

# MAINTENANCE INCENTIVE - FINAL REPORT

March 2020

## 1. INTRODUCTION

Ofgem commissioned a partnership of CEPA, AFRY Management Consulting (AFRY) and Economic Consulting Associates (ECA) to provide economic advice for RIIO-2. This report has been prepared by AFRY under this Economic Strategic Partner contract for RIIO-2.

This report sets out our findings regarding National Grid Gas Transmission's (NGGT) proposals in respect of its maintenance incentive.

### 1.1 Current incentive structure

The current maintenance incentive is split into two scheme components.

- The **Changes Scheme** aims to minimise the number of changes initiated by NGGT to the agreed maintenance plan. A financial incentive of up to £500,000 is designed to reward changing fewer than 7.25% of the days of planned maintenance.
- The **Use of Days Scheme** aims to minimise of the use of exit maintenance days to perform remote valve operations (RVOs). A financial incentive of up to £215,000 is designed to reward using fewer than 11 maintenance days that interrupt customers. A maintenance day (MD) refers to a day of maintenance which impacts upon a customer.

The incentives apply to the maintenance performed from April to September (inclusive) and the schemes have been fully active since 2016/17. As the targets were softened in 2015/16, the data presented for 2015/16 is not consistent with the following years.

As part of their RIIO-2 submission, NGGT have proposed an additional incentive to cover MDs used whilst performing other maintenance activities (non-RVO maintenance) which has a financial incentive of up to £500,000. NGGT have proposed a target of aligning 75% of its non-RVO maintenance with customers' own outages, such that the number of MDs taken for non-RVO maintenance is 25% of the total planned non-RVO maintenance.

NGGT also set out its proposals for the maintenance incentive in RIIO-2 in a Stakeholder Consultation on RIIO-2 incentives published in December 2019<sup>1</sup>.

### 1.2 Objective of study

Ofgem's requirement for this report is summarised as follows.

- To review NGGT's proposals for widening the scope of the incentive to cover non-RVO maintenance by exploring:

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<sup>1</sup> <https://www.nationalgrid.com/uk/gas-transmission/document/129251/download>



- the proportion of the remote valve operation (RVO) maintenance activity versus non-RVO maintenance activities;
  - whether widening the scope of this incentive is justifiable; and
  - whether the proposed new incentive is appropriate and is likely to deliver value to consumers.
- To advise whether or not NGGT should continue to earn money from the current two schemes of the Maintenance incentive or if they should be made downside only or reputational.

Our analysis and recommendations are based upon NGGT's December Business Plan (BP), annual maintenance reviews<sup>2</sup>, the shallow incentive review<sup>3</sup>, answers to supplementary questions (SQs) and a meeting between NGGT and AFRY held on 17 February 2020.

### 1.3 Meeting with NGGT

At our February 2020 meeting with NGGT (see Annex A for attendees and agenda), NGGT explained their approach to building up their 10 year outage plan and its success in minimising the impact on customers. [REDACTED] Further detail was provided in SQ20<sup>4</sup>.

We also discussed the different maintenance activities, how long each type of activity could take and how many customers are impacted by certain activities.

### 1.4 Structure of report

The remainder of this report is structured as follows:

- Section 2 reviews the Changes Scheme;
- Section 3 reviews the Use of Days Scheme;
- Section 4 assesses the proposed non-RVO Use of Days Scheme; and
- Section 5 summarises the analysis and recommendations.

For each element of the incentive scheme (current and proposed) we have presented:

1. a review of the current incentive;
2. NGGT's proposed change;
3. NGGT's recent performance (since 2015/16);
4. an estimate of the potential performance under RIIO-2 (based on limited historical information and NGGT's assertions that the maintenance plan will grow and become harder to align during RIIO-2); and

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<sup>2</sup> <https://www.nationalgridgas.com/data-and-operations/maintenance>

<sup>3</sup> 'Shallow Incentive Review', National Grid, June 2017

<sup>4</sup> NGGT\_SQ\_POL\_20



## 5. recommendations.

## 2. THE CHANGES SCHEME

### 2.1 Review of current incentive

Our initial assessment of the current scheme operation includes the following observations.

- The changes scheme has a target for NGGT to alter fewer than 7.25% of the days of planned maintenance. The number of planned maintenance activities changes considerably from year to year; hence the target varies in absolute number of days. However, there is no evidence or justification provided to explain the choice of 7.25% as an acceptable level of alteration.
- Under the current incentive, there is a symmetric reward/penalty scheme with a cap and collar. For each change day below (above) the target, then a payment (penalty) of £50,000 per change day is accrued up to a cap (collar) of £500,000 per annum.
- [REDACTED]
- The existing maintenance planning process provides for draft plans to be circulated and commented upon before the maintenance plan is finalised and published. The final plan is the reference point for changes and the consultation process reduces the likelihood of changes after the final plan is published.
- Consultation on the maintenance plan is now a standard part of NGGT's planning process and could therefore be considered as a business as usual activity.

### 2.2 NGGT's proposed change

NGGT has proposed no amendment to the Changes Scheme incentive.

### 2.3 NGGT's recent performance

NGGT has consistently outperformed against the incentive target throughout the period, as shown in Table 1. While NGGT has generally hit the cap on incentive payments in previous years (with the exception of 2015/16 for which the data is inconsistent), the company reported that performance in 2019/20 is likely to be lower by around [REDACTED]<sup>5</sup> due to a pig trap failing its PSSR (pressure system safety regulations) inspection. As it is still within the 2019/20 regulatory period, this will be validated and confirmed via NGGT's annual regulatory reporting obligations.

We have not been provided with any explanation as to why NGGT has been able to consistently outperform to this extent on the Changes Scheme or to justify the use of the 7.25% target underlying the incentive.

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<sup>5</sup> NGGT\_SQ\_POL\_67



Our observation is that the established process of consultation and review with users before the final maintenance plan is published means that the final plans are more closely aligned with users operating patterns and needs and so Change Days should be relatively uncommon.

**Table 1 – NGGT's performance against Changes Scheme**

Incentive Year	Target allowance for number of days of change initiated by NGGT (days)	Actual number of days of change initiated by NGGT (days)	Incentive profit/loss
2015/16	3.99	0	£199,500
2016/17	16.82	0	£500,000
2017/18	20.37	0	£500,000
2018/19	13.34	0	£500,000
2019/20	-	~6	~£300,000

Data for 2019/20 has not been confirmed

## 2.4 Projected performance

NGGT expect the volume of maintenance work to increase and their scheduling to become more congested and believe this will reduce the flexibility they have available to move work around unexpected events in order to minimise changes. As a result NGGT expect this incentive to become harder to achieve. However, in the last three years of data, NGGT still had room for worsening performance of between 3 and 10 additional change days before affecting the maximum incentive payment.

While it may be reasonable to anticipate an increase in maintenance activity in the future, we have not reviewed NGGT's rationale for this, we note that:

- we have not been in a position in this assessment to determine whether the scale of the change is material on the basis of current evidence;
- the structure of the incentive (being a proportion of expected maintenance days) partially mitigates NGGT's exposure to higher maintenance volumes in the future and therefore may not actually reduce the incentive payments even if performance deteriorates from current levels in absolute terms; and
- there is no supporting evidence that continuation of the current target methodology will stretch NGGT relative to business as usual.

## 2.5 Recommendation

If this incentive scheme is retained then further justification or modification of the target level (7.25%) and the unit of reward/penalty is required.

Recent historical performance suggests zero change days as the target (i.e. downside only) as this would be in line with business as usual and a stretch



position for NGGT under RIIO-2. In this case, the unit of penalty would need to be reviewed.



### 3. THE USE OF MAINTENANCE DAY SCHEME FOR RVO ACTIVITIES

#### 3.1 Review of current incentive

The existing use of maintenance days scheme incentivises NGGT to minimise the number of exit Maintenance Days<sup>6</sup> (MDs) used to undertake remote valve operations (RVO MDs). NGGT's annual target is to take no more than 11 RVO MDs.

The incentive structure is asymmetric, with greater downside exposure than upside. If the number of RVO MDs used is less than target, NGGT receive a tiered payment between £15,000 and £25,000 up to a scheme cap of £215,000.

If the actual number of RVO MDs exceeds the target, NGGT receive a penalty of £20,000 per day up to a collar of £500,000 (for 25 days or more above target).

Our initial assessment of the scheme parameters yields the following observations:

- The rationale for a fixed target of 11 days, regardless of the actual level of RVO activity required by NGGT, is not explained.
- The justification for differing reward and penalty levels is not obvious from the documents reviewed.

#### 3.2 NGGT's proposed change

NGGT has proposed no change to this incentive.

#### 3.3 NGGT's recent performance

In all years for which full year information is available, NGGT has significantly outperformed against the 11 MD target; being at or close to the incentive payment cap in each year (see Table 2<sup>7</sup>). It has achieved these high levels of outperformance (and consistently low levels of actual MDs used) even though the number of required maintenance days has grown over the period.

This may be partly attributed to NGGT's pro-active maintenance planning and management process. According to NGGT, there are certain locations where RVOs need to be carried out annually. [REDACTED]

[REDACTED]

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<sup>6</sup> "Maintenance Days" are contractual rights that NGGT has to interrupt the flow of gas to a connected party.

<sup>7</sup> Note that the recording of maintenance activity in 2015/16 was different and the incentive not fully enacted.



**Table 2 – NGGT’s performance under MD scheme**

Incentive Year	Number of days required by NGGT for RVO activity	Target MD (days) (for RVOs)	Actual MDs used (i.e. no. of days that could not be aligned with consumers or use local reconfiguration)	Incentive profit/loss
2015/16	8	11	2	£165,000
2016/17	34	11	1	£190,000
2017/18	38	11	1	£190,000
2018/19	31	11	0	£215,000
2019/20	59	11		

**Figure 1 – [REDACTED]**

[REDACTED]

### 3.4 Projected performance

NGGT has provided no evidence that this target will become harder to achieve. At the meeting with NGGT, they described the process of contacting the customers that are impacted by the RVO activity [REDACTED].

[REDACTED], then using the established processes we estimate NGGT will continue to demonstrate strong out-performance against the current target and a continuing incentive payment towards the top end of the reward cap.

### 3.5 Recommendation

The fixed target for MDs should be reviewed and a downside only incentive should be considered, alongside a more stretching target, to mitigate the unintended consequence of poorer future performance.



## 4. PROPOSED USE OF MAINTENANCE DAY SCHEME FOR OTHER ACTIVITIES

### 4.1 Background

NGGT has proposed a new incentive for RIIO-2 based upon its performance aligning maintenance days for maintenance activities other than RVOs (non-RVO maintenance). The non-RVO activities include in line inspection (ILI) runs and other works (including plant and equipment, defect inspections and pipelines and above ground installation work).

### 4.2 NGGT's proposed change

The proposed scheme to cover non-RVO maintenance is a symmetrical cap and collar of £500,000 (+/- £20k/day) against a target of aligning 75% of total maintenance days impacting customers (excluding RVOs).

[REDACTED].

NGGT's high-level estimate for non-RVO maintenance suggests that, in a typical year under RIIO-2, it will approximately double (see Table 3).

Maintenance days for the activities defined under 'other works' is projected to double in volume in a typical year in RIIO-2. The number of in line inspections (ILI) runs has varied considerably year-to-year over RIIO-1 and NGGT's high-level estimate does not seem to imply an increase in ILI activity during RIIO-2.

**Table 3 – [REDACTED]**

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED].

There is also no evidence around the interaction between RVO and non-RVO maintenance days. Since RVO maintenance days are incentivised at a lower rate for the first six RVO maintenance days below target (£15k/day), than non-RVO days (£20k/day), there is the potential for outcomes where maintenance days are reported as driven by RVO requirement to avoid a non-RVO maintenance day (with a different marginal reward/penalty). It is not known whether there is such overlap between RVO and non-RVO activity but to the extent it does exist it could be avoided by having one incentive covering all maintenance days (RVO and non-RVO); or only having an RVO, or a non-



RVO scheme – not both with differential incentives that could provide scope for gaming by NGGT.

### 4.3 NGGT's recent performance

NGGT provided a detailed breakdown of the non-RVO maintenance activities in their answer to SQ68, which is displayed in Table 4 and Figure 2.  
[REDACTED].

**Table 4 – [REDACTED]**

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED].

**Figure 2 – [REDACTED]**

[REDACTED]  
[REDACTED]

[REDACTED].

[REDACTED].

**Table 5 – [REDACTED]**

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]



### Figure 3 – [REDACTED]

[REDACTED]  
[REDACTED]

## 4.4 Projected performance

Based on average historical performance, our initial estimate is that NGGT could out-perform the target and receive £180,000 per annum on average.

NGGT have provided the information, shown in Table 3, regarding the projected increase in non-RVO maintenance activities. [REDACTED].

The historical data provided by NGGT and shown in Table 4 shows a 93% success rate of aligning the maintenance days for the activities defined under 'other works'; so although these activities may double in volume they appear to be easier to align than the ILIs.

The increased volume of maintenance activity may make this proposed incentive harder to achieve in future. However, there is no information available with regards to customers' maintenance plans/days such that we could assess the difficulty of aligning NGGT activity with customers' outages.

## 4.5 Recommendation

A weighted average target may be appropriate to reflect higher expected alignment in 'other works' activity. Alternatively given the high alignment on 'other works' without any incentive, Ofgem may consider a narrower incentive around ILI alignment or a reputational only incentive.

# 5. SUMMARY

In Table 6, we have summarised our view of the existing and proposed maintenance incentives based on the information that has been made available.



**Table 6 – Summary of maintenance incentives**

	Current performance	Increased difficulty in meeting incentive over RIIO-2?	Projected performance	Recommendation
Change incentive	Significant outperformance each year	Possible increase in scheduling difficulty, though no evidence to support provided	Still likely to outperform given strength of planning process and target being linked to total number of maintenance days	If retain then requires further justification or modification of (a) target level (7.25%); and (b) unit reward/penalty.  Recent historical performance suggests zero change day base (i.e. downside only) would be in line with business as usual and a stretch position for NGGT under RIIO-2
RVO MD incentive	Significant outperformance in each year of RIIO-1	No expected increase in difficulty	Very likely to outperform given stability of customer base, established negotiation processes and detailed maintenance plan	Review fixed target MDs, Consider a downside only incentive but against a more stretching target to mitigate unintended consequences of poorer future performance.
Non-RVO MD incentive	n/a – but if applied historically there would have been moderate outperformance	An increase in volume of 'other works' is projected but no evidence to assume ability to align majority of days may occur. ILI activities have been less successfully aligned but NGGT are not projecting an increase in volume of activities	Good but unpredictable	A weighted average target may be appropriate to reflect higher expected alignment in 'other works' activity. Alternatively, given the high alignment on 'other works' without any incentive, Ofgem may consider a narrower incentive around ILI alignment or a reputational only incentive.



## **ANNEX A - AFRY-NGGT MEETING, 17 FEBRUARY**

### ***Attendees:***

***[REDACTED]***

### ***Agenda:***

- Overview of the 10-year outage plan and projected level of maintenance
- Description of the incentives and performance – existing and proposed
- Question and answer session based upon recent SQs



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