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Guidance

RIIO-GT2 Investment Decision Pack guidance

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As part of their RIIO-2 Business Plan submissions, network companies are required to provide Investment Decision Packs which outline the needs case, scope, costs and benefits for major projects or aggregated investment programmes. These packs provide both quantitative and qualitative assessments of the proposed investments and provide an insight into the investment decision making processes and governance undertaken within NGGT. This document sets out what constitutes an Investment Decision Pack and where they should be submitted, as well as outlining key guidance for the Cost Benefit Analysis template.

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1. Introduction

The Purpose of this guidance note is to:

i. Explain the concept of Investment decision packs (IDPs) and the interaction between the Engineering Justification Paper (EJP) and Cost Benefit Analysis (CBA) template;

ii. Ensure that NGGT adopt a common CBA framework to facilitate assessment of asset investment plans, and

iii. Employ a framework consistent with latest thinking on how to conduct CBA in a regulated context.

The frameworks for the EJPs are set out separately within the *Engineering Justification Paper Frameworks for RIIO-GD2 and RIIO-GT2* document, published alongside this paper.

2. What is an Investment Decisions Pack (IDP)?

Ofgem is seeking to improve the visibility and transparency of NGGT's investment decision-making process and assess the justification and viability of these investments through an IDP. An IDP consists of an EJP and a CBA template. The purpose and scope of each document is summarised below:

- EJP: sets out frameworks for both major engineering projects and ongoing network asset health investments. The EJP outlines the problem that the investment seeks to solve and sets out the different options that have been considered. The purpose of the paper is to communicate the key factors that have influenced the investment decision and provide summary engineering detail on the options considered. The EJP guidance document sets out two frameworks: one for major engineering projects and another for network asset health investments.

- CBA template: is applicable to both major engineering projects and ongoing network asset health investments. The template sets out a quantitative assessment of the main options under consideration and demonstrates the value that each of these options would bring. The main purpose of the CBA is to demonstrate the relative value of the preferred investment option, clearly articulating any assumptions and key economic drivers underpinning the investment decision. The template also includes qualitative summaries that allow NGGT to link proposed investments back to their engineering justification and stakeholder engagement. Our assessment will look to all these elements to substantiate viability and justification of investments in RIIO-2.

The IDP documents are designed to be consistent with the HM Treasury Green Book1 approach to appraising and evaluating major investment projects. The principle of the IDP is to provide the information necessary to allow Ofgem to understand and interrogate the investment decision-making processes and internal governance procedures of NGGT. Our expectations on which investments we expect to see IDP submissions in support of Business plans are outlined in more detail below. In addition, Ofgem and the RIIO-2 Challenge Group reserve the right to ask NGGT to provide an IDP for a specific investment at relatively short notice (i.e. 2-5 working days) after the October revised draft Business Plan and December final Business Plan submission deadlines where deemed necessary. This approach reflects the assumption that all investments included in the revised draft and final Business Plan submissions have been through an internal review process and the information to justify the investment is readily available. We plan to issue updated versions of the IDP guidance and CBA template documents in September 2019, ahead of the final Business Plan submissions in December 2019. We expect the final IDP documents we publish in September (version 1.2 of the investment decision pack guidance, version 1.4 of the CBA template and version 2 of the EJP) to be used by NGGT in its final December Business Plan submission. For the October revised draft Business Plan submission, we encourage NGGT to use the final versions as noted above, however, we will accept the EJP guidance published in March 2019 and CBA guidance and template published in May 2019 being used. NGGT should make clear which version of the documents have been used in the October submission.

[1] HM Treasury - The Green Book; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

3. When do we expect to see an Investment Decision Pack (IDP)?

Ofgem expects to see IDPs for investments that are financially material and/or require significant scrutiny by Ofgem because of the risks associated with the investment. In practice, this means that the majority of capital expenditure should be supported by IDPs, although it remains at the discretion of NGGT to consider the appropriate level of aggregation for these submissions.

For NGGT, Ofgem will look to review a number of these IDPs as part of the Business Plan assessment process. The sample reviewed will include financially material investments, and investments where the requirement or costs are subject to a high degree of uncertainty, including around the future use of the network. In addition, a random audit sample across a range of investment types may also be conducted to ensure NGGT is appraising investments in a consistent way.

3.1. Investment Decision Pack groupings

Broadly, across RIIO-GT2, NGGT may choose to carry out CBA at the following levels:

- Asset category/class
- Project level
- Programme of works

At the asset category/class level it may be useful to group CBA analysis where same/similar characteristics are displayed i.e. Programme of Works. Where projects within expenditure categories are homogenous in terms of the costs and benefits involved, we expect these projects to be considered as part of one IDP. Schemes where costs and benefits are specific to the scheme or project being proposed may require consideration under a separate IDP.

We do not intend to prescribe which programmes of works should be subject to a separate pack and will leave this to the judgement of NGGT. However, where packs are submitted for a specific programme of works, we expect the accompanying commentary to outline why the programme of works has been considered separately from the rest of the asset category/asset class.

Where there are any large, standalone investment projects, such as those for compressor emissions, we expect these to be supported by a separate IDP in order to provide investment justification and demonstrate value for money for consumers.

4. CBA-specific guidance

4.1. Identification of options

Consistent with the HM Treasury Green Book[2], NGGT should clearly identify the range of options that were considered to meet the stated aim. This list should, where feasible, include an option that requires a minimal initial investment (the "do minimum option") against which other options can be compared. Additionally, the option of delaying investment must be considered as part of the CBA.

The "do minimum option" or "reference scenario" may represent do nothing or business as usual (e.g. ongoing maintenance). This detail is to be completed within the 'Baseline' sheet. For each investment, NGGT should clearly explain, in the supporting commentary boxes in the CBA, what assumption has been used and which regulations the minimum level of intervention relates to. There are no direct benefits (i.e. avoided costs) accrued under the baseline scenario and these cells have been blanked out in the CBA template. Societal benefits will still be accrued under the baseline scenario and these are taken into account when calculating the baseline NPV. The NPV of each of the options identified within the CBA will be compared against the Baseline NPV, rather than against a zero value.

We have included a section (the 'Full Opt. Considered' sheet) in the CBA template for NGGT to identify and clearly list the long-list options they have considered for each investment decision. This list of options should include those that have been considered and rejected before full costing (in line with the process outlined in the accompanying EJP), as well as the short list of those options that have been considered and costed. A clear rationale should be provided for the inclusion / exclusion of each option on the long list and quantified appropriately (in a few lines or bullets) in the comment box provided. For example, reference to relevant legislation which result in the option being discounted or a quantification of specific costs that preclude the option being economically viable.

Within the 'Baseline' and each 'Option' sheet in the CBA template, there are summary boxes for the Engineering Justification, Stakeholder Support and NGGT View. These summary boxes should provide executive summary style overviews that link back to the key points presented in the EJP and Business Plan. They should provide enough information to outline the key arguments under each category and allow the evaluator to trace back to the relevant section(s) in the supporting documents (i.e. short paragraphs or bullet points summarising the key justification(s) for the proposed investment).

4.2. Valuing the costs and benefits of options

The financial costs and benefits, and workload volumes of the preferred option should correspond to the financial/market values set out in the Business Plan (where applicable). For example, the expected reduction in any cost of repairs (a financial benefit) arising from an investment should be consistent with the assumptions on repair costs set out in the plan. Similarly, there should be a clear link between the volumes presented in the CBA template, the Business Plan Data Templates (BPDTs) and the Network Asset Resilience Measure (NARM) BPDT.

[2] HM Treasury - The Green Book; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

We expect there to be a clear link between the assumptions used in the CBA template and those used in the Gas Transmission NARM methodology, where applicable. Hence, where there exists a common assumption within the NARM methodology[3] for a value attributed to a specific node or variable, it is expected that this would also be used as the basis for values presented within the CBA. The assumptions used for societal benefits of greenhouse gas emissions and reduced fatality and injury probability are consistent with the NARM methodology. The Network Asset Health framework for the EJP sets out how NGGT should outline the key assumptions used for probability of failure and consequence of failure justifying an investment. In some cases, there may be an argument for including benefits that are not captured within the NARM methodology. In such instances, NGGT should clearly outline the assumptions and data sources used to arrive at the estimate of the financial value of the costs included within the CBA template.

Where assumptions are common across the suite of CBAs (for example, the calculation of constraint costs), NGGT should provide a supplementary annex (in MS Excel format) detailing the calculations and valuation methodology used to estimate the financial values input into the CBA model. Where these assumptions are specific to the individual project or programme of works to which the CBA relates, they should be detailed in the workings tab of the CBA model itself.

The financial costs and benefits must be in 2018/19 prices, exclude real price effects (RPEs) and be net of expected productivity improvements (i.e. consistent with the data set out in the NGGT's BPDT. Fixed price assumptions that are based in a different year (i.e. cost of a fatality) have been uprated to 2018/19 prices using the CPIH[4] index, adjusted to the financial year.

Where CBA outcomes are marginal NGGT should run sensitivities on productivity improvements beyond RIIO-GT2. NGGT must also include replacement costs for assets which may need to be replaced during the 45-year horizon. This should include assumed failure rates of assets and must set out their view and explain their assumptions.

4.3. Applying the Spackman approach to gas transmission network investment

The Spackman approach involves the following two-step approach[5]:

- Convert capital costs into annual costs using the company's cost of capital.
- Use the Social Time Preference Rate (STPR) of 3.5% *(less than & equal to 30 years)*; 3% *(greater than 30 years)* to discount all costs and benefits[6], except safety where the Health Discount Rate (HDR)[7] of 1.5% *(less than/equal to 30 years)*; 1.2857% *(greater than 30 years)* should be used.

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[3] As outlined in Appendices A-F of the Network Output Measures: Health and Risk Reporting Methodology and Framework Consultation; http://www.energynetworks.org/assets/files/news/publications/Consultation%20Responses/Gas%20Distribution%20Networks%20(GDNs)%20NOMS%20Methodology.pdf

[4] "CPIH Index 00: ALL ITEMS 2005=100". Available at: https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/l522/mm23

[5] Joint Regulators Group (4 October 2011) Discounting for CBAs involving private investment but public benefit. para 3.10; https://www.ofcom.org.uk/_data/assets/pdf_file/0029/37856/jrg_statement.pdf

[6] HM Treasury - The Green Book, Annex A6: Discounting, Table 9; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

[7] HM Treasury - The Green Book, Annex A6: Discounting, Table 10; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

The capital costs should be converted to equivalent annual costs that are recovered through customers' bills. The CBA spreadsheet model assumes a straight line depreciation in line with our RIIO-GT2 regulatory depreciation policies. The annual capital costs should also be calculated over the assumed economic life of the asset.

To convert capital costs into annual cost recovered through customers' bills, we require NGGT to use a pre-tax weighted average cost of capital (WACC) figure (a simple average of the expected WACC across RIIO-2) which is consistent with their own individual Business Plan submissions.

4.4. Societal benefits and the treatment of non-marketed goods

NGGT should consider societal benefits (i.e. indirect avoided costs) associated with each option. For consistency we have standardised the assumptions and calculations for the valuation of societal benefits and safety benefits. We have entered default parameters in the CBA template for these non-marketed items, where NGGT amend these assumptions full justification should be supplied to support the move from the default parameters. For the benefits associated with preventing fatalities and injuries, we require NGGT to draw on guidance set out in HM Treasury Green Book[8] and the HSE[9].

Ofgem have provided input lines for societal benefits resulting from direct CO2, methane[10] and NOx[11] emissions and provided benefit calculations using recognised figures.

There may be further non-marketed items where a fixed assumption or calculation methodology has not been provided in the CBA model. NGGT can include these benefits in the rows provided but should clearly set out in the workings section of the model the assumptions and valuation methodology used.

NGGT should also set out within the wider investment appraisal any non-marketed impacts or factors that cannot easily be monetised.

4.5. Uncertainty and sensitivity analysis

We expect NGGT to undertake sensitivity analysis consistent with the HM Treasury Green Book guidance[12].

- *"Sensitivity analysis is fundamental to appraisal. It is used to test the vulnerability of options to unavoidable future uncertainties. Spurious accuracy should be avoided, and it is essential to consider how conclusions may alter, given the likely range of values that key variables may take. Therefore, the need for sensitivity analysis should always be considered, and, in practice, dispensed with only in exceptional cases.*

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[8] HM Treasury - The Green Book; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf
[9] http://www.hse.gov.uk/economics/eauappraisal.htm
[10] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/650244/2017_methodology_paper_FINAL_MASTER.pdf
[11] Department for Environment, Food & Rural Affairs - Air quality damage cost guidance 2019; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770576/air-quality-damage-cost-guidance.pdf
[12] HM Treasury - The Green Book; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

- *The calculation of switching values shows by how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option. This should be considered a crucial input into the decision as to whether a proposal should proceed. It therefore needs to be a prominent part of an appraisal."*

We expect NGGT to consider sensitivity analysis with respect to key parameters for example:

- Asset performance / deterioration rates
- Ongoing efficiency assumptions
- Demand variation
- Energy scenarios
- Asset utilisation

In addition, included within the CBA template and EJP are sections for capturing risks associated with the chosen option. These risks should capture any material risk which may impact the cost and/or timing of the chosen investment. The risk impact should be broadly quantified and the likelihood of occurrence estimated, according to the drop-down menu options. The relevant controls and risk mitigation should also be captured within this section.

Due to future uncertainties, we have limited the timeframe of the CBA model to 45 years (from the final year of investment during the RIIO-GT2 period). At the current time, we have also assumed depreciation occurs over 45 years, which is consistent with the approach used in RIIO-GT1.

Currently, we are not designating a specific payback period cut-off for investments in the gas transmission network. We expect NGGT to take into account uncertainty and risk when presenting their Business Plans for RIIO-GT2. This includes the risk of asset stranding, including the option of deferral, and options for whole system solutions, as outlined in our Sector Specific Methodology Decision document. The Investment Decision Pack includes both quantitative and qualitative components, allowing NGGT to provide commentary that clearly outlines their decision-making process, including how they assess potential investment risks. We will take these arguments into account when assessing the business case for each investment.

4.6. Future Pathways – Net Zero

It is crucial that companies demonstrate that the investments being proposed are consistent with the UK Governments' net zero emissions by 2050 target, which came into legislation in June 2019 (Net Zero) and we have set out our expectations on how companies should approach this in the updated RIIO-2 Business Plan Guidance[13], in particular the need for investment supporting net zero pathways. NGGT must consider how the investments they are proposing align with different future pathways and where there is a high risk of asset stranding relating to a specific pathway (e.g. the move towards full electrification), NGGT is encouraged to propose how uncertainty mechanisms could be used to de-risk the investment.

When considering the compatibility of proposed investments with Net Zero, NGGT should take into account factors such as:

- **Primary economic driver –** does the economic justification of the proposed investment rely strongly on environmental benefits? If so, how does this change when key parameters (i.e. carbon prices or utilisation) are adjusted?

[13] RIIO-2 Business Plan Guidance – Available at: https://www.ofgem.gov.uk/system/files/docs/2019/09/riio-2_business_plans_guidance_september_2019_-_published_0.pdf

- **Payback periods –** when does the investment payback? Does the investment primarily benefit existing or future consumers? What is the payback period in relation to the economic and technical life of the intervention? What is the benefit/cost ratio of the investment over the RIIO-GT2 period?
- **Pathways and end points -** what assumptions have been made regarding the transition to net zero, in particular, companies should set out where these differ from the Climate Change Committee's report 'Net Zero – The UK's contribution to stopping global warming'[14]. Of particular importance are the role and timing of the electrification of heating, transport, carbon capture and storage (CCS), hydrogen and biogas. Where the assumptions about the pathway are relevant to the investment, these should be identified.
- **Asset stranding risks –** is the asset at a heightened risk of being stranded? Is the proposed intervention compatible with different technologies (e.g. hydrogen) and pathways (e.g. electrification of heat)?
- **Sensitivity to carbon prices –** would a higher carbon price assumption change the preferred option?
- **Future asset utilisation –** how would the needs case and economic justification for the asset be impacted should the number of customers on the gas network or the demand for gas fall significantly in the future?
- **Whole systems benefits –** are there wider benefits to the proposed investment that enable whole systems solutions or support other cross industry investments compatible with Net Zero targets?

Where NGGT identify a preferred option as potentially being highly sensitive to these types of factors, they are encouraged to undertake further sensitivity analysis to demonstrate their proposed investment is broadly compatible with Net Zero. Given the broad range of inputs that NGGT may choose to vary, we do not intend to be prescriptive about how NGGT undertake sensitivity analyses. However, we have included a template containing a given scenario[15] of CO_2 price calculations, based on BEIS recommended carbon values, which we issue alongside this guidance for ease of use and consistency in this area (Revised CBA Template). NGGT may refer to these in cases where they seek to demonstrate the sensitivity of the NPV to changes in carbon prices.

NGGT may also use the high case CO_2 template to run additional sensitivity analysis and submit these alongside the original CBA. Where NGGT make changes to the inputs to the CBA (e.g. technical inputs for emissions reductions resulting from different utilisation assumptions), they should clearly outline how they have derived these revised inputs, including how underlying assumptions have changed. These additional sensitivity analyses do not necessarily indicate that the preferred option is no longer justified, but NGGT should consider the outputs of any further analyses when explaining how it has built in flexibility to its Business Plan in order to deal with future uncertainty.

4.7. Decision rule

The purpose of the CBA template is to enable NGGT to demonstrate the proposals included in their Business Plan provide the optimum solution which demonstrates best value for customers.

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[14] Available at: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

[15] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794737/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal-2018.pdf

We do not expect NGGT to use CBAs mechanistically (i.e. including all schemes with positive NPV and excluding all those with negative NPV). Where a scheme has a marginally positive or negative NPV, NGGT should consider the inclusion/exclusion of such a scheme, drawing on sensitivity analysis and the identification of any non-monetised benefits or costs. As an example, such non-monetised costs/benefits might include:

a. (Non-monetised) engineering judgement on what constitutes an efficient project, as detailed in the required EJP.
b. Evidence of stakeholder support for one option over another.

We expect NGGT to clearly set out such judgements as part of their IDP, and have, accordingly, provided a section for a brief synopsis for both EJP and stakeholder support within the CBA template.

It is the overall position determined across the following three distinct elements which will determine and substantiate the most appropriate solution:

1. Engineering Justification Paper
2. Stakeholder Engagement & Support
3. The quantitative analysis (i.e. CBA).

The IDP will be assessed in its entirety by Ofgem to inform the viability and justification of any proposed investments within NGGT's well-justified Business Plan. Ofgem also intend to utilise this evidence as part of the ongoing monitoring and assessment of delivery throughout the price control period. Where there has been material divergence in the cost, timing or nature of the solution from that which was assessed and funded through the Business Plan process, we expect these changes to be subject to the same rigor and assessment that the original proposal was subjected to. We would expect an updated IDP, with the baseline being the original solution, to be available to Ofgem upon request.

4.8. Links to Business Plan

NGGT should clearly show the links between their CBA, EJP, Business Plan and BPDTs. For example, NGGT should show how the workload and cost reductions underpinning the CBA and proposed asset investment plans feed through into the overall Business Plan proposals. We have included an area within the template to reference which BPDT/Regulatory Reporting Pack table the CBA would fall under.