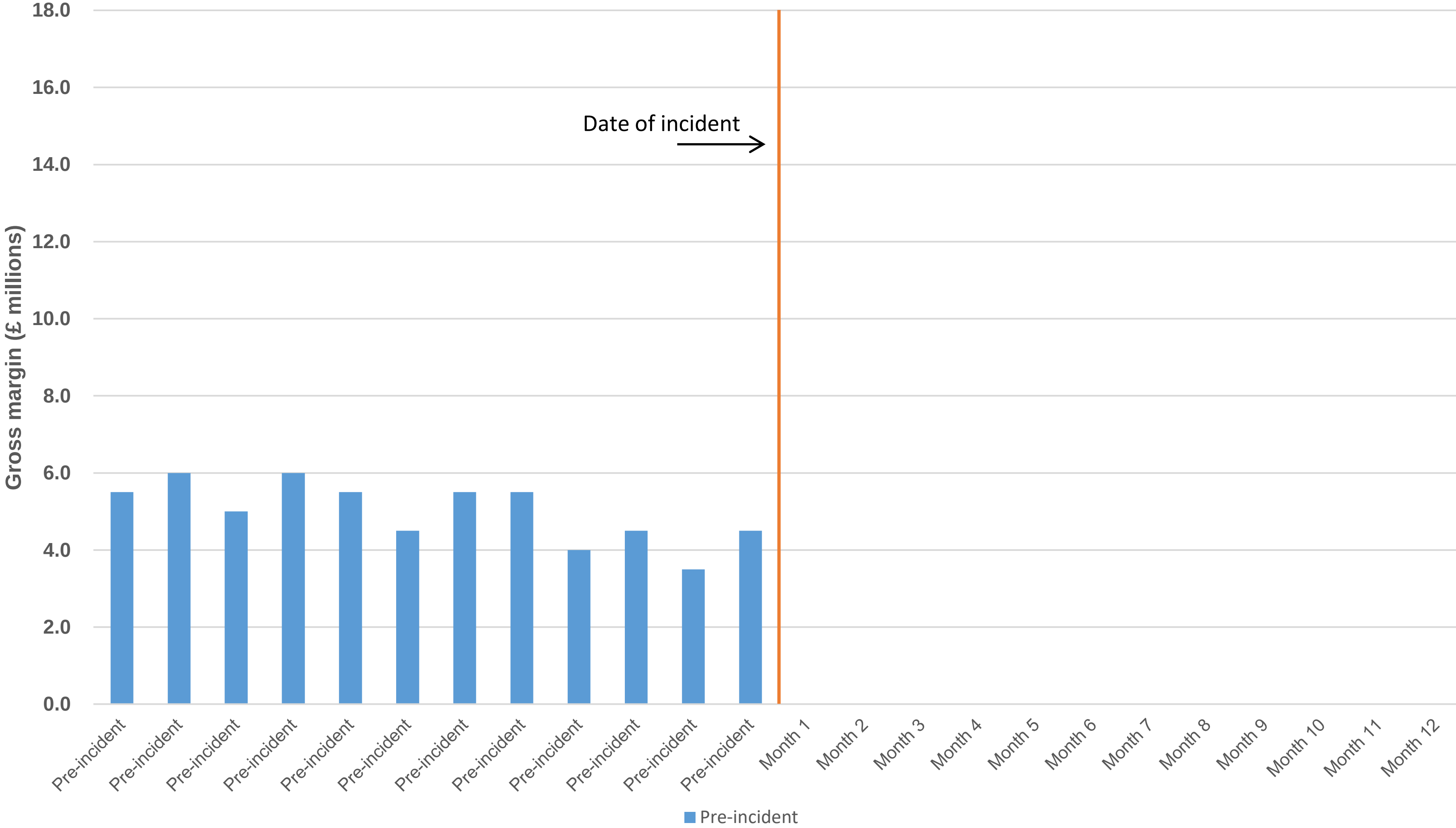
- Annual Declared Value - **£60 million**

- All amounts are before deductible

Illustrative example



Illustrative example



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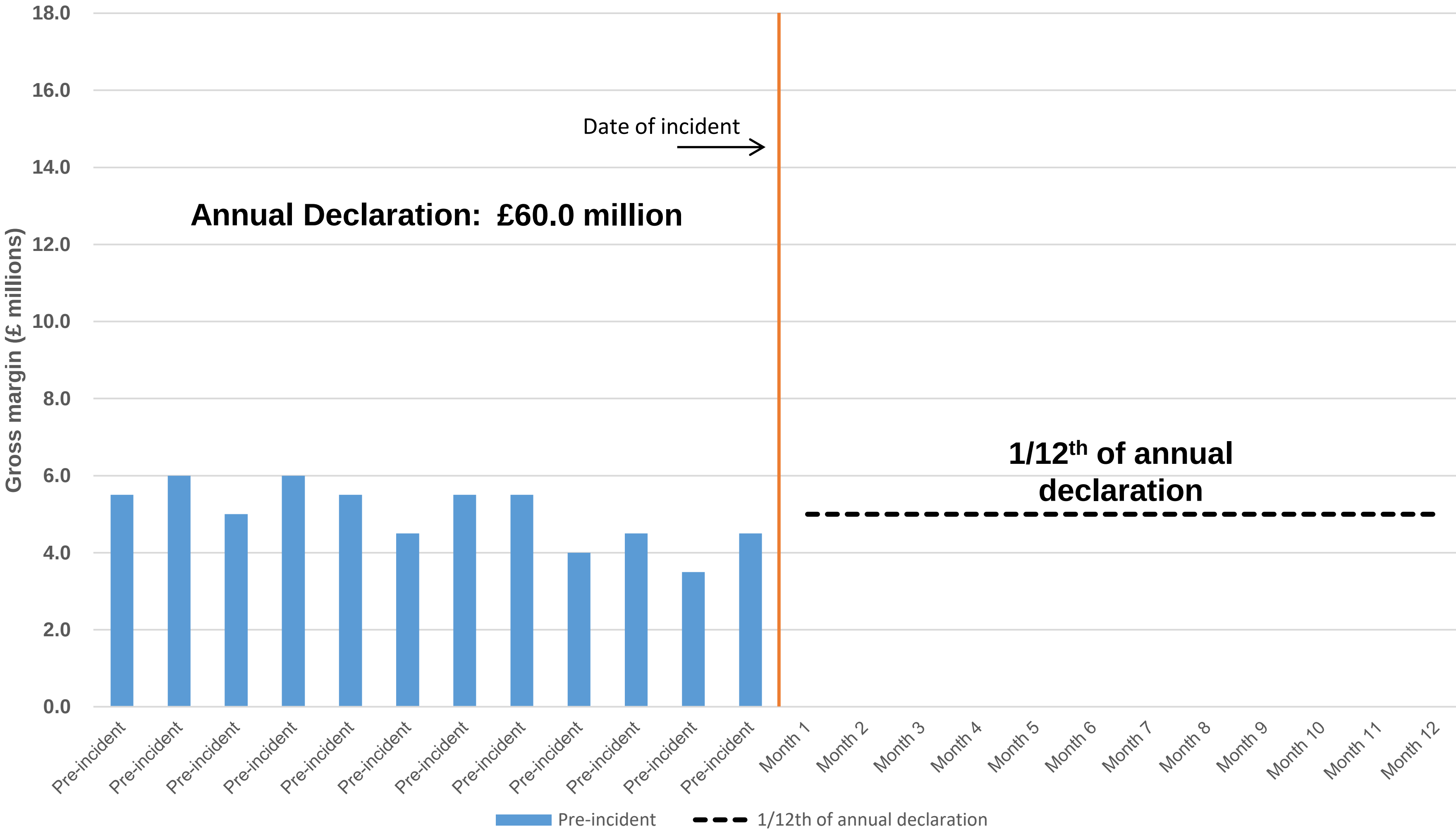

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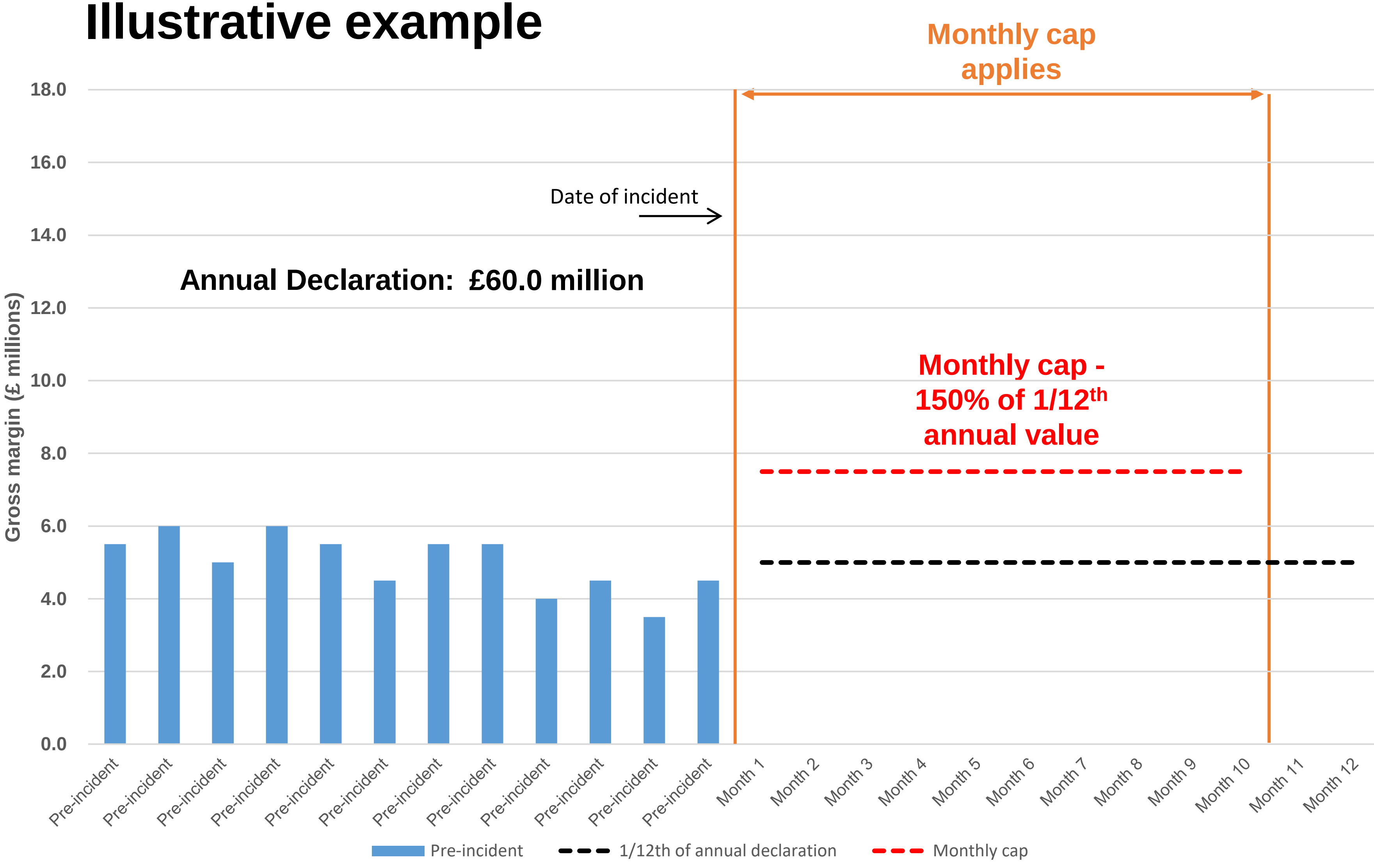

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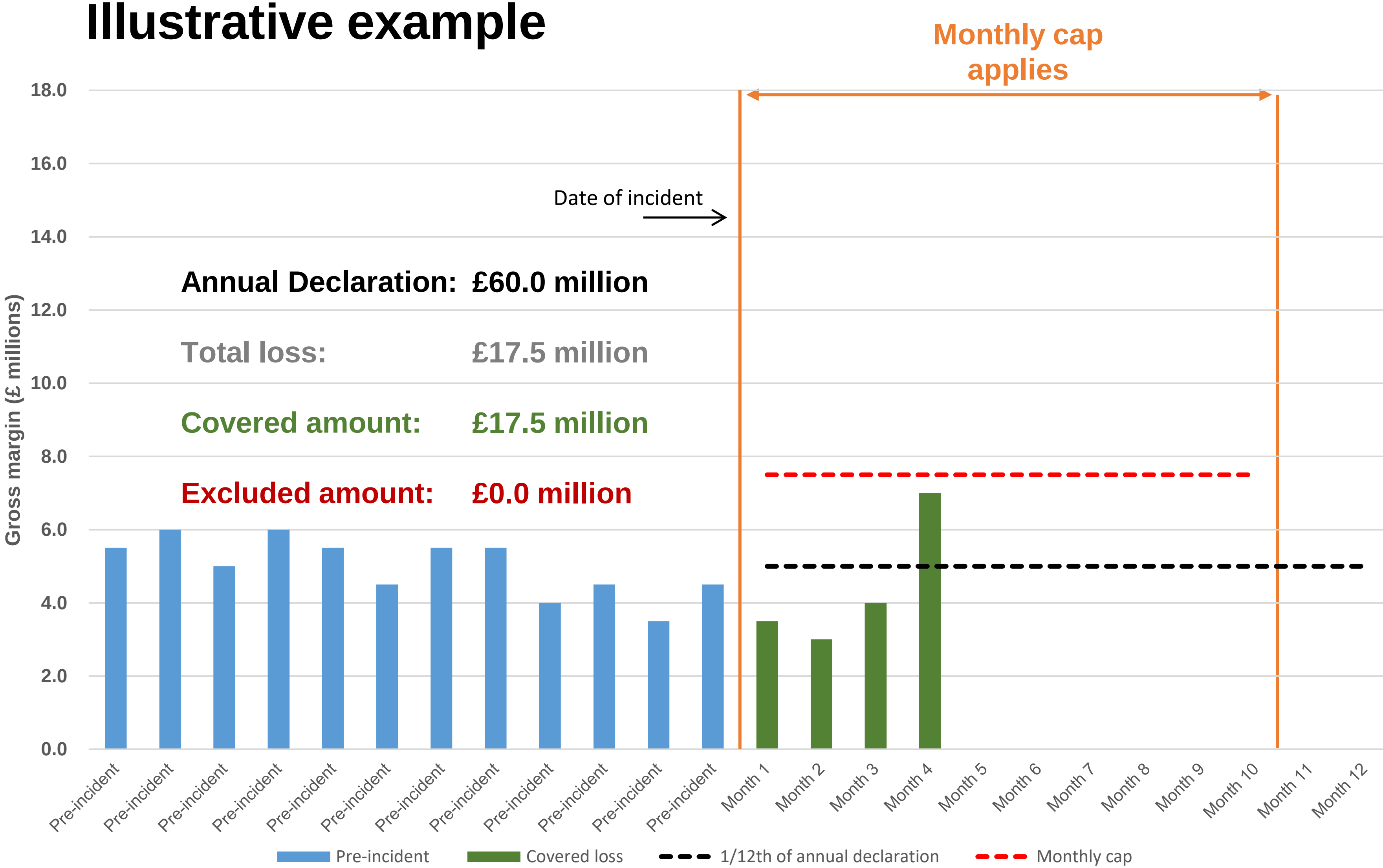

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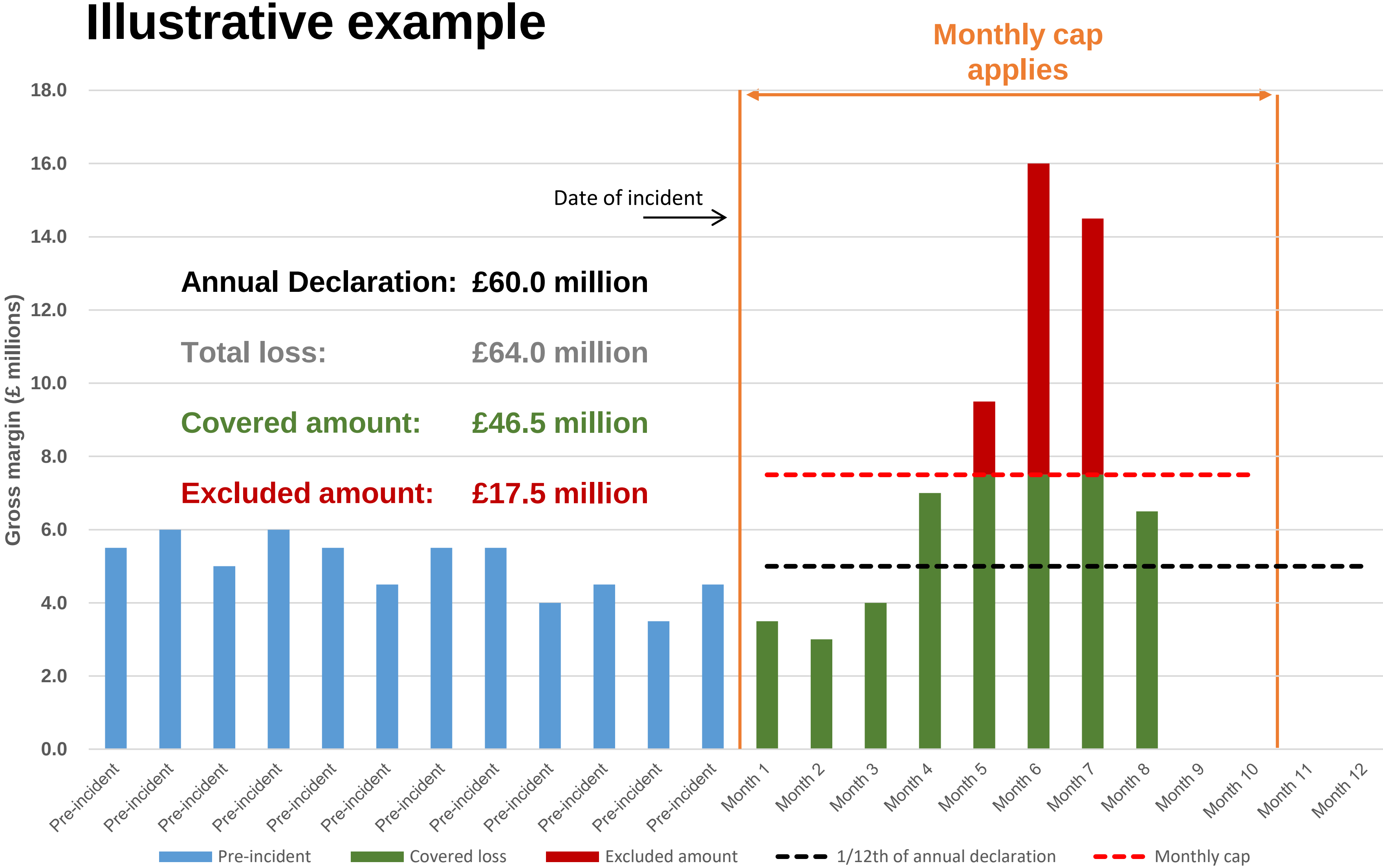

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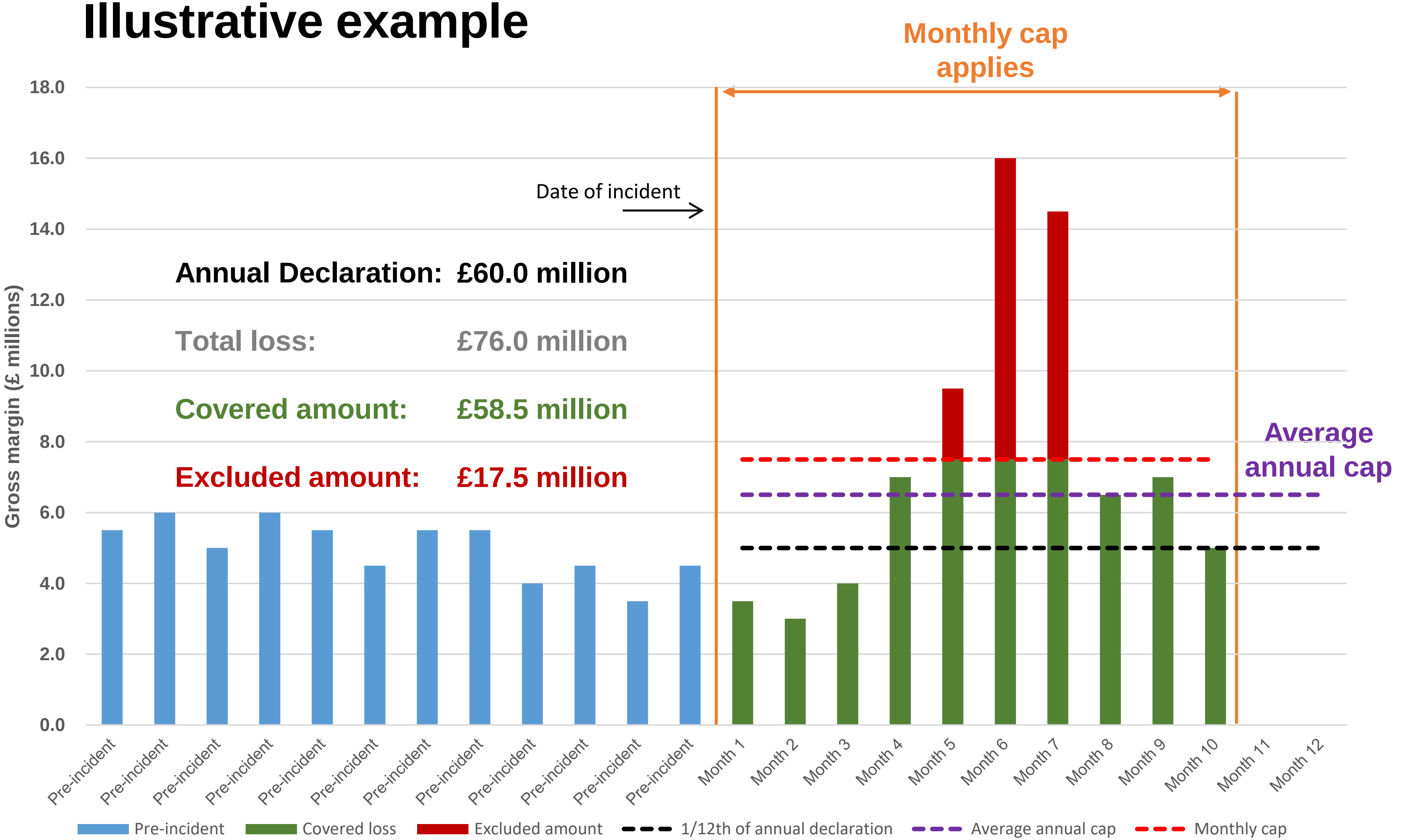

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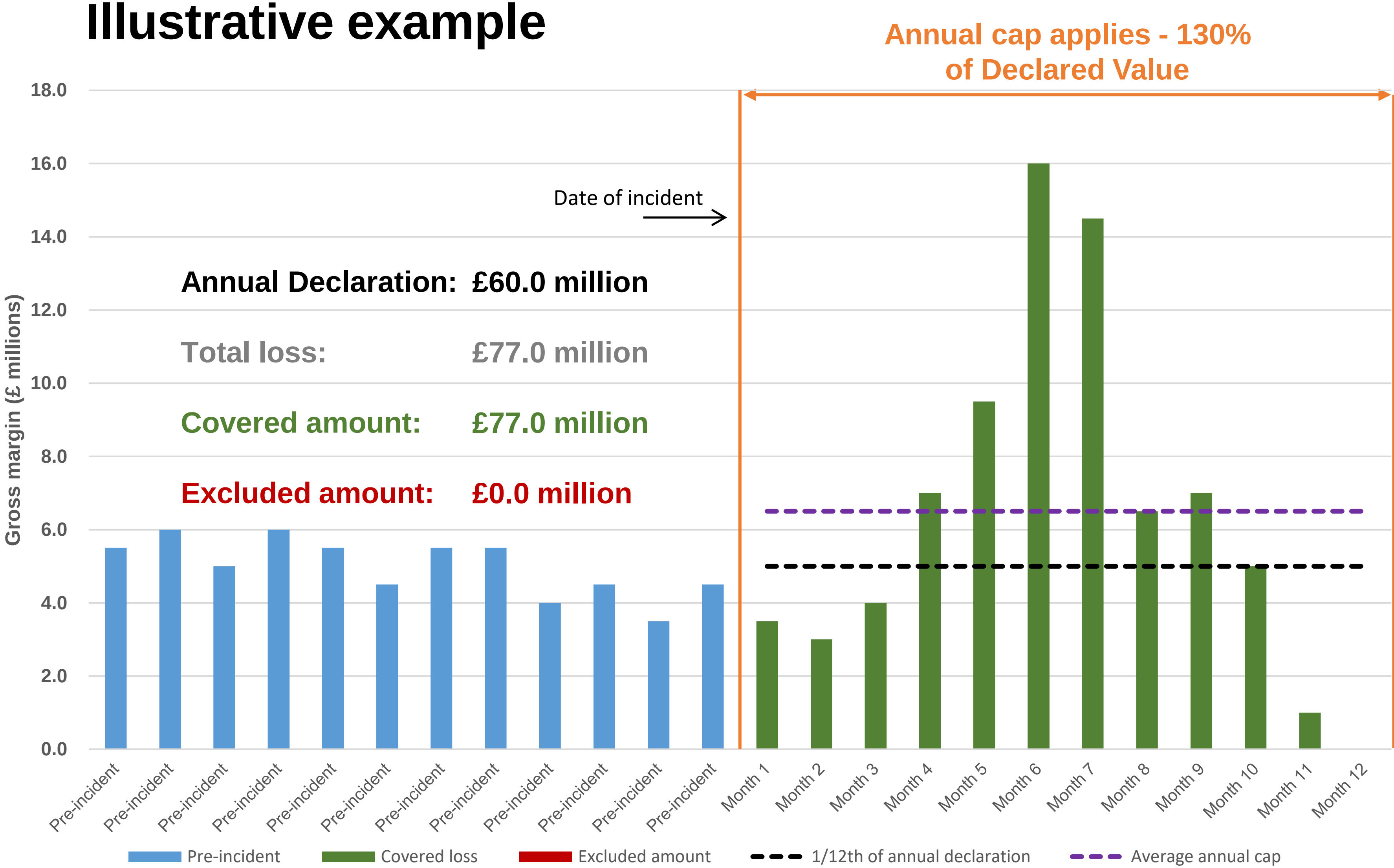


Market response / lessons learned

- Volatility clauses are standard for refineries and petrochem accounts
- Covid provided a good example of volatility and an accumulation of adjustments
- Increased focus on BI values
- Clients provide more BI information
- There are few examples where Bi volatility clause has curtailed the BI indemnity
- Few clients provide monthly data although this is more the case than before the clause
- Few clients update their values mid-term
- Discussions on adjustment going forward vs retrospective

Business Interruption Volatility Clause - updated wording LMA5515

For use on Oil, Gas and Petrochemical Contracts

1. Subject to the other terms, conditions, and limitations of this (Re)Insurance:

1.1 the Annual Cap for business interruption indemnity shall be ______% of the declared annual business interruption value of the Location(s) suffering:

1.1.1 Damage; or

1.1.2 a business interruption loss resulting from Damage at another Location(s) or the property of a customer or supplier, including utilities and services.

Separate Annual Caps with percentages equal to the Annual Cap shall additionally apply to any other Location(s) suffering a business interruption loss resulting from such Damage, based on the relevant declared annual business interruption value of each affected Location(s).

1.2 the Monthly Cap for business interruption indemnity shall be ______% of the declared monthly business interruption values of the Location(s) suffering:

1.2.1 Damage; or

1.2.2 a business interruption loss resulting from Damage at another Location(s) or the property of a customer or supplier, including utilities and services.

Separate Monthly Caps with percentages equal to the foregoing outlined Monthly Cap percentage shall additionally apply to any other Location(s) suffering a business interruption loss resulting from such Damage, based on the relevant declared monthly business interruption value of each affected Location(s).

In the absence of business interruption values declared on a monthly basis, monthly business interruption values used to calculate the Monthly Cap shall equal the declared business interruption value pro-rated to provide a monthly value.

Business Interruption Volatility Clause - updated wording LMA5515

2. If the values are declared for a period which is more, or less, than one year, then the annual value shall be calculated on a pro-rata basis.

3. The Annual Cap or Monthly Cap shall apply for interruption periods as follows:

   3.1 For interruptions equal to or less than 10 months from the date of Damage the Monthly Cap applicable to each monthly period of the interruption shall apply.

   3.2 For interruptions of greater than 10 months but less than 12 months from the date of Damage, the Annual Cap shall apply.

   3.3 For interruptions greater than 12 months from the date of Damage and where the values are declared on a monthly basis, the Annual Cap shall apply to each full period of greater than 10 months but less than 12 months and the Monthly Cap shall apply for any subsequent period equal to or less than 10 months.

4. Subject to the other terms, conditions, and limitations of this (Re)Insurance, business interruption values can be updated by the (Re)Insured and agreed by the (Re)Insurers in writing at any time during the Period of Insurance and the re-declared values shall then apply for the remainder of the Period of Insurance subject to any subsequent re-declarations. The premium will be adjusted in proportion to the change in values declared at the time of re-declaration, in accordance with the terms of this (Re)Insurance.

Business Interruption Volatility Clause - updated wording LMA5515

Unless specified elsewhere in this (Re)Insurance, the premium adjustment made in accordance with this clause shall be calculated at the business interruption rates applied at policy inception in proportion to the change in values declared, for the portion of the Period of Insurance which is subject to the re-declaration. However, in the event that the Location(s) suffer business interruption, the business interruption indemnity caps for each Location(s) suffering a business interruption loss under paragraphs 1.1 and 1.2 shall be based on the declared values at the time of the Damage.

For the purposes of calculating the redeclared business interruption values, the effect of any loss notified under the original policy shall not be taken into account.

Where business interruption values are redeclared to zero at a Location(s), then any coverage under the business interruption section would also cease for this Location(s).

All additional premium or return of premium resulting from re-declarations during the Period of Insurance shall be reconciled at the policy expiry and the resulting payment made within 60 days unless otherwise agreed.

5. In the event that the original policy includes a business interruption premium adjustment provision based on retrospective business interruption values at policy expiry or similar, this clause overrides such provision.

Definitions

6. Definitions for the purposes of this clause are as follows:

   1. Damage shall be defined as contained within the original policy.
   2. Location(s) shall mean the location or locations listed in the Schedule.
   3. Period of Insurance shall be defined as contained within the original policy.

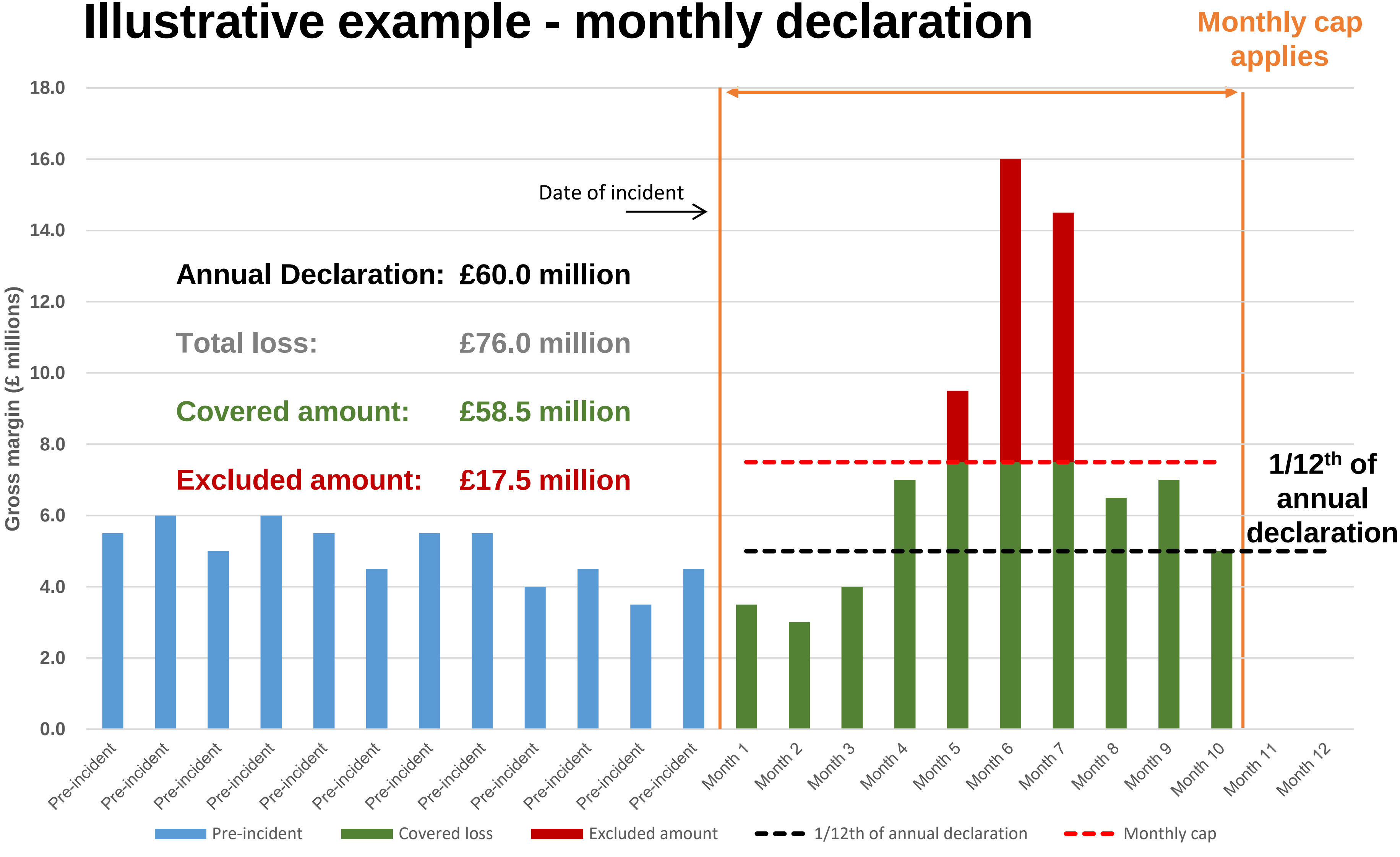
LMA5515

27 November 2020

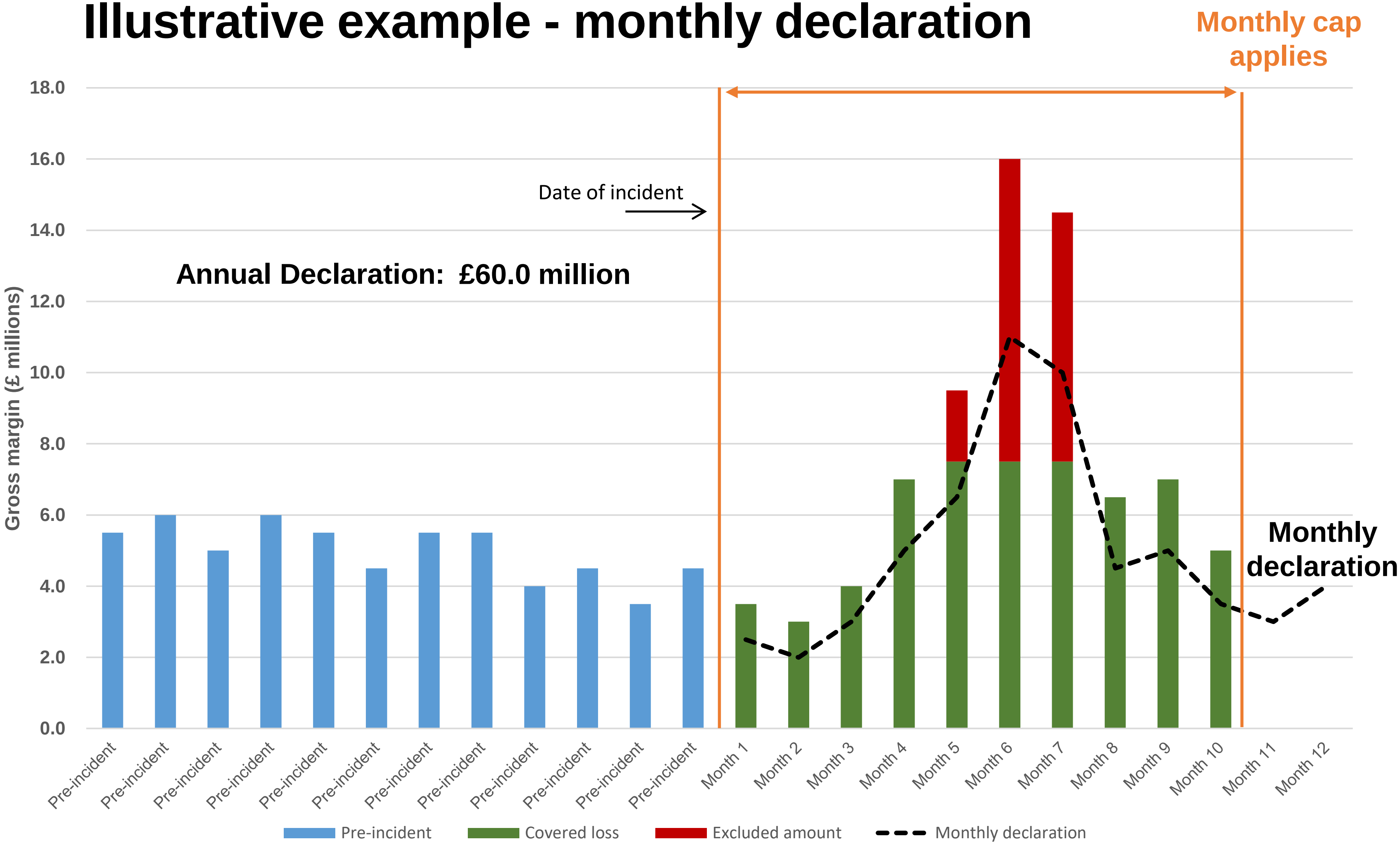
Potential complications

- Planned outage periods
- Partial losses
- Differing volatility percentages for each insurer / layer
- ICWs, AICWs and Take-or-Pay - how would the cap apply?
- Part months
- Interaction with Premium Adjustment clause

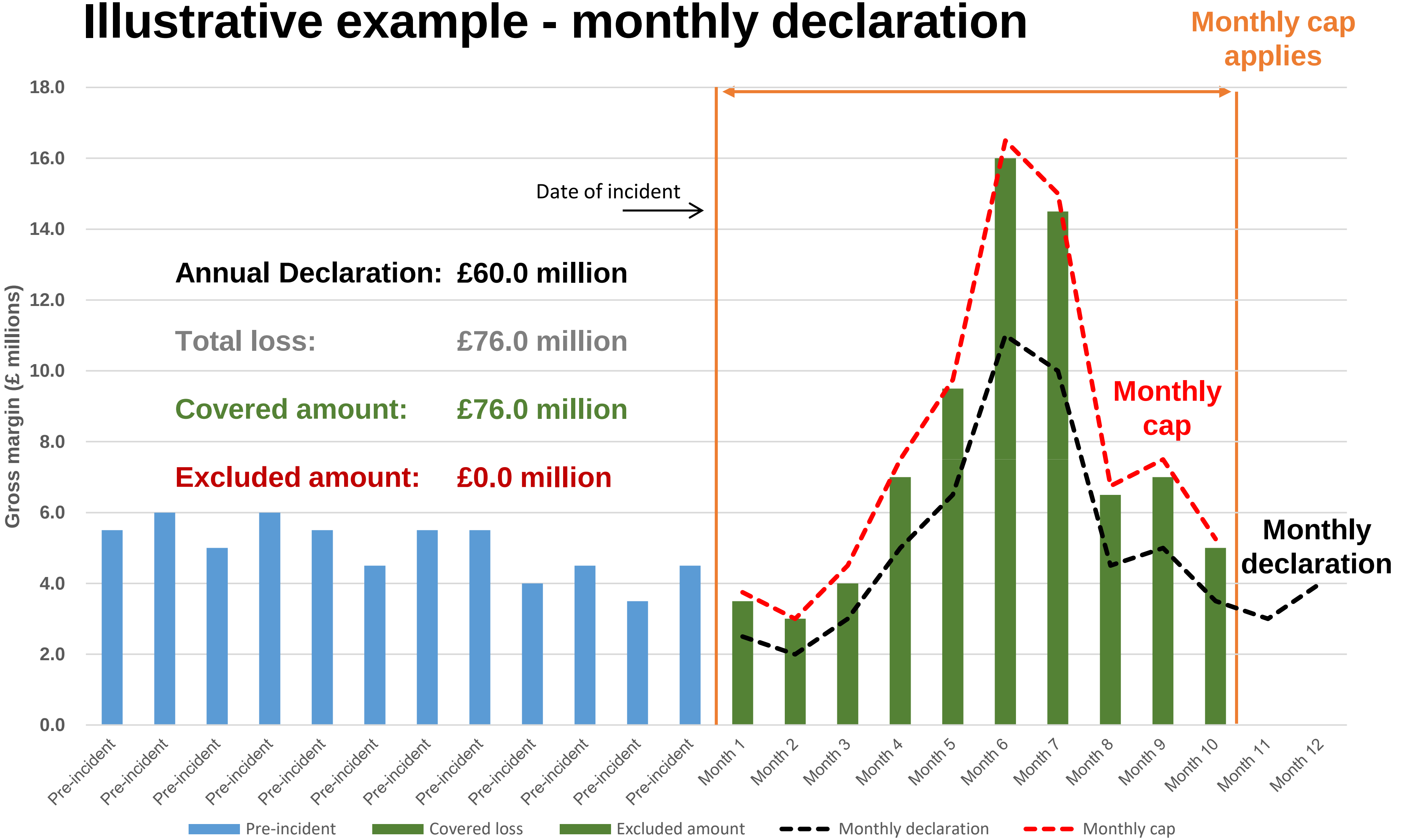
Illustrative example - monthly declaration



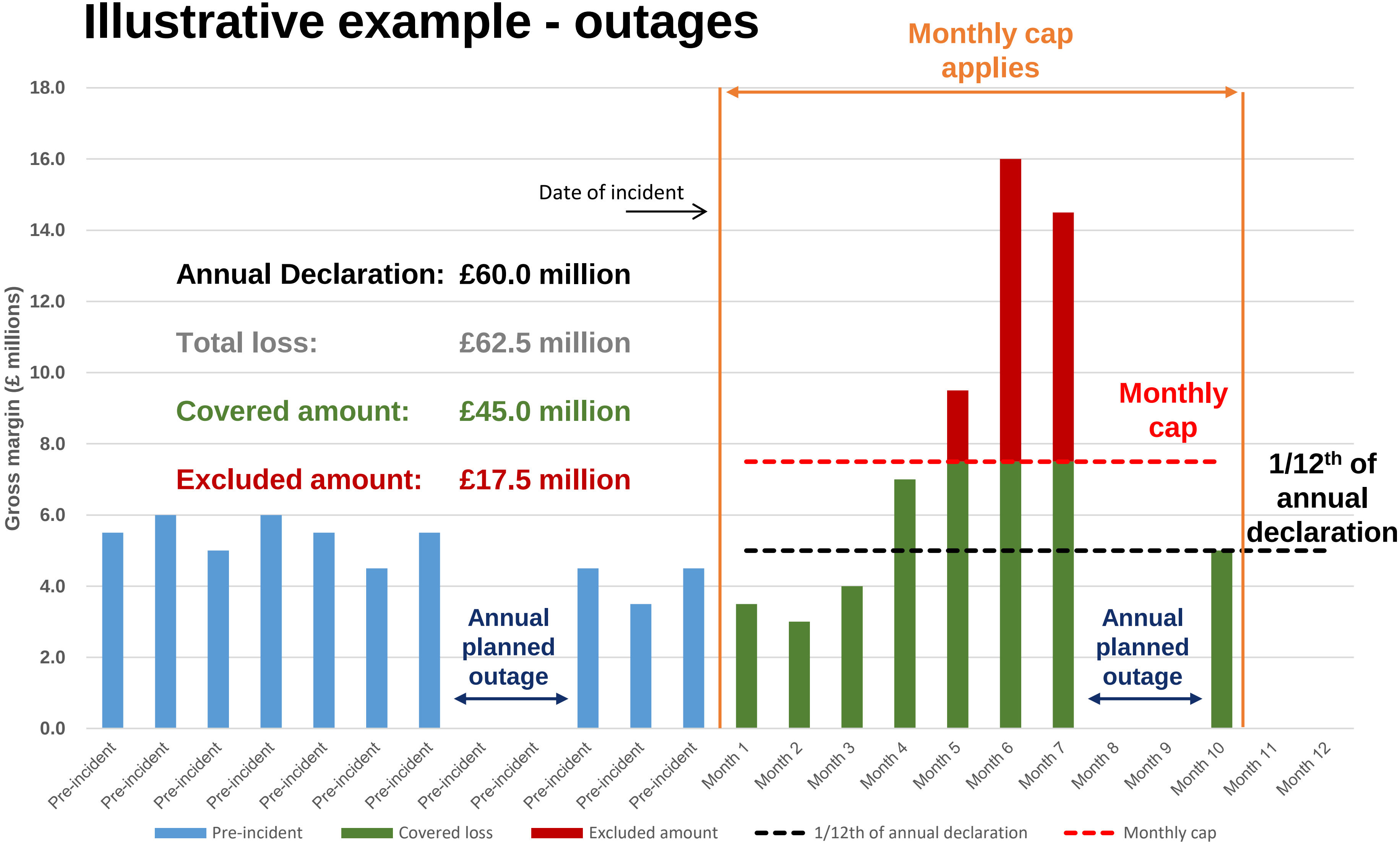
Illustrative example - monthly declaration



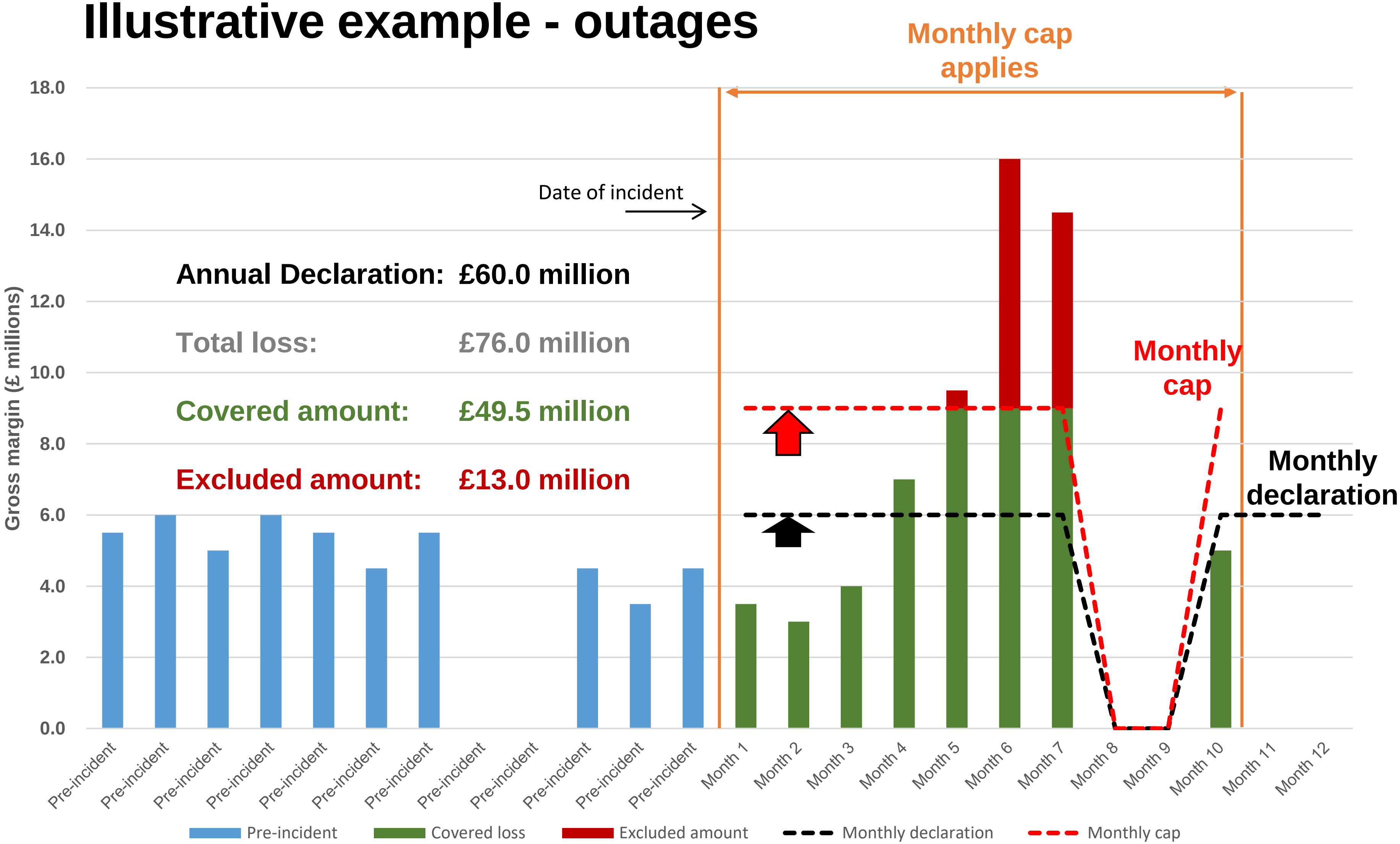
Illustrative example - monthly declaration



Illustrative example - outages



Illustrative example - outages



Illustrative example - partial loss

Background:

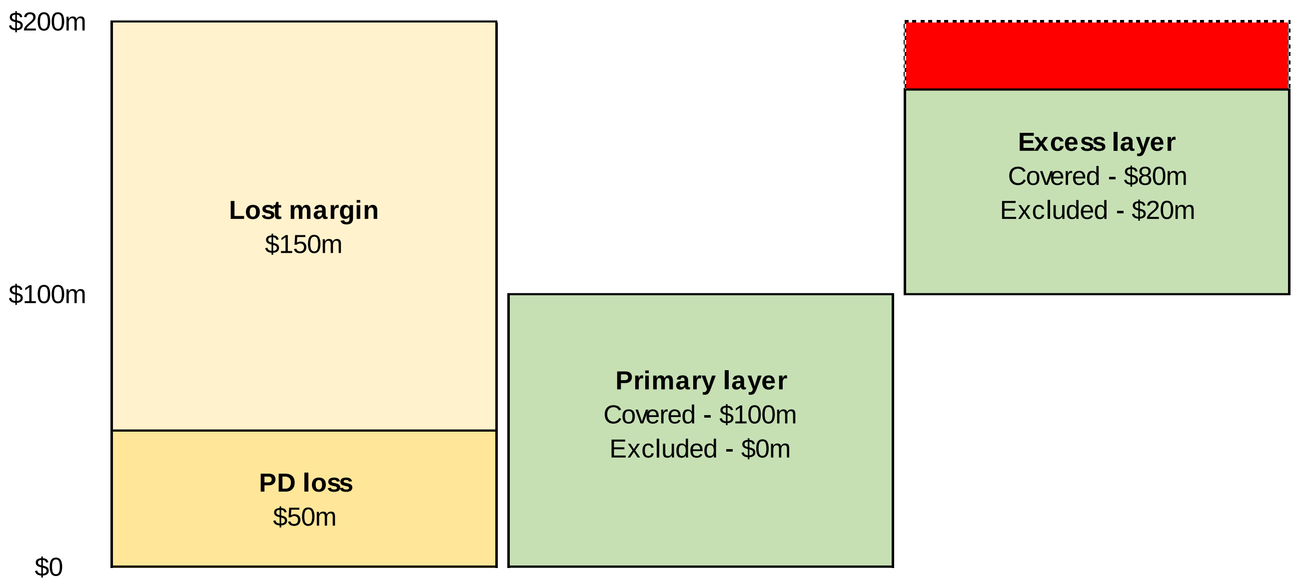
- *"The Annual Cap for business interruption indemnity shall be **120%** of the declared annual business interruption value of the Location(s) suffering Damage…*
- Annual Declared Value - **$10 million**

Description	Total loss	Partial loss
	£	£
Annual cap (120%)	**12,000,000**	**12,000,000**
Total Value at Risk	24,000,000	24,000,000
Proportion lost	100%	50%
Lost gross margin	**24,000,000**	**12,000,000**
Proportion of loss recovered	**50%**	**100%**

Illustrative example - differing volatility percentages

Background:

- PD loss - **$50 million**
- BI Declared Value for loss period - **$100 million**
- Lost margin during loss period - **$150 million**
- Volatility percentages:
  - **Primary layer** ($100m xs $0) - **150%**
  - **Excess layer** ($100m xs $100m) - **130%**



What if the market is more complicated?

<table>
<tr><th>Tower 1 (20%)</th><th>Tower 2 (35%)</th><th>Tower 3 (15%)</th><th>Tower 4 (30%)</th></tr>
<tr><td rowspan="5">$1,000 million xs $0</td><td rowspan="2">$500 million xs $500 million</td><td colspan="2">$250 million xs $750 million</td></tr>
<tr><td rowspan="4">$750 million xs $0</td><td rowspan="2">$500 million xs $250 million</td></tr>
<tr><td rowspan="2">$400 million xs $100 million</td></tr>
<tr><td>$150 million xs $100 million</td></tr>
<tr><td>$100 million xs $0</td><td>$100 million xs $0</td></tr>
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Reuters

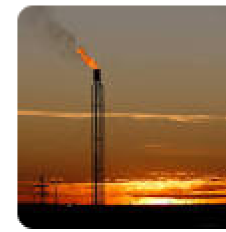
U.S. gasoline refining profits slump to 2008 levels amid coronavirus fears

Refiners process crude oil into a n
heating oil and diesel fuel. Normal

16 Mar 2020

Reuters

U.S. natgas volatility jumps to a record as prices soar



Reuters

Oil steadies as energy crunch stirs up volatility, recovery ...

"People are starting to realize that the risk of higher energy prices could derail growth," said Phil Flynn, an analyst at Price Futures Group...

1 week ago

Bloomberg.com

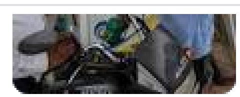
U.K. Sees More Energy Suppliers Failing in Volatile Markets

The significant upward pressure on gas prices is likely to continue and the market needs to brace for further shocks, Ofgem Chief Executive...

2 weeks ago

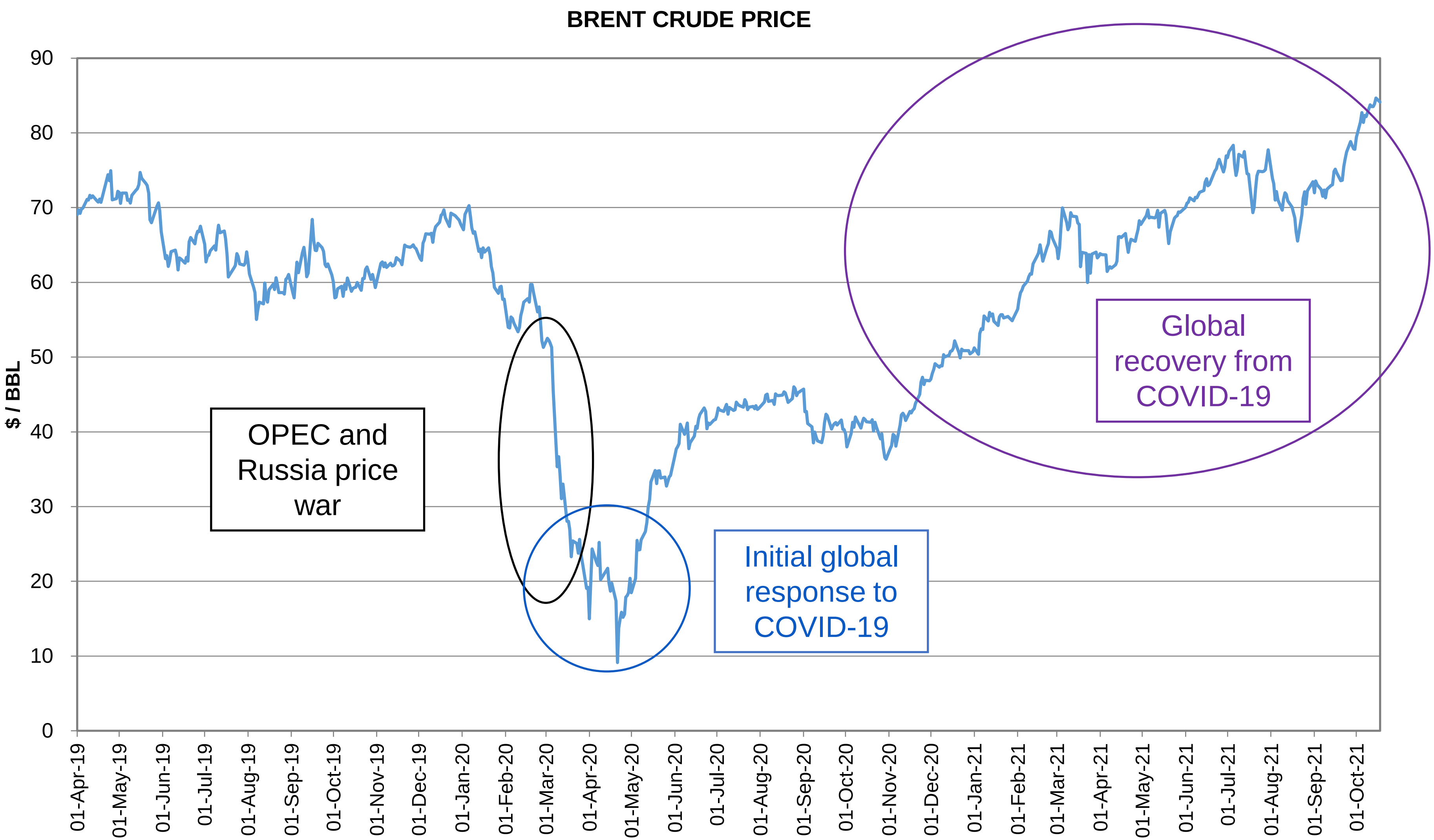
BS Business St

Petrol, dies
market

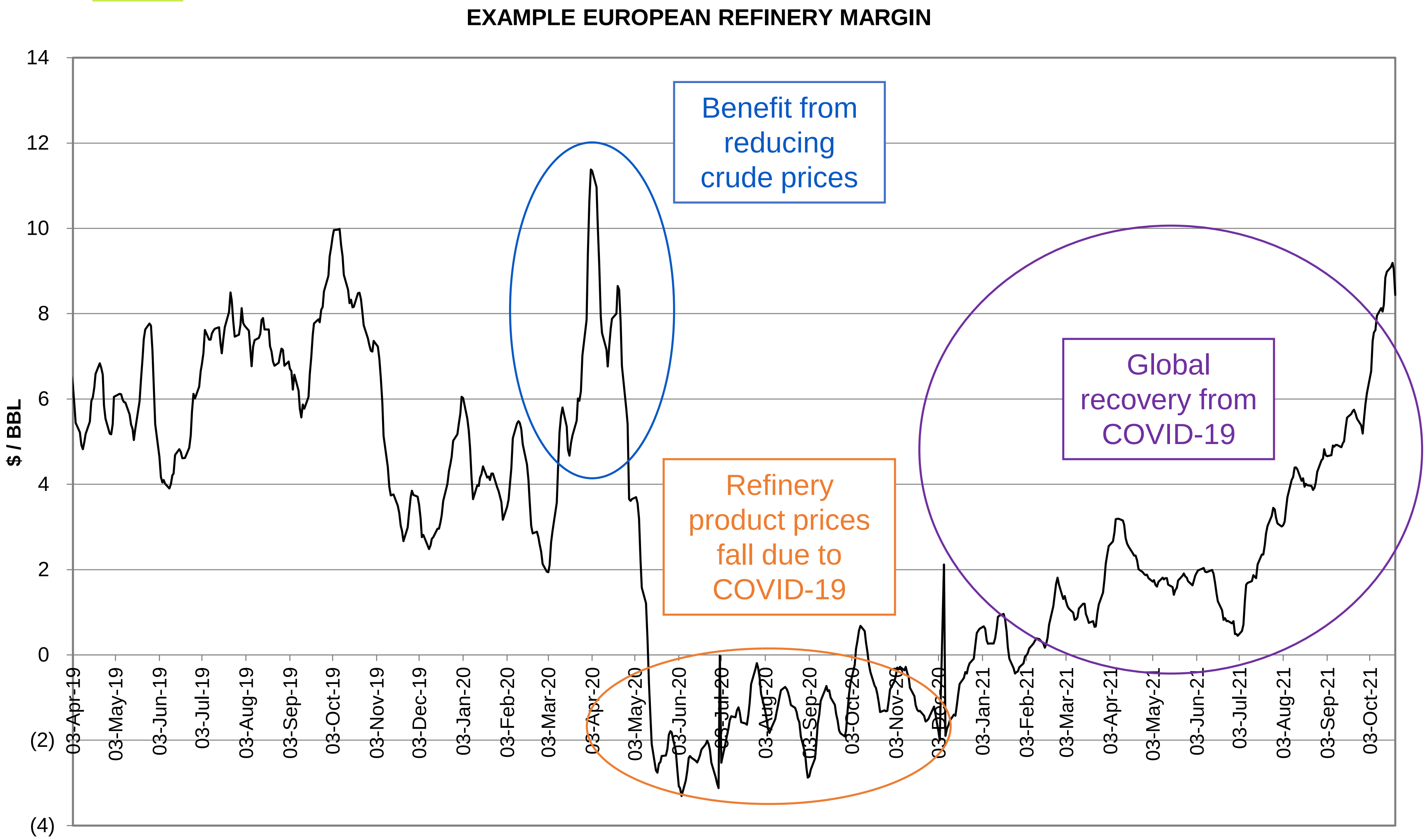


This is the reason why petrol prices were not revised for last three weeks. But extreme volatility in global oil price movement has now pushed...

3 weeks ago



BRENT CRUDE PRICE
$ / BBL
90
80
70
60
50
40
30
20
10
0
01-Apr-19
01-May-19
01-Jun-19
01-Jul-19
01-Aug-19
01-Sep-19
01-Oct-19
01-Nov-19
01-Dec-19
01-Jan-20
01-Feb-20
01-Mar-20
01-Apr-20
01-May-20
01-Jun-20
01-Jul-20
01-Aug-20
01-Sep-20
01-Oct-20
01-Nov-20
01-Dec-20
01-Jan-21
01-Feb-21
01-Mar-21
01-Apr-21
01-May-21
01-Jun-21
01-Jul-21
01-Aug-21
01-Sep-21
01-Oct-21
OPEC and Russia price war
Initial global response to COVID-19
Global recovery from COVID-19


EXAMPLE EUROPEAN REFINERY MARGIN
$ / BBL
14
12
10
8
6
4
2
0
(2)
(4)
Benefit from reducing crude prices
Refinery product prices fall due to COVID-19
Global recovery from COVID-19
03-Apr-19
03-May-19
03-Jun-19
03-Jul-19
03-Aug-19
03-Sep-19
03-Oct-19
03-Nov-19
03-Dec-19
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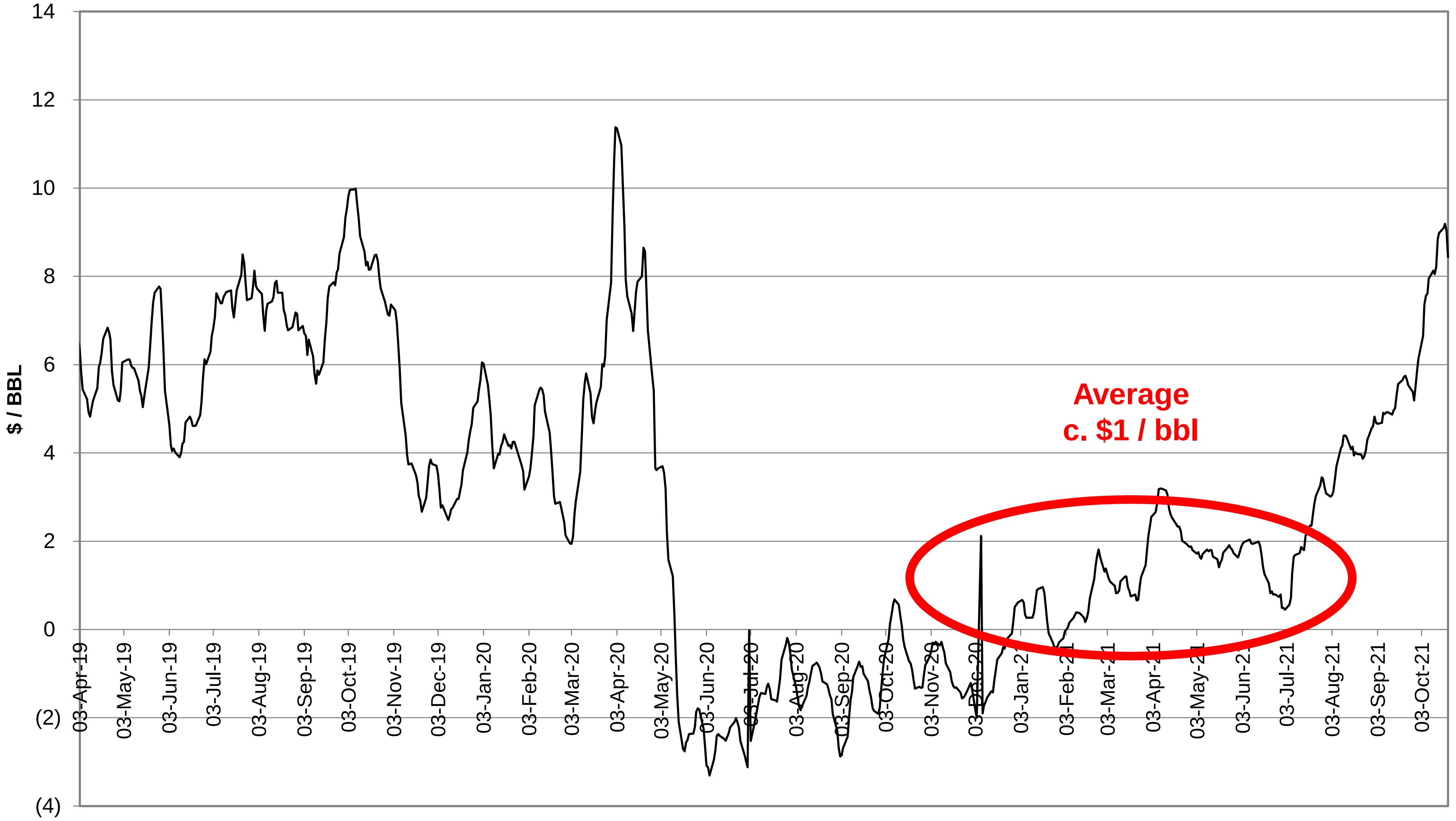
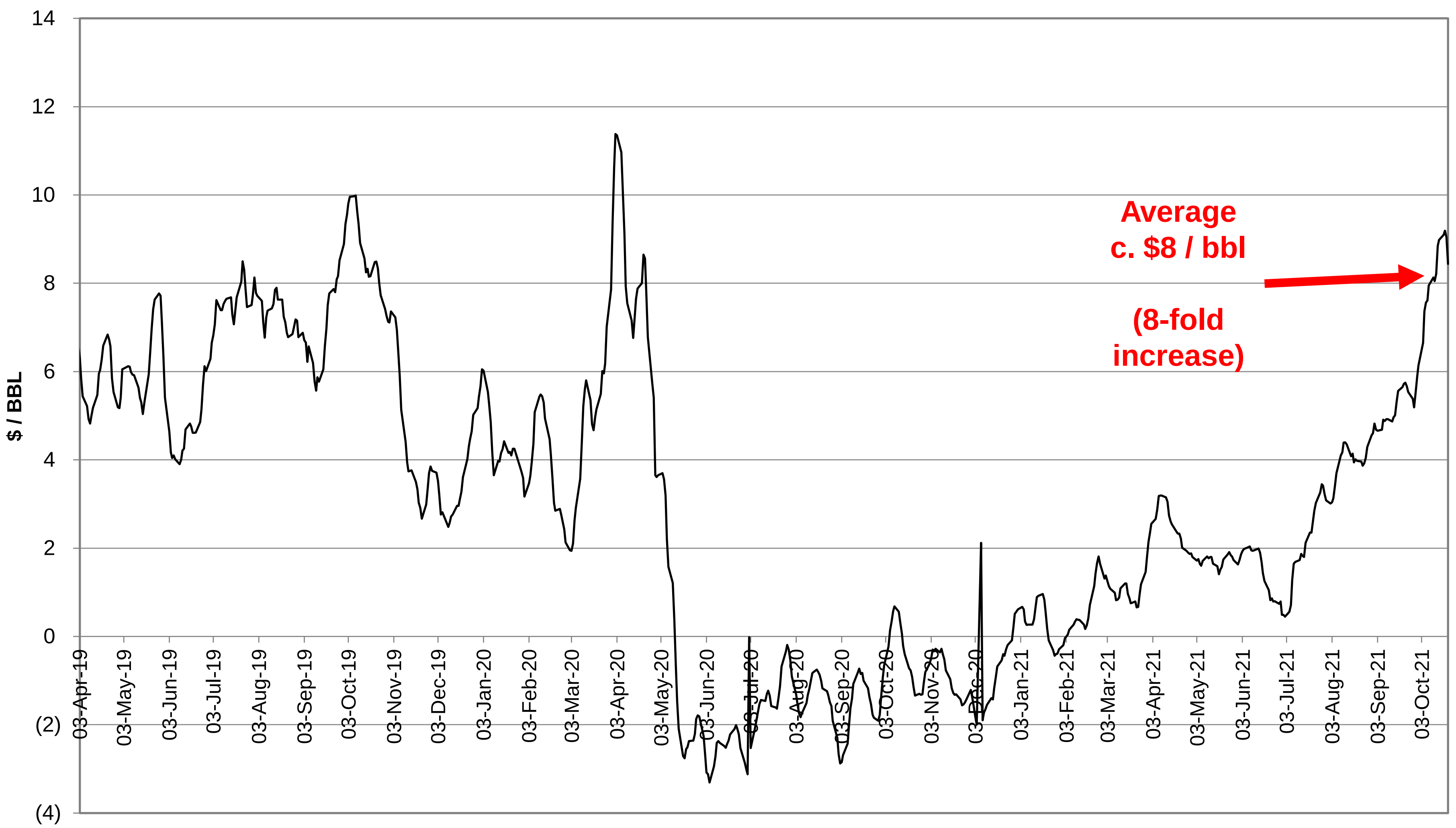
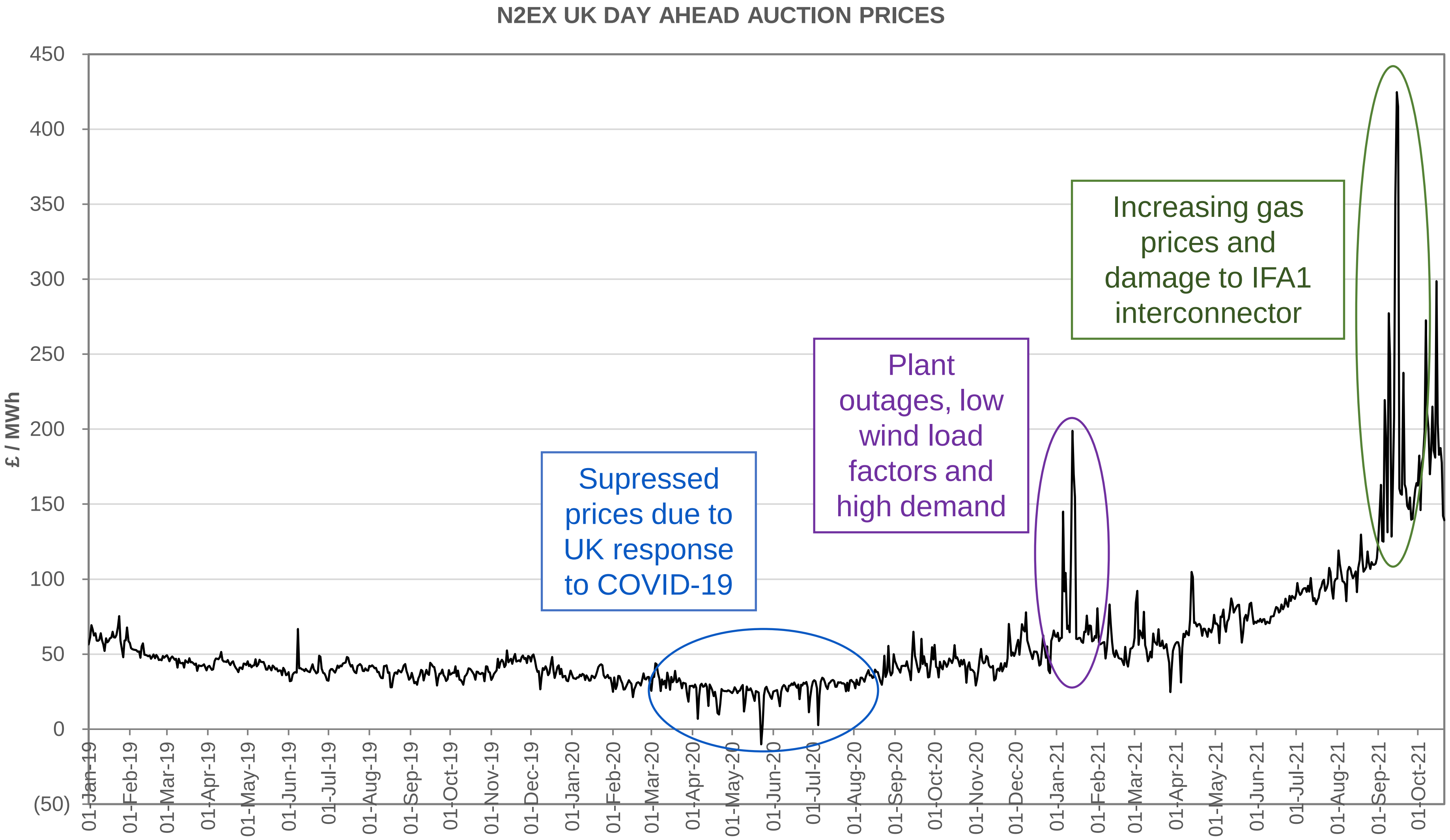
EXAMPLE EUROPEAN REFINERY MARGIN



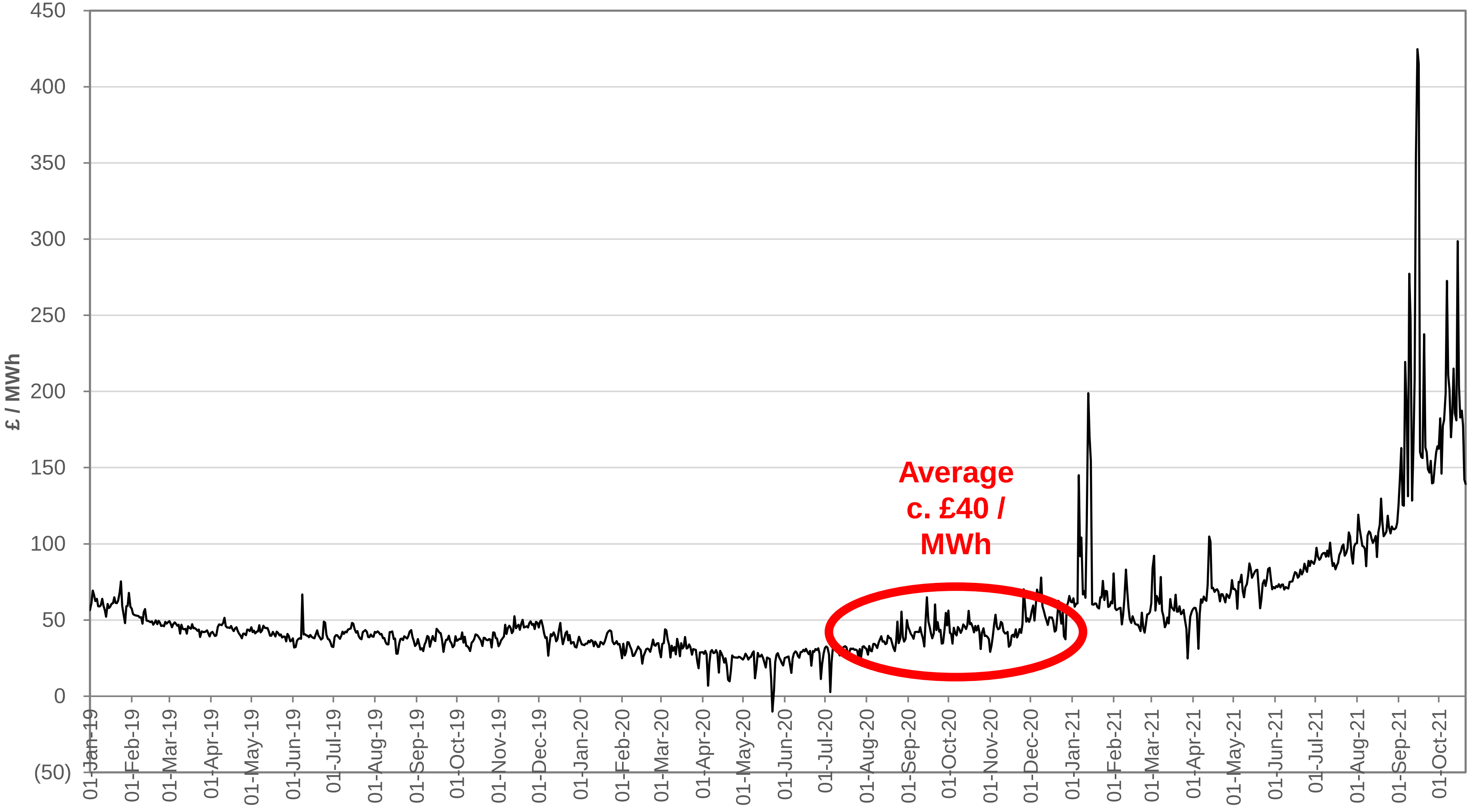
EXAMPLE EUROPEAN REFINERY MARGIN

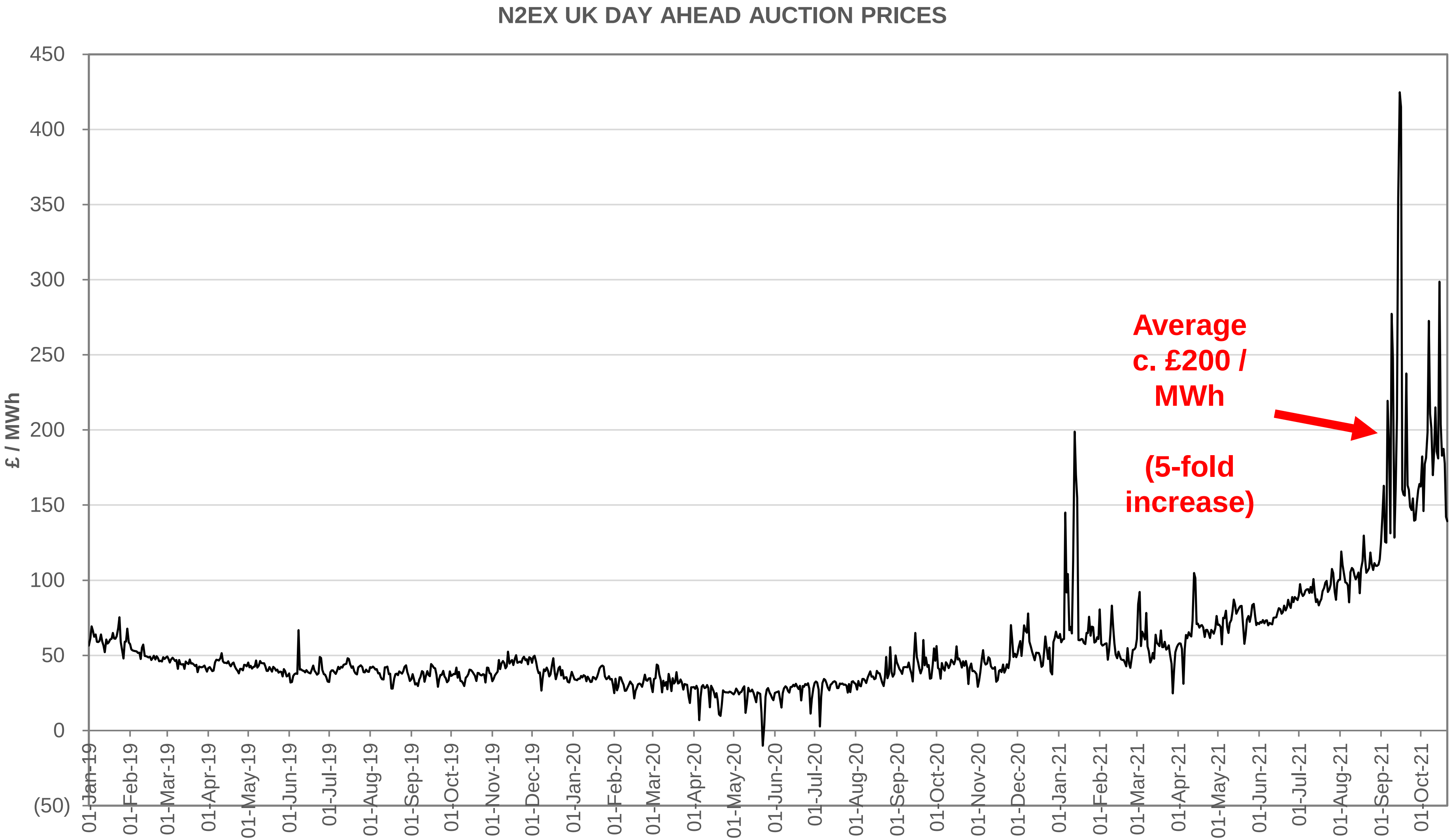




N2EX UK DAY AHEAD AUCTION PRICES
£ / MWh
450
400
350
300
250
200
150
100
50
0
(50)
01-Jan-19
01-Feb-19
01-Mar-19
01-Apr-19
01-May-19
01-Jun-19
01-Jul-19
01-Aug-19
01-Sep-19
01-Oct-19
01-Nov-19
01-Dec-19
01-Jan-20
01-Feb-20
01-Mar-20
01-Apr-20
01-May-20
01-Jun-20
01-Jul-20
01-Aug-20
01-Sep-20
01-Oct-20
01-Nov-20
01-Dec-20
01-Jan-21
01-Feb-21
01-Mar-21
01-Apr-21
01-May-21
01-Jun-21
01-Jul-21
01-Aug-21
01-Sep-21
01-Oct-21
Supressed prices due to UK response to COVID-19
Plant outages, low wind load factors and high demand
Increasing gas prices and damage to IFA1 interconnector

N2EX UK DAY AHEAD AUCTION PRICES




N2EX UK DAY AHEAD AUCTION PRICES
£ / MWh
450
400
350
300
250
200
150
100
50
0
(50)
01-Jan-19
01-Feb-19
01-Mar-19
01-Apr-19
01-May-19
01-Jun-19
01-Jul-19
01-Aug-19
01-Sep-19
01-Oct-19
01-Nov-19
01-Dec-19
01-Jan-20
01-Feb-20
01-Mar-20
01-Apr-20
01-May-20
01-Jun-20
01-Jul-20
01-Aug-20
01-Sep-20
01-Oct-20
01-Nov-20
01-Dec-20
01-Jan-21
01-Feb-21
01-Mar-21
01-Apr-21
01-May-21
01-Jun-21
01-Jul-21
01-Aug-21
01-Sep-21
01-Oct-21
Average c. £200 / MWh
(5-fold increase)

Looking forward

- The Margin Volatility clause is now widespread in the refining / petrochemical sector
- Few claims to date have been capped by the Margin Volatility clause
- However, current market volatility and increasing margins may result in capping of claims becoming more frequent in the near future
- If margins have changed significantly, need to review declarations to ensure a full recovery against a policy with a Margin Volatility clause