

Title: RIIO mid-period review	Impact Assessment (IA)		
IA Number: N/A	Date:18/08/2016		
Project Number: N/A	Stage: Initial		
Division: Networks	Source of intervention: Domestic		
Team: MPR Team			
Type of IA: Qualified under Section 5A UA 2000.	Type of measure: Price control		
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Summary: Intervention and Options

Strategic Outcomes	Key word description
Lower bills than would otherwise have been the case.	The preferred options are likely to deliver lower bills for consumers compared to other candidate options.
Reduced environmental damage both now and in the future.	N/A
Improved reliability and safety.	N/A
Better quality of service, appropriate for an essential service.	N/A
Better Social Outcomes	N/A

Quality Assurance Status	Approved
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Monetised Impacts (£m)

Business Impact Target Qualifying Provision	N/A
Business Impact Target (EANDCB)	N/A
Net Impact on allowances - Strategic outcomes	On 1 April 2018, the preferred MPR options would reduce National Grid's allowances by £185m .
Net Present Value - Society	This is a transfer from National Grid to consumers.

Hard to Monetise Impacts (£m)

Describe impacts on mid-term strategic and long-term sustainability factors.

In addition to monetised impacts, our proposals have the benefit of not distorting National Grid's incentives to deliver outputs that are needed by consumers and other network users in the most cost effective manner.

What is the problem under consideration? Why is Ofgem intervention necessary?

Under the RIIO¹ price control framework, the eight-year price control settlement includes a number of uncertainty mechanisms. One of these uncertainty mechanisms is the mid-period review (MPR) of outputs.

The MPR mechanism was put in place to allow for material changes to outputs where there have been clear changes in government policy or consumers' and network users' needs. It enables the introduction of new outputs required to meet the needs of consumers and other network users and also for the removal of outputs no longer required.

We decided to launch an MPR for the RIIO-T1 price control focusing on three areas, all of which relate to National Grid's outputs (both gas and electricity transmission).

We are now consulting on our proposed changes to outputs and allowances in response to changes in needs.

¹ Revenue = Innovation + Incentives + Outputs



What are the policy objectives and intended effects?

The policy objectives are to:

- Ensure that consumers only fund outputs that are necessary and sufficient to meet the needs of consumers and other network users.
- Provide sufficient funding to ensure that National Grid Electricity Transmission (NGET) and National Grid Gas Transmission (NGGT) are able to deliver what consumers need in a cost efficient manner.

What are the policy options that have been considered, including any alternatives to regulation? Please justify the preferred option (further details in Evidence Base)

The MPR covers three output areas, one in gas transmission for National Grid Gas Transmission (NGGT) and two in electricity transmission for National Grid Electricity Transmission (NGET). In each of these areas, we considered several options for action as part of the MPR. These options are described later in this document. For ease of presentation, this section lists our preferred option in each area. The "do nothing" option in each case is to make no changes to outputs or allowances.

NGGT's Avonmouth pipelines output: this output was included in RIIO-T1 to help manage the consequences of the closure of the Avonmouth liquefied natural gas (LNG) storage facility. NGGT's latest assessment is that the pipelines are not needed.

We are now proposing to remove the pipelines output and adjust NGGT's non-variant load related expenditure allowance by ± 168.8 m. This would ensure that consumers do not pay for an asset that is not needed or built.

New enhanced system operator (SO) outputs for NGET: This includes obligations arising from the Integrated Transmission Planning and Regulation (ITPR) project, and the introduction of additional balancing services products to help it balance the system given lower forecast margins. We also support NGET's introduction of a new service to promote the market for demand-side response. We had not made any funding allowances for these additional activities introduced after we set the RIIO-T1 price control, and want to ensure that efficient costs for the SO are appropriately funded given the continuing development of new services and the need to ensure the system is effectively managed.

We are now proposing to make an allowance of ± 21.5 m over the RIIO T1 period to reflect efficient costs associated with these services.



Non-variant allowance outputs for NGET: Outputs in this area included the following: nine sites protected against rising fault level currents and 11 shunt reactors.

On fault levels, NGET's current assessment is that only one out of the original nine sites needs protection.

Our minded to position on fault level protection is to reduce the number of sites needing protection from rising fault level currents from nine sites to one site and reduce allowances by £38.1m

On shunt reactors, NGET is forecasting a higher need for voltage control, and is therefore expecting to spend £142m on building shunt reactors.

We are not convinced that retaining the shunt reactor output is in the interests of consumers. Shunt reactors are only one of a range of technical and operational solutions to manage voltage on the network. Specifying shunt reactors as outputs for NGET risks creating a distortion in favour of installing shunt reactors on the transmission network when they may not be the most cost-effective solution for consumers. We also consider that NGET is adequately funded for actions that it might take to address the voltage control issue.

Our minded to position on shunt reactors is to declassify shunt reactors as an output and leave funding unchanged.

The overall impact of our minded to proposals on National Grid's allowances across both its electricity and gas transmission price controls is a reduction of ± 185 m.

Will the policy be reviewed? Yes/No	Νο
	Decision will stand until the end of the RIIO-T1 price control period (31 March 2021), after which a new price control will take effect.

For simplicity, the following section (FULL ECONOMIC ASSESSMENT) reports only on the preferred options.



Summary: Analysis & Evidence

Avonmouth Pipelines: Option 1

FULL ECONOMIC ASSESSMENT

Price base year:	PV I Yea	Base r:	Time Period:	Net impact on allowances(£m)					
2009/10	N/A	N	8 years	Low: N/A		High: N/A		Best Estimate: Reduce allowances by £168.8m	
COSTS (£m)	Total Tra (Constant		Years				Total Cost (Present Val	ue)
Best Estima	ate	N/A			N/A			N/A	
This option r monetised co	Description and scale of key monetised costs by 'main affected groups' This option removes the pipelines output. It reduces allowances by the entire amount that has not been spent. The monetised cost for NGGT is a reduction in allowances by £168.8m, compared to a counterfactual where we do not make any change to allowances as part of the MPR.								
Other key n	Other key non-monetised costs by 'main affected groups'.								
BENEFITS (£m)		(Constant	Total Tra t Price)	nsition Years		je Annual ransition)(Constant	Price)	Total Bene (Present Val	-
Best Estima	ate	N/A			N/A			N/A	
Description and scale of key monetised benefits by 'main affected groups' The monetised benefit to consumers is a reduction in NGGT's allowances by £168.8m.									
Other key non-monetised benefits by 'main affected groups'.									
NGGT and co activities in t	Key Assumptions/sensitivities/risksDiscount rate (%)N/ANGGT and consumers face a small unquantified risk of incurring costs on constraint management activities in the absence of the pipelines. This risk is unlikely to be material under current demand conditions and forecasts.N/A							N/A	
BUSINESS ASSESSMENT (Option1)									
Direct impact on businesses (EANCB) N/A Score £m: N/A									



Summary: Analysis & Evidence

System Operator: Option 1

FULL ECONOMIC ASSESSMENT

Price base year:	PV E Year	Base r:	Time Period:	Net impact on allowances(£m)					
2009/10	N/A	L.	8 years	Low: N/A		High: N/A		Estimate: Inc ances by £21.5	
COSTS (£m)	Total Tra (Constant		Years		e Annual ransition)(Constant	Price)	Total Cost (Present Val	ue)
Best Estima	ate	N/A	ſ		N/A			N/A	
The key mon	Description and scale of key monetised costs by 'main affected groups' The key monetised cost to consumers is through an increase in NGET's allowances by £21.5m compared to a counterfactual where we do not make any adjustments to allowances.							o a	
Other key n N/A	Other key non-monetised costs by `main affected groups'. N/A								
BENEFITS (£m)		(Constan		al Transition YearsAverage Annual (excl. Transition)(Constant Price)Total Benefit (Present Value)			-		
Best Estima	ate	N/A		N/A N			N/A		
Description and scale of key monetised benefits by 'main affected groups' N/A									
Other key non-monetised benefits by 'main affected groups'. The additional funding will allow NGET to deliver on the obligations Ofgem has given it for its enhanced SO role, for example in planning the future of the grid, and managing additional supply and demand balancing services. These will benefit eventually benefit consumers through more efficient network investment and lower balancing costs.									
Key Assum	umptions/sensitivities/risks Discount rate (%) N/A					N/A			
BUSINESS A	ASSE	SSMENT (Option1)						
Direct impac	t on b	ousinesses	(EANCB)				Score	£m:N/A	



Summary: Analysis & Evidence

Non-Variant Allowances: Option 1

FULL ECONOMIC ASSESSMENT

Price base year:	PV E Yea	Base r:	Time Period:	Net impact on allowances(£m)					
2009/10	N/A	L.	8 years	Low: N/A		High: N/A		Estimate: Reances by £38.3	
COSTS (£m)	Total Tra (Constant		Years		e Annual ransition)(Constant	Price)	Total Cost (Present Val	ue)
Best Estima	ate	N/A			N/A			N/A	
The preferre correspondin no change to	Description and scale of key monetised costs by 'main affected groups' The preferred option is to reduce the output for fault levels to the number already delivered and make a corresponding adjustment to expenditure allowances. We would declassify shunt reactors as an output and make no change to allowances. The key monetised cost for National Grid is through a reduction of allowances related to fault levels by £38.1m, compared to a counterfactual where we do not make any changes to allowances.								
Other key n N/A	Other key non-monetised costs by `main affected groups'. N/A								
BENEFITS (£m)		(Constant	Total Trai t Price)	n sition Years			Total Bene (Present Val	-	
Best Estima	ate								
Description and scale of key monetised benefits by 'main affected groups' The key monetised benefit to consumers is through a reduction in NGET's allowances related to fault levels by £38.1m. This would result in lower charges as consumers would not pay for assets that are not needed or built.									
Other key n	on-m	onetised b	penefits by `mai	n affected	groups'.				
This removes a potential distortion to NGET's incentives towards shunt reactors even when these may not be the most cost effective option for consumers. We are counting this as a non-monetised benefit as the level of savings cannot be identified ex ante.									
Key Assum	ption	s/sensitiv	vities/risks			Discour	nt rate	(%)	N/A
BUSINESS	ASSE	SSMENT (Option1)						I
Direct impac	t on b	ousinesses	(EANCB)				Score	£m: N/A	



Evidence Base (for summary sheets)

Background and context

A Mid-Period Review (MPR) of outputs was one of the mechanisms we included in the RIIO price controls to help manage uncertainty around the outputs to help us hold the company to account for deliverables.

The purpose of the MPR within the RIIO framework is to help ensure that price control outputs continue to deliver what customers and other network users need. As part of this review, we will consider whether outputs (that have been included within the scope of the review) are set at a level that is both necessary and sufficient to meet the needs of customers. Where we find they are not, we will consider whether it is in the interests of customers to change these outputs.

We said in Final Proposals (FP) that any potential MPR would cover material changes to outputs that can be justified by clear changes in government policy and the introduction of new outputs that are required to meet the needs of consumers and other network users.

When we launched the MPR in May we said that we would examine the following three areas where we considered output requirements may have changed:

- National Grid Gas Transmission (NGGT): the Avonmouth Pipelines output
- NGET: Enhanced SO role
- National Grid Electricity Transmission (NGET): non-variant allowance outputs – fault level protection and shunt reactors

An impact assessment of the MPR scope decision was published as part of the May 2016 decision document.

All allowances in this document are expressed in 2009/10 prices so that they are consistent with the way in which these were originally set at the RIIO-T1 price controls.

The counterfactual

Our impact assessment is against a defined counterfactual. Our counterfactual for this IA includes the following:

- no changes to gas and electricity transmission outputs and associated allowances at MPR;
- NGET faces enhanced SO output requirements relating to the Integrated Tranmission Planning and Regulation (ITPR) project (since it is already in



the licence), the New Balancing Services (NBS), and is not funded through any other mechanism; and

• NGET is not funded for its new programme of activities aimed at promoting participation in the market for demand-side response (DSR).

This counterfactual is for policy development purposes and should not be taken as a view on what might happen in the absence of the preferred policy.

Which parties may be affected?

The main affected groups are:

- NGGT and NGET through impacts on transmission price control allowances;
- Consumers through impacts on energy bills (due to changes in network charges)

Options and calculation of monetised impacts

We considered three output areas as part of the MPR. We set out the policy options that have been considered in each area, our preferred option in each case. All allowance figures are expressed in 2009/10 prices.

We have chosen to focus on the impact of our actions on National Grid's allowances rather than on consumer bills (which is small relative to the size of the bill). Under the RIIO model for network operators, there is a relationship between allowances and consumer bills. Allowances feed through to revenue, and revenue in turn feeds through to consumer bills (albeit with some timing differences). As an aid to choosing between options under consideration, we see little additional value in looking at impacts on bills.

On NGGT Avonmouth, we have considered three options:

- Option 1 (Preferred option): Remove the pipelines output. Reduce allowances by the entire amount that has not been spent.
- Option 2: Make no change to the pipelines output or allowances as part of the MPR. Instead we would hold them accountable at the end of the T1 period if the pipelines are not delivered and take back the allowance then.
- Option 3: Remove the pipelines output. Reduce allowances by the amount that has not already fed through to revenues and the Regulatory Asset Value.

Background and context



This output was included in RIIO-T1 to help manage the consequences of the closure of the Avonmouth liquefied natural gas (LNG) storage facility. NGGT has now confirmed that the pipelines are no longer needed and that it does not propose to build them. We included an allowance of £169.0m for the delivery of this output.

Change in need

As part of the MPR, we have reviewed NGGT's assessment of the need for the pipelines. The change in the needs case for the pipelines output is driven by two factors:

- NGGT's demand forecasts are lower than they were at the time we set the price control. This means that the need for Transmission Support Services (ie the security of supply case) has reduced to the extent that investment in a new pipeline (ie the Easton Grey to Pucklechurch segment) cannot be justified.
- NGGT has re-assessed its safety case since we set the price control and has now concluded that the Pucklechurch to Ilchester pipeline segment is not needed for meet safety requirements. The Health and Safety Executive has not objected to NGGT's assessment.

Reasoning behind our preferred option

We specified the output as the "pipeline solution". Given that the pipelines are not needed, we think removing the output and associated funding is consistent with the scope and intent of the MPR. We were also clear (in our RIIO-T1 Final Proposals) that we would review this output area as part of the MPR.

We expect NGGT to meet its safety and security of supply obligations as part of its wider functions for which we consider that adequate funding has been provided within the RIIO-T1 price control settlement.

We are not pursuing the two other options in this area:

We do not think option 2 is in the best interests of consumers as it would needlessly delay the financial adjustment when there is sufficient certainty and justification to make the adjustment now. Our preferred approach would deliver benefits to consumers sooner and would provide certainty for all stakeholders.

Option 3 was put forward by NGGT. The pipelines output was meant to be a multi-year project and we had spread the total allowance of £169.0m across several years to reflect NGGT's delivery plan. Under the RIIO financial model, approximately £86.6m will have been passed through to NGGT's revenues and Regulatory Asset Value by 31 March 2017. NGGT argued that the adjustment to



allowances should exclude this £86.6m on the grounds that removing the entire allowance constitutes retrospective action of the sort that we previously said we would not do.

We disagree with NGGT. We have been clear that our commitment not to make retrospective adjustments relate to underspends from more efficient delivery of an output – in this case it is clear that the output has not been delivered. We think our preferred option is fairer to consumers and is consistent with our past statements, the intention of RIIO that revenues follow output delivery, and the scope and intention of the MPR where we said we would change outputs where we find that needs have changed.

How we calculated the allowance impact

In our Final Proposals for RIIO-T1 we decided to include the pipelines as an output and included an allowance of £169.0m in NGGT's baseline revenues to fund the pipelines output. NGGT has said that it had spent £0.2m on work to assess its technical and strategic options. We are minded to allow this expenditure as it supported the reassessment of the needs case, leading to a more efficient outcome. Our proposal intends to reduce allowances by the amount not spent, ie £168.8m.

On NGET enhanced SO role, we have considered three options:

- Option 1 (Preferred option): Make an allowance for reasonable costs for each of the three areas.
- Option 2: Only make an allowance for the ITPR activities and new balancing services (SBR/DSBR). We would not make an allowance for the DSR costs.
- Option 3: Make no changes to allowances as part of the MPR.

Background and context

One of the areas that we decided to include in the scope of the MPR was the development of new outputs for NGET to reflect enhancements to its System Operator (SO) role. The enhanced activities reflect developments in two primary areas:

- the implementation of the Integrated Transmission Planning and Regulation (ITPR) licence requirements in 2015, and
- delivery of two new balancing services products: Demand Side Balancing Reserve (DSBR) and Supplementary Balancing Reserve (SBR).

As part of the ITPR project, we introduced new obligations for NGET as SO in its licence. These new responsibilities primarily relate to system planning at the



annual delivery of the Network Options Assessment report. This annual mechanism will require NGET to assess and report the need and timing of future reinforcements across GB and will also make assessments of cross border interconnector capacity requirements.

NGET has submitted a request for additional funding to support its efforts on demand-side response (DSR) services covering the period from 1 April 2015 to 31 March 2019. NGET, in its SO role, has initiated a new programme of activities aimed at encouraging and facilitating increased participation in demand-side response (DSR). This includes:

- Activities aimed at raising awareness amongst industrial and commercial demand customers to the market possibilities offered by DSR.
- Activities aimed at electricity industry stakeholders to help ensure that sufficient routes to market exist and that there is a level playing field for demand customers who wish to participate in the DSR market.

NGET has said that these activities are additional to their "business as usual" role as the system operator.

We are supportive of NGET's efforts in this area because we think increased take-up of DSR services can benefit consumers in the long term through lower system operation costs. We think NGET's new DSR programme is capable of delivering tangible benefits for consumers and other network users. More generally, we believe the SO role will be extremely important in ensuring the development of the future energy system and facilitating services which will benefit the system and consumers, thus we wish to ensure it is properly funded to carry out this task, while also ensuring that only efficient costs are recovered.

How we calculated the allowance impact

Following our review, we are minded to allow additional allowances over the RIIO T1 period in each of the following areas as set out below.

ITPR obligations: In relation to ITPR, we are proposing to allow ± 15.0 m over the RIIO T1 period.

New balancing services (SBR and DSBR): In relation to the new balancing services products (SBR and DSBR), we are proposing to allow £4.5m over the RIIO-T1 period. This allowance relates to NGET's internal costs for setting up and administering these products – and does not cover any payments made or received from market participants.

Demand-side response (DSR): In relation to the DSR programme, we are proposing to allow £2.0m over the RIIO-T1 period.



Output area	NGET's funding request (2009/10 prices)	Our proposed allowances (2009/10 prices)		
ITPR activities	£16.92m	£15.00m		
SBR/DSBR	£4.56m	£4.50m		
DSR	£2.10m	£2.02m		
Total allowance impact	£23.58m	£21.52m		

The overall impact is summarised in the table below.

On NGET non-variant allowances (fault levels and shunt reactors), we have considered three options:

- Option 1(Preferred option): Reduce the output for fault levels to the number already delivered and make a corresponding adjustment to expenditure allowances. Declassify shunt reactors as an output and make no change to allowances.
- Option 2: declassify fault levels and shunt reactors as outputs, and make no changes to expenditure allowances.
- Option 3: reduce the output and expenditure allowances for fault levels. Retain the shunt reactor output, and make no changes to levels or allowances. consider requests for funding for additional shunt reactors at the end of RIIO-T1 where these are demonstrably in the interests of consumers.

The option of doing nothing (ie no changes to outputs or allowances) was discounted at an early stage of our review for reasons set out later in this section.

Background and context

Outputs we set in this area include: Protecting against rising fault level currents at nine sites and installing 11 shunt reactors. The total allowance in RIIO-T1 linked to these two outputs is around £92.8m.



- Protecting nine sites against rising fault currents. The need for this was driven by NGET's forecast of increases in transmission connected generation over the T1 period. We had included an allowance of £39.5m for this output.
- Installing 11 shunt reactors. The need for this was driven by falling reactive power demand across the transmission network leading to an increased need for voltage control measures. We had included an allowance of £53.3m for this output.

Change in need

On fault levels, NGET has now told us that it only needs to install additional protection at one site. Fewer than expected generation connections to the transmission network means that the previously forecast increases in fault currents are now not expected to materialise at the other sites. NGET has already carried out the work required to install additional protection at one site and does not expect to do any further work to protect the other sites in the remainder of RIIO-T1. We have no reason to disagree with its view.

On shunt reactors, NGET is now forecasting a higher need for voltage control due to a number of factors, including more embedded generation than expected. It says that it plans to spend £142m on shunt reactors. This includes £112m for shunt reactors at 25 identified sites and a £30m provision for shunt reactors at as yet unspecified sites.

Reasoning behind our option selection

We do not dispute NGET's assessment that the need for voltage control is potentially higher now than it was at the time we set the price control. However, having reviewed the shunt reactor output as part of the MPR, we are not convinced that retaining this output is in the interests of consumers.

Shunt reactors are only one of a range of technical and operational solutions to manage high voltage issues on the network. These solutions include staggering transformer taps, reactive compensation on the distribution network either through network investment or commercial services from demand and distributed generation, and more effective enforcement of conditions of connection. Specifying shunt reactors as an output, when a range of alternative solutions exist, risks creating a distortion in favour of installing shunt reactors on the transmission network when they are not necessarily the most cost-effective solution for consumers.

We think the risk of distortion is more acute in the case of shunt reactors than for fault level protection for the following reasons:



- The voltage management issue is expected to continue and a whole system approach involving NGET, other transmission network owners, distribution network operators and generators is likely to be needed.
- On fault levels, NGET's latest assessment is that only one site needs protecting, and that work has already been done. Unless needs were to change again in the future, no further fault level protection work is necessary.

We consider it reasonable for us to say that the voltage management issue needs to be managed by NGET in the most efficient way and that current funding levels adequately provide for this.

We considered an alternative option that involves removing both outputs (fault level protection and shunt reactors) and making no adjustments to NGET's allowances. However, we are mindful that leaving funding unchanged for fault level protection – an area where much of the output is clearly not needed – is not likely to be in the interests of consumers.

Another option we considered involves reducing the fault level output and allowances as under our preferred option. On shunt reactors, it involves retaining the shunt reactor output and funding as it currently stands, and allowing efficient costs incurred at the end of RIIO-T1 based on an assessment of need and efficiency. We do not favour this option. This option could also discourage the development of innovative approaches to solving the high voltage issue, and distort incentives to NGET to install shunt reactors even when they may not be in the interest of consumers – because of the difficulties inherent in an ex-post efficiency assessment. The requirement for an ex-post efficiency assessment places an additional burden on NGET and us at the end of RIIO-T1.

For the reasons set out above (ie clear change in needs for fault level protection, and the risk of distortion in voltage control), we discounted the "do nothing" option at an early stage of the review.

How we calculated the allowance impact

In our Final Proposals for RIIO-T1 we allowed £39.5m for installing additional protection against rising fault level currents at nine sites.

NGET now says that only one site needs additional protection and that work has already been done. Approximately ± 1.4 m of the total allowance relates to this one site, and we propose to retain this within NGET's overall allowance.

The net reduction in NGET's allowance under our preferred option is therefore $\pm 38.1m$ (which is $\pm 39.5m$ less $\pm 1.4m$).



Analysis of the non-monetised impacts of options considered

The main effects considered in this impact assessment are measured by the impact on allowances. The remaining non-monetised impacts relate to the NGET output areas only.

In relation to the enhanced SO outputs for NGET, the main non-monetised benefit of our preferred option is that NGET will be funded to deliver on the obligations Ofgem has given it. For example, an Impact Assessment of ITPR² has identified the benefits of the enhanced SO as better co-ordination, greater economy and efficiency in planning the future of the transmission network and support for decision making.

Managing additional supply and demand balancing services helps security of supply. Furthermore its efforts to develop the demand-side response market could help lower system balancing costs and network investment in the future.

The main non-monetised cost of pursuing the alternative options is that NGET may be deterred from taking pro-active action that may benefit consumers due to uncertainty about how these activities may be funded.

In relation to the non-variant allowances, the main non-monetised benefit of our preferred option is that it does not distort NGET's incentives to deliver the most cost effective solution to the voltage control issue.

² https://www.ofgem.gov.uk/ofgem-

publications/93913/it pr final conclusions impact as sessment publication final-pdf