
RIIO-3 Business Plan Guidance

Annex 1: Investment Decision Pack (IDP) Guidance

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1. Introduction

1.1 As part of their RIIO-3 business plan submissions, companies are required to submit Investment Decision Packs (IDPs) which outline the needs case, scope, costs and benefits for major projects or aggregated investment programmes that meet the specified criteria. These packs are intended to provide both quantitative and qualitative assessments of the proposed investments and provide an insight into the investment decision-making processes and governance undertaken within each company. The purpose of this guidance note is to:

- explain the concept of IDPs and the interaction between the Engineering Justification Papers (EJP) and Cost Benefit Analysis (CBA) templates;
- ensure that companies adopt a common CBA and EJP framework to facilitate cross-company comparisons of asset investment plans; and
- employ a framework consistent with latest thinking on how to conduct CBA in a regulated context.

What is an Investment Decision Pack (IDP)?

1.2 Ofgem is seeking to improve the visibility and transparency of each company's investment decision-making process and assess the justification and viability of these investments through the use of IDPs. The principle of the IDPs is to provide all information required to allow Ofgem to understand and interrogate the investment decision-making processes and internal governance procedures of each company. An IDP normally consists of an EJP and a CBA, though for certain categories of ET investment a CBA will not be appropriate, as set out in Table 7. 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 technical problem that the investment seeks to solve and sets out the different options that have been considered. The purpose of the template is to communicate the key factors that have influenced the investment decision and to provide engineering detail on the options considered. Sections 3 and 4 of this document set out separate EJP frameworks for the different categories of work that may be covered by an IDP, for the GT, GD and ET networks. The EJP is primarily intended to be assessed by engineering professionals within Ofgem and any subject matter experts or consultants we engage.
- **CBA:** Is applicable to both major engineering projects and to ongoing network asset health investments. The CBA sets out a quantitative assessment of the

main options under consideration and demonstrates the consumer 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 the companies to link proposed investments back to their EJP and stakeholder engagement. Our assessment will look to all these elements to substantiate viability and justification of investments in RIIO-3.

- 1.3 Requirements relating to IDP submissions supporting proposed expenditure within the business plan are outlined in more detail below. In addition, Ofgem reserves the right to request companies to provide an IDP for a specific investment after business plan submissions have been received, where we consider it necessary. This would be handled through the SQ process. This approach reflects the understanding that all investments included in the business plans have been through an internal review process and the information to justify the investment is readily available.

What should be in in an IDP?

- 1.4 IDPs need to be produced for investments that are financially material and/or require significant engineering and/or economic scrutiny by Ofgem because of the risks associated with the investment. In practice, this means that the majority of capex (and for GD networks, repex) spend should be supported by IDPs.
- 1.5 The submission requirements and guidance outlined below apply to both proposed baseline expenditure and expenditure subject to an uncertainty mechanism. Where companies are proposing significant investments that will be funded through uncertainty mechanisms, they should follow a comparable engineering and economic evaluation process as was used to justify baseline expenditure. However, we recognise that by definition uncertainty mechanisms will have less data available to include in this process. Known ET connection work should be included in an IDP; however, for projects that have a well justified needs case but the costs are not mature enough for submission in the business plans, companies must provide an EJP for these projects - clearly setting out the justification for the needs case and an explanation why the project is not mature and reasons why other data fields in the EJP cannot be completed. For projects for which there is already a project-specific licence condition in place and/or projects funded under RIIO-1 or RIIO-2 where no additional funding is sought, an IDP is not required.

1.6 To ensure that the information submitted for each project or programme of work is appropriate for that activity, we are asking works to be categorised into the following three key areas for GT and GD;

- Major Projects
- Asset Health (NARM)
- Asset Health (Non-NARM)

1.2 Table 1 below describes the type of works that are considered applicable investments for each investment type for GD and GT, alongside examples and cost thresholds. Detailed submission requirements for GD and GT vary by investment type and are described in more detail in Section 2 of this IDP Guidance.

Table 1: GD/GT IDP Categories and Thresholds

Type	Applicable Investments	Examples	Threshold (across the RIIO-3 period)
Major Projects	Full Site Replacement/Strategies Major Extensions/Refurbishments	Reinforce an AGI to meet capacity constraints, site refurbishments to meet safety standards and improve asset integrity, full replacement of compressor package.	£5m
Asset Health (NARM)	All Assets in NARM	Replacement of 200 governors across the network, replacement of all non-mandatory repex pipelines, replacement of pre-heaters across the network	£2m
Asset Health (Non-NARM)	Assets not included in NARM	Replacement of fire suppression systems, IMRRP mandatory repex programmes	£5m

1.3 For ET projects or investment programmes, works should be categorised into the following four key areas;

- Major Projects
- Portfolio Works
- NESO Driven Works
- Other

- 1.4 Table 2 below describes the type of works that are considered applicable investments for each investment type, alongside examples and cost thresholds. Detailed submission requirements for ET vary by investment type and are described in more detail in Section 3 of this IDP Guidance.

Table 2: ET IDP Categories and Thresholds

Type	Applicable Investments	Example	Threshold (across the RiIO-3 period)
Major Projects	Full Site Replacement/Strategies Major Extensions/Refurbishments	Large Generator/ Demand Connections Combinations of Site and Route works Connection Hubs	£25m+
Portfolio Works	NARM Lead Assets	SGTs, Rx, CBs, OHLs, Cables	£N/A
	NARM Non-Lead – High volume works	Switchgear, Substation Primary Cables, ITs, LVAC, Civils, P&C, Auxiliary Systems	£5m+
	Non-Lead - Low volume works	HVDC, FACTs, other Low Volume High Value	£5m+
NESO Driven Works	Schemes coming as a result of NESO involvement	Connections (generation and demand), Pathfinders, Operability driven investment, Fault Current Replacements, Market Facilitation	£5-£100m
Atypical	Schemes that are not included in the above	Long Term Equipment Procurement, Land Procurement, Other individual investments above £5m	£5m+

2. EJP Framework for GT and GD

Overview

- 2.1 When a CBA is used to justify engineering spend it must have an accompanying EJP. The EJP must follow the appropriate framework type provided in this guidance.
- 2.2 The EJP template sets out the key information required to allow a thorough review of the investment and they must be replicated in full for each CBA. Where a section in the template is deemed not to be relevant for a given project/spend then this should be explained, and the section retained. The purpose of this approach is to help the review team by having a consistent document structure and numbering format across multiple network company business plans.
- 2.3 The EJP templates should be replicated in the company business plans. However, company-specific presentation styles (i.e. fonts/branding/images) can be used. This guidance note provides suitable frameworks for use rather than a document template.
- 2.4 Where appropriate, companies may include additional information beyond that required in the template, however, network company EJPs should be concise, and the production of lengthy documents is highly discouraged. A maximum page count of 40 pages would be appropriate.
- 2.5 Where appropriate, companies may combine documentation for each network, where differentials in workload volumes and funding requests are detailed in the EJPs. This is only applicable to the EJP narrative piece, the network will still be required to submit separate Business Plan Data Templates (BPDTs) for each licence.
- 2.6 In addition, where appropriate, the inclusion of simple annotated drawings is encouraged and engineering documents such as network layout documents can be attached to aid understanding.

Table 3: GT and GD EJP structure overview

Type	Applicable Investments	Examples	EJP Format	Supporting Information Required (not exhaustive)
Major Projects	Full Site Replacement/Strategies Major Extensions/Refurbishments	Reinforce an AGI to meet capacity constraints, site refurbishments to meet safety standards and improve asset integrity, full replacement of compressor package	Word/PDF	Problem statements, Condition assessments, connection offers, design drawings, optioneering, bespoke CBAs, project plans
Asset Health (NARM)	All Assets in NARM	Replacement of 200 governors, replacement of all non-mandatory repex pipelines, replacement of pre-heaters	Word/PDF	Problem statements, equipment summaries, condition assessments, optioneering, design drawings, CBAs
Asset Health (Non-NARM)	Assets not included in NARM	Replacement of fire suppression systems, IMRRP mandatory repex programmes	Word/PDF	Problem statements, equipment summaries, optioneering condition assessments, design drawings, CBAs

Major Projects in GD and GT

2.7 Major Projects are a major investment where there is a defined scope, bespoke cost estimates and a known outcome. The project would typically install or renovate a package of equipment at one or a few locations. The work package would install more than a single asset type, eg a compressor package rather than focus on a single valve type. Other examples of Major Projects include network extension, reinforcement, or site-wide re-life projects. **Table 4** below summarises the EJP submission requirements for Major Projects.

Table 4: Major Projects in GD and GT - summary

Major Projects	
Format	Word
Applicable Works	<p>Where there is a defined scope, bespoke costs and known outcomes a Major Projects template should be used.</p> <p>This can include full replacement of a compressors package or whole site re-life projects.</p>
Supporting Information	<p>Where there are interactive asset health issues, detailed condition assessments of the entire site are to be made available on request. The EJP should contain sufficient condition information to support the proposed works.</p> <ul style="list-style-type: none"> • Clear and well-defined scope of works, this includes design drawings (annotated as appropriate), • optioneering and • Bill of quantities to support cost confidence reviews. <p>Project specific Cost Benefit Analysis will be required given the high levels of optionality available. This should be followed by a detailed discussion outlining the business case and its drivers.</p> <p>Land ownership boundaries and new land procurement information.</p>
Cost Thresholds & Exclusions	£5m

Asset Health in GD and GT

- 2.8 Network Asset Health investments look to maintain the reliability/integrity of a single equipment type across the network, eg justification to replace or renovate 200 district governors. This type of investment is expected to be generated using asset health management processes and use probability and consequence of failure to justify the investment.
- 2.9 For all NARM and Non-NARM activities companies should submit EJPs using the Word template provided. This template could be used for non-mandatory Repex justification, although if there are specific bespoke projects for non-mandatory Repex the Major Projects template may be more suitable for these circumstances.
- 2.10 Asset Health thresholds are per network, not per document (if the documentation is combined). The materiality thresholds apply to programmes of work, aggregated up from smaller individual projects, these types of projects will be submitted under Asset Health IDP even if the combined threshold exceeds the threshold for Major Projects. Individual projects that meet the materiality threshold for the Major Projects IDP should be submitted under a Major Projects format.

2.11 **Table 5** below summarises the requirements for EJP submissions for all Asset Health projects, which do not fall under the definition of Major Projects.

Table 5: Network Asset Health in GD and GT - summary

Asset Health	
Format	Word
Applicable Works	<p>Where individual replacements/refurbishments (this could constitute multiple assets on the same site) have individual need cases through Asset Health related drivers. Asset health management software should indicate the probability and consequence of failure.</p> <p>This includes the following asset classes: Regulators, Pre-heating, Governors, valves, non-mandatory Repex</p>
Supporting Information	<p>For high volume investments: Clear condition assessments will be required to be undertaken in advance of submission. We do not require these to be submitted directly but the licensee is to provide proportionate asset specific data as justification in the first instance. This data is to be held for all assets within the plan submission that we can request. We do not envisage the need for detailed optioneering for most of the assets included in the plan. However, where a licensee wishes to supply detailed optioneering, we will consider these in our review.</p> <p>For low volume high-cost investments: Clear condition assessments will be required to be submitted highlighting the drivers for intervention. Furthermore, system studies where appropriate, are required to support the proposed works. For low volume investments we envisage the need for detailed optioneering and will consider incremental costs.</p>
Cost Thresholds & Exclusions	<p>NARM assets - £2 million</p> <p>Non-NARM assets - £5 million</p>

Asset Health (NARM GD only)

2.12 **Table 6** below presents an overview of the asset classes for which Asset Health (NARM) IDPs are to be submitted by GDNs. These asset classes are consistent with the GD NARM methodology. GDNs should submit IDPs for each asset type at the secondary asset level, with the exception of iron mains, where companies should submit IDPs for each asset type identified at the tertiary asset level. Companies may submit IDPs at the primary asset level, however, these must cover in detail each of the secondary or tertiary asset types within that category, providing all of the required information for each type of asset.

Table 6: GD Asset Classes to be supported by IDPs

Primary asset level	Primary sub-level	Secondary asset level	Tertiary asset level
Mains		Iron	Tier 1 (inc <=2" steel); Tier 2B; Tier 3. Tier 1 STUBs
		PE	
		Steel	
		Other	
Services		Services	
MOB Risers		Risers	
LTS Pipelines		Piggable	
		Non-piggable	
Offtakes & PRS	Odorant & Metering	Offtake metering system	
		Offtake odorization system	
	Pre-heating	Offtake pre-heating	
		PRS pre-heating	
	Filters and pressure control	Offtake filters	
		Slam shut & regulators	
		PRS filters	
		PRS slam shut & regulators	
Governors		District	
		I&C	
		Service	

2.13 Services associated with mains replacement are to be included within the relevant mains-level IDP. This reflects the fact that mains replacement is the primary driver of service workloads. Companies should clearly outline how environmental, safety and other benefits are attributable between mains interventions and service interventions. Service interventions not associated with mains replacement should be presented in a separate IDP.

2.14 Companies may combine piggable and non-piggable LTS pipelines within a single IDP. However, any significant differences in benefits between these two categories should be clearly identified, including the relative impacts on ongoing opex costs.

2.15 **Table 6** above outlines the minimum expectation regarding the level at which EJPs and CBAs should be submitted, but companies should consider further

breakdowns where necessary, based on distinctions between size, usage, costs and consequences of failure for different asset types within an asset class. In some instances, it may be appropriate to provide multiple EJPs and CBAs for a given secondary asset class, where the equipment capacity can vary widely, resulting in very different applicable unit costs and benefits.

- 2.16 Repex assets should be categorised on the basis of the material of the mains being decommissioned, rather than the mains being commissioned. Therefore, IDPs for PE mains are only required if a company expects to undertake a significant amount of replacement, reinforcement or diversion work on existing PE mains that is not predominantly customer funded.

Data requirements

- 2.17 For works that are driven and majority paid for by third parties, companies should consider whether it is appropriate to submit an EJP in support of these investments, to demonstrate the engineering judgements that have been made to define the scope or preferred option and cost estimates for these projects, particularly where they are of significant materiality.
- 2.18 Companies should provide a summary overview table detailing the IDP that have been submitted under each category of works.
- 2.19 Given the differing scopes and justifications for different types of projects, it is normal for an EJP to draw on differing sources of data to justify each type of investment.
- 2.20 To reflect the difference between these investment types, templates have been provided. The templates contain further guidance on the type of information to be included in each section of the EJP.
- 2.21 Where we have not provided guidance in respect of the asset classes for which IDPs are to be submitted for GD and GT, it is for the companies to determine which programmes of works should be subject to separate IDPs. However, where packs are submitted for a specific programme of works (which may span across different asset categories/asset classes), the accompanying commentary is to outline why the programme of works has been considered separately from the rest of the asset category/asset class.

3. EJP Framework for ET3

Overview

- 3.1 RIIO-ET3 will use a framework of four different types of EJPs rather than a single EJP, per Figure 1 below and Table 4 below. This will provide proportionate information in relation to the investment's options that are realistically available and the total value of the investment.
- 3.2 The four EJPs will utilise two principal formats:
- EJPs which are narrative based; or
 - Excel based which prioritise data above narrative.
- 3.3 The use of the EJP types is defined in the following sections. Licensees are to consider this when developing their submissions.
- 3.4 Templates will be issued in the EJP Template Pack which will be provided along with this document.

Figure 1. EJP types

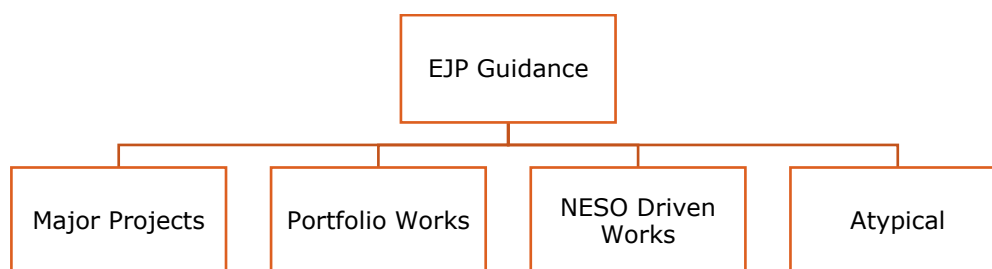


Table 7: EJP structure overview

Type	Applicable Investments	Example	EJP Format	Supporting Information Required (not exhaustive)
Major Projects	Full Site Replacement /Strategies Major Extensions/ Refurbishments	Large Generator/ Demand Connections Combinations of Site and Route works Connection Hubs	Word	Condition Assessments, Connection Offers, Design Drawings, System Studies, Bill of Quantities (BoQ), bespoke CBAs

Type	Applicable Investments	Example	EJP Format	Supporting Information Required (not exhaustive)
Portfolio Works	NARM Lead Assets	SGTs, Rx, CBs, OHLs, Cables	Excel ¹	Condition Assessments, Design Drawings, BoQs, portfolio CBAs
	NARM Non-Lead – High volume works	Switchgear, Substation Primary Cables, ITs, LVAC, Civils, P&C, Auxiliary Systems		Condition Assessments, Portfolio CBAs (as required)
	Non-Lead - Low volume works	HVDC, FACTs, other Low Volume High Value	Word	Condition Assessments, Design Drawings, CBAs
NESO Driven Works	Schemes will have involvement with the NESO	Connections (generation and demand), Pathfinders, Operability driven investment, Fault Current Replacements, Market Facilitation	Word	System Studies, Design Drawings, BoQs
Atypical	Schemes that are not included in the above	Flooding, IT/OT, Long Term Equipment Procurement, Land Procurement, Other individual investments above £5m	Word	Studies, Narrative, Industry letters of support, Stakeholder views.

Major Projects ET

- 3.5 Major Projects EJPs are designed to justify major interventions at substations, but can include associated circuit routes or new routes. These are multi-driver works which will see two or more lead asset categories and/or wholesale non-lead asset replacements.
- 3.6 Given the wide range of potential options detailed optioneering is to be included. This is likely to follow similar ASTI requirements. Incremental costs are to be clearly evidenced in options.

¹ Narrative Overviews are allowed for Portfolio works based on Excel. Appropriate referencing is required.

Table 8: Major Projects summary table

Major Projects	
Format	Word or Pdf. These will be an estimated 30 pages (not including appendices/annexes).
Applicable Works	<p>Where there are multiple overlapping drivers, these are to be raised through Major Projects.</p> <p>This can include full replacement of substations, whole site in-situ replacements (major refurbishment), Connection Hub (new sites which are entirely anticipatory) and construction of new routes.</p> <p>This does not include individual non-related asset replacements.</p>
Supporting Information	<p>Where there are interactive asset health issues, detailed condition assessments of the entire site is to be made available on request. We expect that the EJP will contain sufficient condition information to support the proposed works.</p> <p>System study results are to be provided on request, however there will be sufficient information contained within the EJP to support the proposed works.</p> <p>Clear and well-defined scope of works, this includes design drawings (annotated as appropriate) and bill of quantities to support cost confidence reviews.</p> <p>Project specific Cost Benefit Analysis will be required given the high levels of optionality available.</p> <p>Land ownership boundaries and new land procurement information.</p> <p>To support our cost assessment, for baseline projects we expect to see evidence that projects have been developed to minimum of Stage 2, as practicably as possible (see 3.153.15). If Stage 2 cannot be evidenced, TOs should provide relevant supporting data that provides justification of their cost confidence.</p>
Managing Uncertainty	<p>For projects submitted for baseline funding, that are driven by load or have shared drivers (both load and non-load), details on how uncertainties have been managed through Strategic Investment are to be provided– see</p> <p>Where project needs case and costs are uncertain at the start of the price control, we expect this uncertainty to be justified in business plan submission and to be managed through the Load Related Re-opener. TOs are also to provide details on any Strategic Investment where they seek to mitigate any future uncertainty.</p>
NESO Review	We expect the NESO to be provided with copies of the EJPs at business plan submission. We may ask the NESO for their analysis if required during our review.
Cost Thresholds & Exclusions	[£25m and above]

Additional Guidance on Major Projects

Overview

- 3.7 Major investments applicable works is wide ranging. The template provided is designed to ensure that licensees have considered the elements of the investments which are critical to our review.
- 3.8 Our word counts are prescriptive in areas where information can be easily condensed. We have elected to be less restrictive in areas where additional pertinent information is required. We have provided scope for appendices to enable additional information which supports our reviews.

Major Projects System Design Table

- 3.9 This table is used to infer the initial system-based options. Licensees are to complete the table as far as possible with the information which they have. Where the information is not available, but will be available in period, licensees are to provide narrative as to the expected outcomes - to ensure Ofgem can evidence that the licensee has considered these works. Where the information is not applicable, licensee are to state this clearly.
- 3.10 In the System Requirements section, we licensees are to enter their most recent information using approved scenarios driving their solution.
- 3.11 For Initial Design Considerations references to the thinking of the Licensee is to be provided. Where the design elements are not applicable, the licensee is to state this.

Applicable Works

- 3.12 We have set out our definitions on applicable major LRE scopes of work in Appendix 1.
- 3.13 Sites which are substation replacements, major refurbishments or those which are defined by the licensees as a new site but are within 5km of an existing site, where there are non-load related benefits, we expect a full EJP submission. Regarding the 5km threshold, narrative is to be provided justifying the rationale for locating within 5km of other major asset sites. This is because TOs should have explored other options (eg site extensions, replacements etc.) ahead of building a new site at such a proximity to an existing site.
- 3.14 Where there are genuine new sites which have no non-load related benefits and are exclusively used for Load related works, the use of the Major Project template

is to be used but we will accept reduced design and cost details. Licensees will highlight the uncertainties in the EJP.

Optioneering - Design Requirements

- 3.15 To support our cost confidence analysis, licensees are to meet Stage 2² design requirements as defined in the BPDT Guidance³ Indirect Design Definitions Table. While not mandated, we welcome Stage 3 design work being shared to aid our review as this will support cost confidence analysis. If Stage 2 cannot be evidenced, TOs should provide relevant supporting data that supports their cost confidence.

Cost – BoQ & Strategic Investment

- 3.16 We retain the BoQ description of the costs associated with the projects but note that not all licensees can provide BoQ level disaggregation. Licensees are to provide costs in a project specific disaggregated manner. Where there are different customers and/or drivers, licensees are to separate these costs where this occurs.
- 3.17 Licensees are to consider Strategic Investment in all Major Projects. These costs will need to be isolated to enable our review.

Deliverability - Previous Funding Overview & Programme

- 3.18 We note that licensees have flexibility to change and alter their plans in accordance with the changing needs of the network. It is crucial we have sufficient information to understand where licensees have either invested in a site recently or requested investment at a site, but not utilised it. Therefore, we require the licensees to provide details on this historic element while addressing their major project EJPs.
- 3.19 The licensees' Gantt chart is to be of sufficient resolution to both read and then get all key data from.

Need case only EJPs

- 3.20 For those projects where there is a firm needs case, but costs are uncertain, TOs are to submit projects as part of their RIIO-ET3 Business Plans using the Major Project EJP template.

² Provides a Layout drawing at 3 phase level which does not include the as found environment. Eg does not include civils related works, access related. Includes Route maps, Tower Positions, Cable Route

³ RIIO-ET3 Electricity Transmission Price Control – Instructions and Guidance on Business Plan Data Templates: Version 1

- 3.21 TOs must provide a well justified needs case, some degree of engineering design and optioneering where possible, early estimated costs, estimated expected date for full funding application. Using the template TOs will clearly articulate reasons for why the project is too immature for baseline funding and the stage of the development which the project is at.
- 3.22 Where relevant, TOs will provide clear justification in the EJP as to why the use of Strategic Investment has not managed the uncertainty which is being faced in the project.
- 3.23 Where needs cases are well justified at business plan submission, we will seek to approve the need for the project subject to a future cost submission through a streamlined Load Related Re-opener.
- 3.24 We recognise the uncertainty around an estimated cost range for a project given the immaturity of engineering design. We will retain the EJP through the price control period to use as reference to measure change to the project as development continues and that costs remain within expected cost ranges.

Project Descriptions

- 3.25 We have provided an overview of the project descriptions licensees are to use in Appendix 1, see 0 for more details.

Asset Health Portfolio – Lead Assets

- 3.26 We recognise that there are likely to be individual asset replacements which do not fall within Major Projects. We propose to combine individual asset investments into a portfolio EJP which is best suited to an excel format. There may be multiple assets on site that need interventions, but this may not meet the threshold of the Major Project EJP.
- 3.27 Our move to primarily Excel based submission should minimise repetitive submissions. We recognise that elements of value adding narrative may be lost in site specific investments, however our proposal strikes a balance between minimising submission quantity while retaining key system and asset cost information. While not mandated, any overarching narrative that a licensee wishes for us to consider will be reviewed if submitted.
- 3.28 Licensees will submit their investment proposals contained within the grouping of all lead assets. For example, a licensee will submit asset data for all SGTs, but fill out optioneering information for only those where interventions in period are

planned. This will provide a context to the wider investment that narrative based submissions generally seek to achieve. A licensee can provide additional narrative at a portfolio level, or asset level, but this is not expected.

- 3.29 We will include elements for data that provides the licensee the opportunity to highlight their longer-term plans for the asset group. This should support wider long-term procurement context.
- 3.30 Strategic Investment will be accounted for, and costs related to Strategic Investment will be collated as incremental costs.

Table 9: Portfolio – Lead Asset Summary Table

Portfolio - Lead Assets	
Format	Excel based.
Applicable Works	<p>Where individual replacements/refurbishments (this could constitute multiple assets on the same site) have individual need cases through Asset Health related drivers.</p> <p>This includes the following asset classes: SGTs, Rx, CBs, OHLs, Cables.</p>
Supporting Information	<p>Clear condition assessments will be required to be undertaken in advance of submission. We do not require these to be submitted directly and will use NARM data as a primary influence of need case. However, we expect upon request to be provided with the relevant condition data for the investment as required.</p> <p>We welcome incremental costs to be submitted. Where there is a drive towards incremental costs we may require suitable system studies information to support or detailed narrative to highlight the limited regret of the investment proposals.</p> <p>Design drawings/route maps (annotated as appropriate) are to support cost confidence reviews.</p> <p>We do not anticipate that CBAs will be required for all projects, but where there are multiple options which are marginal in cost, we may expect further information to be provided.</p>
NESO Review	The NESO is to be provided with copies of the EJPs at business plan submission, but the NESO is not required to provide any comments.
Cost Thresholds & Exclusions	No Thresholds.

Asset Health Portfolio – Non-Lead Assets

- 3.31 Like our position for Lead Assets, we believe that reducing the submission burden to Excel based format is appropriate for the value of investments and, specifically to non-lead assets, the limited optioneering which is usually required.

3.32 We require similar levels of condition information as would be expected for lead assets. This will ensure that we are aware of context for the specific investments that we are approving.

Table 10: Portfolio – Non-Lead Assets Summary Table

Portfolio -Non-Lead Assets		
Format	Excel based for High Volume, Word/Pdf for Low Volume High Value (please use Atypical EJP Template for low volume high cost)	
Applicable Works	Assessed in Non-Lead EJPs: Where individual replacements/refurbishments (this could constitute multiple assets on the same site) have individual needs cases through Asset Health related drivers.	Not Assessed in Non-Lead EJPs: Where individual replacements/refurbishments (could constitute multiple assets on the same site) are included as part of a Major Project or Lead Project
	This includes the following high volume asset classes: See Appendix 2 This includes the following other Asset Classes: FACTs, HVDC. Non-Lead Assets	This includes the following high volume asset classes: See Appendix 2
Supporting Information	For high volume investments: Clear condition assessments will be required to be undertaken in advance of submission. We do not require these to be submitted directly but the licensee is to provide proportionate asset specific data as justification in the first instance. This data is to be held for all assets within the plan submission that we can request. We do not envisage the need for detailed optioneering for most of the assets included in the plan. However, where a licensee wishes to supply detailed optioneering, scope of works and CBAs we will consider these in our review.	For low volume high-cost investments: Clear condition assessments will be required to be submitted highlighting the drivers for intervention. Furthermore, system studies where appropriate, are required to support the proposed works. For low volume investments we envisage the need for optioneering and will consider incremental costs.
NESO Review	High Volume Works	Low Volume Works
	The NESO is to be provided copies of EJPs during business plan	Where there are system operability impacts we may engage the NESO to

Portfolio -Non-Lead Assets		
	submission, but the NESO is not to provide any comments.	understand benefits of proposed interventions.
Cost Thresholds & Exclusions	<p>No Threshold for high volume works included in Major project or Lead projects.</p> <p>£5m for single asset types if not included in Major projects.</p> <p>UIOLI for Projects under £5m thresholds.</p>	

Additional Guidance on completion of Excel Based EJPs

Overview

- 3.33 To ensure that licensees have sufficient guidance on how to complete the Excel based templates we have included this section. We have highlighted areas for additional considerations. We will clarify our intent in these sections to ensure that the principles of our requirements are understood along with the guidance.
- 3.34 Our templates are the minimum data required to undertake our analysis, but we will review additional information provided to us on the condition it is colour coded as per the rest of the template. While we accept additional information, we expect licensees to retain the template.
- 3.35 We note that licensees may choose to use cover formatting or logos in their EJPS as per their branding. Providing this does not make any of the template redundant or unreadable, this is acceptable.
- 3.36 Where possible, we have used existing BPDT and Glossary terminology in our EJPs. On occasions specific data has no previous definitions and so have provided additional information in this document to minimise terminology related issues.

Asset Data

Overview

- 3.37 All sections in Yellow in the Excel templates are to be used for asset data to be provided. Our intentions are to minimise the amount of narrative required by having **all** assets listed with the NARM or similar aggregated asset data provided to us for the asset class. This listing of assets should provide a range of points of context. Crucial to this is the intention markers for T4 and T5 in the blue optioneering section.

- 3.38 We note that the asset classes in NARM and Non-NARM assets are not standardised in ET. We reference Lead and NARM assets together to try to minimise the ambiguity in the classification of these asset categories.
- 3.39 We are also aware that the unlike the ED sector, where CNAIM provides a consistent approach and view of Risk, ET NARM is not consistent. We recognise the difficulty in comparison and so while we will be utilising NARM as a primary source of need case data, it is not the only source we will consider. Where a licensee holds additional condition data licensees can add additional columns or tabs to share this data as part of the template.

Lead Assets (NARM)

- 3.40 For Lead Assets (NARM) assets we intent to use NARM indicators as the key asset data drivers. Where additional data, for example condition data, is required, the TOs should have the information retained separately and should be able to provide this to us upon request through SQs.
- 3.41 For Overhead lines licensees are to work on a per circuit (Cct) basis. We will not require a per span level data set to be completed. Where a licensee has multiple condition factors on a Cct, the licensee will aggregate this to a grouped level of the worse condition factor on the Cct. Examples have been provided for licensees to work from in the template.

Non-Lead (Non-NARM)

- 3.42 For Non-Lead (Non-NARM) assets we intent to provide the licensees scope to include the relevant assets data associated on an asset specific basis as they have available. As these assets are Non-NARM a standardised submission is to be provided. The templates are provided for the licensee to amend as their available information requires.
- 3.43 The minimum Asset Data we require in the NL Portfolio paper is a single asset ID and an installation date. Where a licensee is unable to provide any data above the minimum requirement un-used columns can be deleted. Where the licensee has additional data which supports their need case additional columns can be added as required.
- 3.44 We are cognisant of the high volumes of assets which may be counted in Non-NARM interventions. We propose a cut off at [30,000] assets in any given asset class.

Optioneering

Overview

- 3.45 All sections in blue and light blue are optioneering. Licensees are to provide us sufficient optioneering information to be able to undertake our analysis. We have included, specifically in Lead Assets the ability to reference drawings as to the options and scopes of preferred (and where applicable) reject options. These drawings will be in pdf format and licensees are to annotate these drawings sufficiently to draw out any specific scope and/or cost information relevant to the proposal.

Future Period Interventions

- 3.46 We have provided columns for T4 and T5 interventions as part of the Lead assets optioneering sections. Licensees are to provide [replace or refurbish] intention in these cells. While we are not reviewing T4 or T5 investments licensees are to consider their future plans. We see this as providing significant context to T3 investments.

Lead Assets

- 3.47 For lead assets optioneering is to be complied with in the template provide. Where additional information is to be provided, we are comfortable additional columns are added as the licensee requires.

Non-Lead Assets

- 3.48 Generally, we believe that the materiality of high-volume low-cost assets optioneering is lower than that of lead assets or low volume high cost non-lead assets.
- 3.49 To that effect the optioneering has been condensed to replacement or refurbishment for assets which are not included as part of a Major or Lead asset project.
- 3.50 Where assets are included as a scope element driven by a Major or Lead project, we will not require the options to be presented in the Portfolio paper.

Lead and Non-Lead Costs

- 3.51 Project Costs and Incremental costs are referenced directly in the Excel templates. These titles represent the following:
- Project Costs – the direct costs of the project, this may result in overlap with the BPDT.

- Incremental Costs – This represents either a single point of Strategic Investment or multiple strategic investment values. The goals of this is to provide a breakdown of cost for works in which a strategic investment is being made.
- 3.52 Any Cost and Volume based analysis required by the EJP will use the BPDT as source data. We do not anticipate licensees providing any C&V data in the portfolio, unless they elect to do so.
- 3.53 Any projects in which the assets are referenced to a major project does not need to break the costs for those individual projects after the lead asset. For example, a Disconnecter, or Unit Protection relay does not need to replicate costs, these should be referenced and greyed out in line with the colour code in the template.

Referencing including Historic Funding

Overview

- 3.54 We have provided references to minimise ambiguity. We note that licensees have different systems and process at play which mean that it is difficult define all cell details in the portfolio EJPs.

BPDT Interaction

- 3.55 We have provided a green section for BPDT referencing. Our intention is to avoid repetition from the BPDT as far as possible. We have used the OSR to minimise interaction with the BPDT. Additional columns can be added if required by the licensee.
- 3.56 In relation to the BPDT Direct Costs are in reference to the Direct Costs as a project total. Therefore, if there are multiple assets included in a single OSR, this cost will be provided as a project cost as opposed to a unit cost. We note that there are elements of our review which include cost confidence assessments, this is not diminished as there should be sufficient detail in other elements of the portfolio worksheet to enable our review.
- 3.57 We note that that incremental costs are requested in the portfolio EJPs which do not overlap with the BPDT. Incremental costs are defined earlier in the document.

Historic Funding

- 3.58 We have asked for ET1 and ET2 investments to be referenced at an asset specific level. In these columns we intend to have those which were planned and those which were delivered. We do not require a cost to be provided for historic projects in the historic funding cells.

- 3.59 We note that T2 is not complete and so there is a clear understanding that intervention plans may change, this will include the licensees best view of those assets not yet delivered.

Referencing to Major or Lead Projects

- 3.60 Where a Major Project is being referenced in the portfolio EJPs the asset data will be provided in the EJP along with the project OSR. The blue optioneering section will be greyed out, as per the portfolio instructions.
- 3.61 Where there are two lead assets the same OSR, the higher cost component will be referenced as the equivalent to a Major Project. Therefore, the lower cost lead asset will have its blue optioneering section greyed to avoid duplication in review.
- 3.62 For Non-lead portfolio papers which have no individual investments which rise above the £5m threshold, the OSR referencing will be included and required for assets with a population count less than [30,000 individual units]. There are similar requirements to the lead project to major project relationship that optioneering will be greyed to avoid duplication of review.
- 3.63 We have provided a separate template for Major Project OSR references to avoid duplication in our review.

NESO Driven Works

- 3.64 NESO driven works contain the following broad categories which are to be submitted using EJPs:
- Connections – both Generation and Demand
 - Pathfinders – Of all Types
 - NESO Formal Requests – Of all types
 - Incremental Wider Works
- 3.65 We recognise that generally these works would not be appropriate to be represented in an Excel format. We propose therefore that these EJPs are narrative based. There will likely be a need to consider Strategic Investment.
- 3.66 For these works, the licensees are to provide the NESO with the opportunity to review and comment on NESO Driven EJPs ahead of final submission.
- 3.67 The following works do not need to be submitted in NESO Driven Works EJPs for baseline submissions:
- ASTI Projects

- tCSNP Projects
- CSNP Projects

Table 11: NESO Driven Works summary table

NESO Driven Works	
Format	<p>Word/pdf for all works.</p> <p>Licensees can choose to aggregate all submissions into a portfolio of similar investments.</p> <p>Estimated requirement of between 8-10 Pages A4.</p>
Applicable Works	<p>New Connections, both Generation and Demand which do not fall into the Site Strategy EJP criteria.</p> <p>Any Pathfinder works that the ESO has signalled the Licensee has been successful in the tender process. Alternatively, where TOs are required to connect Pathfinder customers, this will be treated as a normal connection activity.</p> <p>ESO Requested works for system operability (Fault Current, or similar or constraint management issues (Market Operations)).</p>
Supporting Information	<p>For all works the following is required:</p> <ul style="list-style-type: none"> • Evidence of NESO review (not approved) • System Studies must be undertaken (submitted on request if required). • Detailed scope of works – site drawings and scope. • CBAs as required.
NESO Review	The NESO is to be provided with copies of all EJPs. We may request the NESOs analysis during our review.
Managing Uncertainty	<p>Connection agreement signed.</p> <p>Baseline, with Strategic Investment.</p>
	<p>Future Connections</p> <p>Uncertainty Mechanisms and Load Related Re-opener</p>
Cost Thresholds & Exclusions	£5m to £100m

Atypical EJPs

Atypical Projects	
Format	<p>Word/pdf for all works.</p> <p>Licensees can choose to aggregate all submissions into a portfolio of similar investments.</p> <p>Estimated requirement of between 8-10 Pages A4.</p>
Applicable Works	<p>As required by the licensees (noting this does not conflict with cost assessment methodologies)</p> <p>Examples:</p> <ul style="list-style-type: none"> • Long Term Equipment Procurement • Strategic Land Procurement • Depots and Asset Storage • Control Rooms • Training Centres • Flood Resilience • Climate Resilience • Asset Data Standardisation • tCNAIM Development and Deployment Investments
Supporting Information	<p>For all works the following is required:</p> <ul style="list-style-type: none"> • Evidence of independent views (if appropriate) • Relevant Legislation or Industry Standards (if appropriate) • Relevant Market Information (if appropriate)
Cost Thresholds & Exclusions	<p>£5m above.</p> <p>Any works related to Asset Data Standardisation or tCNAIM Development and Deployment Investments have no thresholds.</p>

Overview

Need for Atypical EJPs

3.68 We recognise that licensees may have other investments that they believe requires engineering review. We propose that licensees can make submissions using the broad EJP principles to justify investments. The cost threshold for this is £5m.

Atypical EJPs

3.69 We have provided an overview of the applicable investments examples. We have not provided an exhaustive list of possible investments to ensure investments which provide consumer benefits are not constrained. Where EJPs are submitted which are for a separate audience from the engineering review, licensees are to clarify this in their EJP submission to ensure that we allocate reviews correctly.

- 3.70 The Template retains elements of system design tables from other EJPs. Where this is applicable, it may be used. Where not applicable it may be deleted. The principles of need case identification are retained but format is as required by the licensee.

Whole Life Total Cost for ET3

Overview

- 3.71 To provide genuine Whole Life Total Cost (WLTC) licensees are to consider both the construction and lifetime outage costs for their proposed interventions over the course of the asset's lifetime. This may either be in frequency or in duration of outage, or a combination of both.
- 3.72 The consideration of this may result in significantly different optioneering decisions being made from historic price controls. For example, reconductoring of an Overhead Line may be optimal from a CAPEX and OPEX perspective from a licensee's position, however, when considering the outage cost and risks of this, it may be more suitable to construct a new Overhead Line in selected circumstances.
- 3.73 We recognise that there are challenges in gaining long-term system access needed for some major interventions. We recognise the increasing constraint costs which the consumer ultimately pays for and as such the true WLTC of interventions is likely to increase. Licensees should consider constraint cost elements in their optioneering. This consideration does not require all works to have outage costs quantified.
- 3.74 Licensees are to design their networks to be fit for the future. Where a licensee submits investments that appear to limit future extension, robust justification for any limitations imposed by the design is to be provided. For reference, examples of potentially limited extensibility may be: where designs such as single mesh switches are used, where investments to existing sites preclude future extension, where sites are chosen with limited ability to extend such as near rivers/major roads/railways etc.

Interaction with the NESO on Whole Life Costs

- 3.75 We accept that it is exceptionally challenging for the NESO to predict with sufficient accuracy on an individual bay basis the exact costs for future outages. Potential ranges of costs will be so widespread that we do not intend to request specific bay by bay outage costs.

- 3.76 Conversely, while boundary costs are useful, they do not represent the full costs which the consumer will bear. As such licensees are to incorporate intelligence from their own experience, and where required the NESO, in their optioneering and analysis and proposed options. While we have seen conflicting approaches taken by TOs on non-boundary constraint costs; we will consider these cost implications seriously during our review and expect licensees to be able to robustly justify their position on selected designs.
- 3.77 Where the licensees optioneering is suggesting that the cost of outages are material to the selecting the preferred option, evidence of quantification can be included in the EJP submission, and if appropriate costs in the EJP and/or the CBA.
- 3.78 Licensees are to engage with the NESO where appropriate on their proposals. Where material a licensee will be able to demonstrate how it has taken into account the NESO's input, especially where asset interventions result in extended outage requirements.

Strategic Investment

Introduction to Strategic Investment

Overview

- 3.79 Over the course of T2 we have been considering different interventions by licensees which, when faced with the net zero challenges, will most likely hinder their progress. Our T2 design was such that licensees were afforded opportunities to access additional funding to ensure that the needs of future and present consumers were balanced. Our analysis shows that licensees have benefited from historic strategic investments, most notably in the nationalised industry. While some licensees do practice this process, we believe that the value in Strategic Investment is such that a more coordinated approach is required.
- 3.80 TOs are required to proactively demonstrate Strategic Investment (SI) as a principle by which they manage uncertainty relating to Major Project and nominal asset interventions. As prudent asset managers, we believe TOs are best informed on the determinants of both LRE and NLRE need cases on their networks now and in the future.
- 3.81 Our intention in RIIO-ET3 is to ensure that TOs are provided flexibility in their NLRE and LRE investments that empowers them to undertake pre-emptive interventions to manage uncertainties through baseline investments where appropriate. For example, when confronted with assets that are, in poor

condition, approaching obsolescence or at maximum operating capacity, TOs should possess a comprehensive understanding of the prerequisites for its replacement, augmentation or extension ahead of business plan submission.

- 3.82 This knowledge is crucial in managing uncertainty and can be leveraged to explore a spectrum of strategic investment options, such as the procurement of land, expansion of civil platforms, or the provision of additional operability and/or capacity. This proactive approach ensures the continuity and reliability of the electricity transmission infrastructure now and in the future.
- 3.83 Justification needs to be proportionate to the investment that is planned. The greater the use of SI in an investment there will be an expectation that additional justification will be provided.

SI in relation to Needs case only EJPs

- 3.84 In EJPs licensees are to utilise the SI options to minimise the use of the Load Related Re-opener, as described at SSMD. In both LRE and NLRE licensees are to consider the use of SI ahead of use a reopener. When both a firm NLRE driver and a non-firm LRE driver exist, the licensee should focus on addressing the NLRE driver and manage the remaining LRE driver uncertainty through SI.
- 3.85 It is incumbent upon TOs to use the EJP templates to provide comprehensive justifications even where actions and final options are incomplete/immature. There may be cases where TOs are ready to submit a thorough engineering justification for a specific intervention, but where it is not yet ready to request full cost allowances for the project. In cases such as these, TOs must:
- Identify that the EJP is for a needs case only, that no construction allowances are being sought.
 - Explain why it is not yet ready to request construction allowances. This will include citing any absent data and information which is required to reach project maturity;
 - Be clear on the exact engineering solution that need case approval is being sought for (ie EJPs cannot identify that an intervention will be needed without being clear on the specific option that is being progressed);
 - Provide an early estimated cost range for the project (if the final submitted cost for the project falls outside of this range in the future submission window, we will reserve the right to re-visit the needs case for the project);

- Set out a clear delivery plan for the project which includes when it intends to seek full construction funding, and through which regulatory mechanism (eg the Load Related Re-opener in 2027).

Categorisation

3.86 We propose the following categorisation for SI:

Table 12: SI Categorisation

Asset Type	Type	Baseline	Type 1	Type 2	Type 3	Type 4
Substation	Extension	Ratings Optimisation	Land Procurement (may include land option dependant on duration)	Platform & Fencing	Busbar Including Bus Section + Couplers	Bay Build
	New build	Ratings Optimisation <i>Extendable Configuration</i> ⁴	Land Procurement (may include land option dependant on duration)	Platform & Fencing	Busbar Including Bus Section + Couplers	Bay Build + Additional Services (Voltage, Stability Control)
	Units	kA	Bays			
Route	Uprating	Ratings & Voltage Optimisation	For Cables – Spare Ducting (extra cable per phase)			
	New build	Ratings & Voltage Optimisation	For Cables – Spare Ducting (extra cable per phase)			

3.87 The table above seeks to standardise the terminology around SI. This provides both the Unit (Type) and the measurement (Bays) that will allow easier assimilation of the information provided. For example; a licensee may submit a project which includes:

- New Build, 4 bays of Type 3
- New Build, 4 bays of Type 1
- This would result in 8 extra bays, of which 4 are built with switchgear and land is procured for the remaining 4.

⁴ Where the solution is not able to be extended, justification will be expected to be delivered.

4. CBA Guidance

Identification of options

- 4.1 Consistent with the HM Treasury Green Book, companies should clearly identify the range of options that were considered to meet the stated investment aim. Where feasible, the CBA should 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 (the “deferral option”) must be considered as part of the CBA. In some cases (eg for asset populations) deferral may be equivalent to the “do minimum” option, while in others (eg for mandatory repex) deferral will not be an option. In these cases, this can be noted as part of the Baseline description rather than being included as a separate option.

Baseline scenario

- 4.2 The “do minimum option” or “baseline scenario” may represent do nothing or business as usual (eg ongoing maintenance and repair). This detail is to be completed within the ‘Baseline’ sheet. For instance, we consider the “baseline” scenario to be that which involves the minimum level of intervention that would be required to remain compliant with all relevant safety regulations, and other such legal obligations. Capital costs can be included in the baseline option if they are part of this minimum level of intervention.
- 4.3 For programmes of works, the baseline scenario should be consistent with the ongoing costs of maintaining the asset population at its current state of operation and level of performance risk (ie costs associated with maintenance and repair, as well as responding to emergency call outs on the asset population in question over the investment period). It is important that these costs are entered into the CBA (as ‘maintenance & repair’ in the intervention drop-down menu), so that relative differences in opex expenditure resulting from each proposed investment option can be captured within the NPV calculation.
- 4.4 For proposed programme of work investments, companies may either submit a single CBAs, where the asset population should be entered as the whole population for the asset type being considered, and opex costs should be consistent with the costs of maintaining the whole asset population, or they may submit multiple CBAs in support of a portfolio EJP, as set out in Table 6.
- 4.5 An exception to paragraphs 4.1 and 4.2 is for gas distribution networks submitting mandatory repex and services programmes of works CBAs. In these

cases, the baseline should be shown as ongoing maintenance and repair work only, with the 'Option 1' representing the minimum to remain compliant with HSE requirements. In this particular case it is important for us to understand the costs and benefits associated with the Iron Mains Risk Reduction Programme, even though it means the baseline scenario may not be a viable option. The CBA will only be used as a decision-making tool if more than option is identified.

- 4.6 For standalone major projects or company-led expansions of the network, the baseline scenario should be 'do nothing', if a viable alternative to making the investment is to keep the network in its current state. This scenario may still include opex or compliance-related costs if these would be different under the project option. Where 'do nothing' is not an option, the baseline should be 'do minimum' or deferral, as appropriate.
- 4.7 For each investment, the company should clearly explain, in the supporting commentary boxes in the CBA, what assumptions have been used when defining the baseline scenario.

Options

- 4.8 The 'Full Opt. Considered' sheet in the CBA template is provided for companies to identify and clearly list the 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), and shortlist those options that have been taken forward, fully costed and presented in the CBA. Clear rationales for inclusion/exclusion of different options should be provided and quantified appropriately (ie a few lines or bullets) in the comment boxes provided – unless provided within the associated EJP.
- 4.9 For each option which has been taken forward for full costing, an 'Option' sheet should be completed. The Option sheet should present the costs associated with the investment option (eg costs of replacement or refurb) and where appropriate the ongoing opex costs associated with maintaining the whole asset population (ie maintenance, repair and emergency costs), taking into account any reductions in these costs as a result of other interventions (eg asset replacement meaning less maintenance or other opex is required on the new assets). Companies should also include any additional costs or benefits associated with the investment option that they consider having a material impact on the investment decision and are not already captured within the template.
- 4.10 Asset populations should be entered for all intervention types selected. For maintenance and repair, the asset population should be consistent with the whole

asset population, as per the base case. For other intervention types, the asset population should equal the number of assets for which that type of intervention will be undertaken over the whole RIIO-3.

- 4.11 The Option sheet includes a table that presents the relative differences between the investment option under consideration and the baseline scenario, both in absolute (present value (PV)) and relative (Net Present Value (NPV)) terms. This allows the key net benefit drivers to be quickly identified, which helps with the quantitative assessment of the option.
- 4.12 Within the 'Baseline' and each 'Option' sheet in the CBA template, there are summary boxes for the option description, engineering justification, stakeholder support and the company 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 summarizing the key justification(s) for the proposed investment).
- 4.13 The 'Baseline' and each 'Option' sheet has an accompanying 'Workings' sheet, which should be used to provide additional information on how the costs and benefits were calculated. This should include an explanation of any additional costs and benefits included, and a description of how longer-term costs have been forecasted. If relevant, it can also be used to explain how the cost data presented in the EJP is linked to the totals entered in the CBA.

Valuing the costs and benefits of options

Expenditure costs

- 4.14 Rows 54 to 70 of the Baseline and Option sheets allow companies to input any expenditure associated with the ongoing maintenance of the asset population and, for the Option sheets, the costs directly associated with the proposed investment. For IDPs relating to asset classes or programmes of work, the purpose of this section is to capture the material costs associated with maintaining an asset class and to understand how these change given the investment being proposed within each option. For each option, the expenditure should include both the capex and opex spends associated with this option. This allows a clear comparison of capex and opex trade-offs and ensures an appropriate split is applied between capitalised and expensed expenditure in the RAV calculations within the CBA template. For IDPs where the investment

involves the construction of new assets, rather than replacing and maintaining existing assets, the expenditure section will likely only capture the costs associated with the construction of the new asset.

- 4.15 To ensure that the relative impacts on direct network costs can be compared between the Baseline and Option, it is vital that the Baseline and Options templates are completed in absolute terms. This will ensure that changes to ongoing network opex costs resulting from a proposed investment will be captured in the final NPV calculations.
- 4.16 The expenditure rows in the template also allow companies to directly input other costs that may not be captured within the existing template categories, but which may have a material impact on the investment decision. Companies should focus on identifying costs that materially drive investment decisions, rather than seeking to present a long list of cost items that contain many individually immaterial costs.
- 4.17 The financial costs and benefits, and workload volumes of the preferred option should correspond to the financial or 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 business 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 Metric (NARM) BPDT.

Societal costs

- 4.18 The societal costs section of the CBA template is designed to evaluate the key environmental, safety and other drivers that support many investment decisions. For consistency we have standardised the assumptions and calculations for the valuation of key environmental and safety (risk of fatality and non-fatal injury) costs, the reduction of which relative to the baseline represents a benefit. We have entered default parameters in the CBA template for these non-marketed items; these will be reviewed with the companies in working groups to confirm the most appropriate values.
- 4.19 We have categorised benefits into environmental benefits, safety benefits, financial benefits and other benefits. There are freeform entry rows which allow companies to enter option/project-specific benefits. Companies should specify the category of benefit of any freeform entries, as this will determine the discount rate used (see below for further discussion of discount rates). As with the

calculated environmental and safety costs, any freeform entries should be on the basis of absolute costs, allowing comparison of the relative differences between the Baseline and Options. Cost should be entered as negative numbers.

Companies should clearly outline the assumptions and data sources used to arrive at the estimate of the financial value of any non-marketed costs (benefits) included within the CBA template. The inclusion of non-marketed costs or benefits within the CBA template should be explained within the EJP.

- 4.20 We note that for ET there are wider market cost implications which CBA should consider. Specifically, licensees are to consider their designs from the perspective of whole life costs and in particular consider the costs of outages not only to the TO, but the total cost to consumers. Every future outage does not need to be costed in detail, where these costs are being used as a justification for option selection, efforts at quantification should be used in the CBA. Licensees should demonstrate the considerations between the CBA and the EJP associated with the works.
- 4.21 Companies should normally assume that zero benefits are realised in the first year of investment, and 100% of benefits are realised in year two and beyond. If a different assumption is used, this should be explained within the EJP.
- 4.22 When including benefits within the CBA, we expect there to be a clear link between the assumptions used in the CBA template and those used in the NARM methodology, where applicable. Hence, where there exists a common assumption within the NARM methodology 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 Network Asset Health framework for the EJP sets out how companies should outline the key assumptions used for probability of failure and consequence of failure justifying an investment.
- 4.23 The template includes a monetised risk memo line for both the Baseline and Option sheets. Companies should enter the monetised risk score (as output from their NARM models) into this line for both the Baseline sheet and the preferred Option. The memo line allows for a comparison between the benefits identified within the CBA and the output of the NARM model for a given intervention option. The NARM memo line does not link into the CBA calculations and is for reference only.
- 4.24 In cases where the proposed investments are not covered by the NARM methodology, companies should explain in the EJP the methodology(ies) they used to estimate the societal costs (and benefits) of the Baseline and Option,

clearly outlining key assumptions. It is not required to complete the NARM memo line in such instances.

Calculating NPV

- 4.25 The NPV of each of the options identified within the Option and Baseline sheets will be calculated in absolute terms. The evaluation of each option will then be made on the basis of comparing the relative benefits of the Options against the Baseline (ie comparing the NPV of each option). Thus, it is the improvement in the NPV which is the primary economic consideration when justifying investment options, rather than the absolute value of the NPV. This reflects the fact that the CBA templates do not explicitly account for the value of some benefits associated with the energy networks (eg the value of consumers having ready access to gas supplies for cooking and heating). However, as these unquantified benefits apply to both the Baseline and Option scenarios, for the purpose of this analysis it is considered that they net out in the final comparison.

General guidance

- 4.26 The financial costs and benefits must be in 2023/24 prices, exclude real price effects (RPEs) and ongoing efficiency assumptions (ie consistent with the data set out in the companies' Business Plan Data Templates (BPDT)). Fixed price assumptions that are based in a different year (ie cost of a fatality) have been updated to 2023/24 prices.
- 4.27 The technical parameters for calculating the costs of emissions are contained within the Fixed Data sheet. Where available, we have used the global warming potential (GWP) figures set out in DESNZ's supplementary guidance to the Green Book⁵.

Applying the Spackman approach to network investment

- 4.28 The Spackman approach involves the following two-step approach:
- 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, except

⁵ [Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/674441/green-book-supplementary-guidance-valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal.pdf)

safety where the Health Discount Rate (HDR) of 1.5% (less than/equal to 30 years); 1.2857% (greater than 30 years) should be used.

- 4.29 In line with this approach, the CBA template converts capital costs to equivalent annual costs that are recovered through customers' bills, based on the asset lives set in the Fixed Data tab, and the depreciation parameters built into the calculation rows of the Baseline and Options tabs. As final decisions on these inputs have not yet been made, companies' draft IDP submissions should use the same values and methodologies that were used in RIIO-2. These values have been included in the CBA templates, and are expected to be updated after the receipt of the draft IDPs. Following our final decisions on depreciation, updated templates will be provided for the submission of IDPs as part of company business plans.
- 4.30 The conversion of capital costs into equivalent annual costs should be done using a vanilla weighted average cost of capital (WACC) figure (a simple average of the expected WACC across RIIO-3), based on the assumption of notional gearing. For the submission of draft IDPs this should be in-line with the early view of WACC pre-populated in the initial BPFM, while business plan IDPs should be in-line with the final BPFM.
- 4.31 Where the application of a company's business plan submission of WACC or alternative regulatory depreciation parameters would change the outcome, companies must highlight the relevant projects, calculate the associated result based on the company's view of WACC and/or regulatory depreciation and explain how this would impact its investment decision making.
- 4.32 Companies are to take into account uncertainty and risk when presenting their business plans for RIIO-3, and companies should demonstrate that they have considered the option of deferral within the CBA. Companies should also take into consideration options for whole system solutions, in line with the guidance outlined in our SSMC document. The IDPs include both quantitative and qualitative components, allowing companies 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.
- 4.33 Where CBA outcomes are marginal, the company should run sensitivities on key input assumptions and productivity improvements beyond RIIO-3. Sensitivities are useful for exploring uncertainty in a business case, or where value for money is low. Since the level of uncertainty will vary between projects, companies

should make their own assessment of what is appropriate on a case-by-case basis rather than applying a universal definition of what counts as marginal, although typically sensitivities would be considered where benefit cost ratios indicate that value for money is low or below (ie below 1.5). In addition, where environmental factors play an important role in driving net benefits, companies are encouraged to demonstrate that the proposed investment is consistent with different future energy pathways (e.g. transition to a hydrogen-based economy, compatibility with deep electrification of the economy).

Decision rule

- 4.34 The purpose of the CBA template is to enable companies to demonstrate the proposals included in their business plans provide the optimum solution which demonstrates value for customers.
- 4.35 While companies are not required to use CBAs mechanistically (i.e. including all schemes with positive NPV and excluding all those with negative NPV); variations are to be qualified. The output from the CBA is an important element of companies justifying their preferred option, and should be considered alongside factors such as the technical and economic asset life, payback periods and risks to investment.
- 4.36 Where a scheme has a marginally positive or negative NPV relative to the baseline, companies 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:
- (Non-monetised) engineering judgement on what constitutes an efficient project, as detailed in the required EJP
 - Evidence of stakeholder support for one option over another (i.e. providing connectivity to vulnerable customers).
- 4.37 Companies should clearly set out such judgements as part of their IDP, and have, accordingly, provided a section for a brief synopsis for both engineering justification and stakeholder support within the CBA template.
- 4.38 It is the overall position determined across the following three distinct elements which will determine and substantiate the most appropriate solution:
- Engineering Justification Paper
 - Stakeholder Engagement and Support

- The quantitative analysis (i.e. CBA).
- 4.39 The IDP will be assessed in its entirety by Ofgem to inform the viability and justification of any proposed investments within the company's well-justified business plan. Investments which present high quality EJPs and CBAs, as well as demonstrate consistency with stakeholder preferences, will be more likely to be considered by us as outstanding under Stage C of the BPI.
- 4.40 Included within the CBA template and EJP are sections for capturing risks associated with the preferred option. These risks should capture any material risk which may impact the cost and/or timing of the preferred investment. The risk impact should be broadly quantified and the likelihood of occurrence estimated, according to the drop-down menu options within the CBA template. The relevant controls and risk mitigation should also be captured within this section. These sections are important as they demonstrate that companies have undertaken a comprehensive evaluation of the proposed spend.
- 4.41 Ofgem also intends to utilise the evidence presented in the IDPs 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 and/or nature of the solution from that which was assessed and funded through the business plan process, these changes are to be subject to the same rigour and assessment that the original proposal was subjected to. An updated IDP, with the baseline being the original solution, is to be available to Ofgem upon request.

Uncertainty and sensitivity analysis

- 4.42 Companies are to undertake sensitivity analysis consistent with the HM Treasury Green Book guidance.
- *"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.*
 - *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."*

- 4.43 Companies are to consider sensitivity analysis with respect to key parameters, for example:
- Asset performance / health deterioration rates
 - Ongoing efficiency assumptions
 - Future demand growth / reduction
 - Future energy pathways
 - Future utilisation of assets
- 4.44 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.
- 4.45 Sensitivity analyses should primarily focus on the preferred option, demonstrating that it is viable under a range of different potential scenarios. However, companies may also need to undertake sensitivities on other options, to provide comparators under different assumptions. For example, when testing the sensitivity of a key input assumption (eg capacity utilisation) it is appropriate to only consider the impact on the preferred option, however, when evaluating the impact of higher carbon prices, it is important to consider this impact on each of the options identified in the CBA.

Future pathways – net zero

- 4.46 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 how companies should approach this in Chapter 4 of the Business Plan Guidance, in particular the need for investment supporting net zero pathways. Companies must consider how the investments they are proposing align with different future pathways and where there is significant uncertainty in the investment need relating to a specific pathway (eg the move towards full electrification) companies are encouraged to propose uncertainty mechanisms. Consistent with the Business Plan Guidance, companies must use the most up to date published Future Energy Scenarios (FES) pathway data for this purpose. When considering the compatibility of proposed investments with net zero, companies 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?
 - 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-3 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 Government’s Net Zero Strategy⁶. Of particular importance are the role and timing of the electrification of heating, transport, carbon capture and storage (CCS), hydrogen and biogas. Where the choice of pathway has an impact on the investment, the sensitivity should be tested and the impact identified.
 - Asset lifetimes – will the expected lifetime of the asset vary between different pathways and how will this affect costs and benefits? Is the proposed intervention compatible with different technologies (eg hydrogen) and pathways (eg electrification of heat)
 - Sensitivity to carbon prices – would a higher or lower 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 investments compatible with Net Zero targets?
- 4.47 Where companies 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. High sensitivity can be defined as an option no longer being NPV positive or being only marginally NPV positive, the preferred option no longer providing a superior NPV to some or one of the alternative options, the payback period for

⁶ [Net Zero Strategy: Build Back Greener - GOV.UK \(www.gov.uk\)](https://www.gov.uk/net-zero-strategy)

the preferred option increasing significantly or the option being at high risk of becoming obsolete in the foreseeable future.

- 4.48 Given the broad range of inputs that companies may choose to vary, we do not intend to be prescriptive about how companies undertake sensitivity analyses. However, our CBA template already calculates sensitivity to low, central and high carbon values, for ease of use and consistency.
- 4.49 Companies may use the existing CBA template to run additional sensitivity analyses and submit these alongside the original CBA. Where companies make changes to the inputs to the CBA (eg 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 companies should consider the outputs of any further analyses when explaining how they have built in flexibility to their Business Plans, in order to deal with future uncertainty.

Links to business plan

- 4.50 Companies should clearly show the links between their CBA, EJP, business plan and BPDts. For example, the companies should show how the workload and cost forecasts underpinning the CBA feed through into the overall Business Plan proposals and BPDts. We have included an area within the template for companies to reference which BPDt/Regulatory Reporting Pack table the CBA would fall under for the preferred option.

Guidance

Appendix 1 – ET Major Projects – Description of applicable works

Type of Investment*	Description	Level of Technical and Regulatory Scrutiny	Optioneering range expectations	Level of Engineering development needed	Regulatory treatment
Substation Extension and/or OHL Reinforcement	<p>An extension to an existing site, beyond the existing substation footprint, with new substation components that may include, land procurement, Strategic Investments and all associated civils works.</p> <p>Includes all Tower Strengthening and foundation works and any OHL reinforcements.</p>	Low – generally low regret investments which require light touch design review from engineering and low levels of cost assessment.	Limited macro-options likely to be available.	To support our cost assessment, we expect licensees to meet substations Stage 2 design, as practicably as possible as set out in paragraph 3.15. If Stage 2 cannot be evidenced, TOs should provide relevant supporting data that provides justification of cost confidence. For OHL, conductor choice and ratings are also required. While not mandated, we strongly encourage design work to meet Stage 3 requirements (as set out in paragraph 3.15) to aid our review and support cost confidence.	<p>Baseline allowances for projects that have been submitted and assessed as part of the Business Plan submissions.</p> <p>Or</p> <p>Volume Driver for Local Enabling Entry and Exit Generation and Demand connections.</p> <p>Or</p> <p>Use of Load Related Re-opener (LRR) for:</p> <p>i) Atypical projects that exceed volume driver thresholds.</p> <p>ii) Projects where needs case and/or costs are justifiably unknown at start of price control.</p> <p>iii) Needs case presented and confirmed as part of Business Plan submission alongside explanation for project immaturity, and</p>

					where possible a degree of design optioneering and maturity.
New Substation and/or New OHL/Cable which does not constitute to a site replacement, augmentation or extension to an existing site.	<p>New installation that may provide additional capacity to a local area or reinforce the underlying original regional capacity through greater resilience - greater than 5km from an existing site⁷.</p> <p>Or</p> <p>that may provide additional capacity to a local area or reinforce the underlying original regional capacity through greater resilience – less than 5km from an existing site⁶. TOs must provide justification of the siting in their EJPs.</p> <p>Or</p> <p>All new OHL and Cable routes (less than or greater than 5km from existing assets).</p>	<p>Moderate – generally low regret investments which require moderate engineering design review to ensure present and future needs have been accounted for.</p> <p>Moderate regulatory scrutiny required due greater uncertainty on optioneering and costs</p>	<p>Wider design options likely to be available at substations which will require more up-front development of options.</p> <p>Routeing likely to have design driven by external factors.</p>	See above	See above

⁷ which does not constitute to a site replacement, augmentation or extension to an existing site.

Shared Drivers	<p>Load related reinforcement works on:</p> <p>1) Existing or new substations</p> <p>And/or</p> <p>2) Existing or new OHL or cable,</p> <p>which include significant non-load related elements or other external interfaces. May include a degree of Strategic Investment – for example extending site footprint (eg for additional bays).</p>	<p>Moderate to high – Scrutiny of appropriate regulatory mechanisms required.</p> <p>Potential for higher levels of scrutiny on need case, engineering, optioneering and design due to complexity in works.</p>	<p>Substantial options generally available which will need thorough development to ensure consumer benefits</p>	See above	See above
Substation Replacement (Existing site)	<p>Construction of a new substation, at an existing site, with updated components to fulfil either the original role or provide greater capacity for customer connections. The overall footprint may increase because of Strategic Investments (e.g. accommodate additional bays).</p>	<p>Moderate scrutiny of appropriate regulatory mechanisms required.</p> <p>Moderate regulatory scrutiny required due greater uncertainty on optioneering and costs.</p>	<p>Wider design options likely to be available at substations which will require more up-front development of options.</p>	See above	See above
Substation Augmentation (Within existing substation boundary)	<p>Enhancing or modifying existing substation components to increase capacity/capability, in-situ, within the existing footprint of the current site.</p>				

Appendix 2 – ET Asset classifications for Portfolio EJPs

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
1	Assets	Circuit Breaker	6.6/11kV CB (GM) Primary	HV	Each	Yes	Yes	Switchgear
2	Assets	Circuit Breaker	6.6/11kV Switch	HV	Each	Yes	Yes	
3	Assets	Circuit Breaker	Switch (GM)	<=33kV	Each	Yes	Yes	
4	Assets	Circuit Breaker	Switchgear - Other	<=33kV	Each	Yes	Yes	
5	Assets	Circuit Breaker	Other Switchgear	132kV	Each	Yes	Yes	
6	Assets	Circuit Breaker	Other Switchgear	275kV	Each	Yes	Yes	
7	Assets	Circuit Breaker	Other Switchgear	400kV	Each	Yes	Yes	
8	Assets	Circuit Breaker	CB (Air Insulated Busbar)	<=33kV	Each	Yes	N/A	Circuit Breakers
9	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (OD)	<=33kV	Each	Yes	N/A	
10	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (ID)	<=33kV	Each	Yes	N/A	
11	Assets	Circuit Breaker	CB (Air Insulated Busbar)	132kV	Each	Yes	N/A	
12	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (OD)	132kV	Each	Yes	N/A	
13	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (ID)	132kV	Each	Yes	N/A	
14	Assets	Circuit Breaker	CB (Air Insulated Busbar)	275kV	Each	Yes	N/A	
15	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (OD)	275kV	Each	Yes	N/A	
16	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (ID)	275kV	Each	Yes	N/A	
17	Assets	Circuit Breaker	CB (Air Insulated Busbar)	400kV	Each	Yes	N/A	
18	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (OD)	400kV	Each	Yes	N/A	
19	Assets	Circuit Breaker	CB (Gas Insulated Busbar) (ID)	400kV	Each	Yes	N/A	
20	Assets	Overhead Line Fittings	Fittings	<=33kV	Each	Yes	Yes	Overhead Lines
21	Assets	Overhead Line Fittings	Fittings	132kV	Each	Yes	Yes	
22	Assets	Overhead Line Fittings	Fittings	275kV	Each	Yes	Yes	

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Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
23	Assets	Overhead Line Fittings	Fittings	400kV	Each	Yes	Yes	
24	Assets	Overhead Pole Line	OHL (Pole Line) Conductor	<=33kV	km	Yes	Yes	
25	Assets	Overhead Pole Line	OHL (Pole Line) Conductor	132kV	km	Yes	Yes	
26	Assets	Overhead Pole Line	OHL (Pole Line) Conductor	275kV	km	Yes	Yes	
27	Assets	Overhead Pole Line	OHL (Pole Line) Conductor	400kV	km	Yes	Yes	
28	Assets	Overhead Tower Line	132kV OHL (Tower Line) Conductor	Rating <300MVA	km	Yes	Yes	
29	Assets	Overhead Tower Line	132kV OHL (Tower Line) Conductor	Rating >300MVA & <=400MVA	km	Yes	Yes	
30	Assets	Overhead Tower Line	132kV OHL (Tower Line) Conductor	Rating >400MVA	km	Yes	Yes	
31	Assets	Overhead Tower Line	275kV OHL (Tower Line) Conductor	Rating <=1400MVA	km	Yes	Yes	
32	Assets	Overhead Tower Line	275kV OHL (Tower Line) Conductor	Rating >1400MVA	km	Yes	Yes	
33	Assets	Overhead Tower Line	400kV OHL (Tower Line) Conductor	Rating <=2550MVA	km	Yes	Yes	
34	Assets	Overhead Tower Line	400kV OHL (Tower Line) Conductor	Rating >2550MVA	km	Yes	Yes	
35	Assets	Overhead Tower Line	OHL (Tower Line) HTLS Conductor	132kV	km	Yes	Yes	
36	Assets	Overhead Tower Line	OHL (Tower Line) HTLS Conductor	275kV	km	Yes	Yes	
37	Assets	Overhead Tower Line	OHL (Tower Line) HTLS Conductor	400kV	km	Yes	Yes	
38	Assets	Earth Wire	OHL (Tower Line) Earth Wire	<=33kV	km	Yes	Yes	
39	Assets	Earth Wire	OHL (Tower Line) Earth Wire	132kV	km	Yes	Yes	
40	Assets	Earth Wire	OHL (Tower Line) Earth Wire	275kV	km	Yes	Yes	
41	Assets	Earth Wire	OHL (Tower Line) Earth Wire	400kV	km	Yes	Yes	
42	Assets	Earth Wire Fittings	Earth Wire Fittings	<=33kV	Per Set	Yes	Yes	Earth Wire Fittings
43	Assets	Earth Wire Fittings	Earth Wire Fittings	132kV	Per Set	Yes	Yes	
44	Assets	Earth Wire Fittings	Earth Wire Fittings	275kV	Per Set	Yes	Yes	
45	Assets	Earth Wire Fittings	Earth Wire Fittings	400kV	Per Set	Yes	Yes	
46	Assets	Overhead Pole Line	Pole	<=33kV	Each	Yes	Yes	Overhead Lines

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
47	Assets	Overhead Pole Line	Pole	132kV	Each	Yes	Yes	
48	Assets	Overhead Pole Line	Pole	275kV	Each	Yes	Yes	
49	Assets	Overhead Pole Line	Pole	400kV	Each	Yes	Yes	
50	Assets	Cable	Submarine cable	132kV	km	Yes	N/A	Cables
51	Assets	Cable	Submarine cable	275kV	km	Yes	N/A	
52	Assets	Cable	Submarine cable	400kV	km	Yes	N/A	
53	Assets	Other switchgear	Disconnecter (AIB)	<=33kV	Each	Yes	Yes	Switchgear
54	Assets	Other switchgear	Disconnecter (AIB)	132kV	Each	Yes	Yes	
55	Assets	Other switchgear	Disconnecter (AIB)	275kV	Each	Yes	Yes	
56	Assets	Other switchgear	Disconnecter (AIB)	400kV	Each	Yes	Yes	
57	Assets	Other switchgear	Earth Switch (AIB)	<=33kV	Each	Yes	Yes	
58	Assets	Other switchgear	Earth Switch (AIB)	132kV	Each	Yes	Yes	
59	Assets	Other switchgear	Earth Switch (AIB)	275kV	Each	Yes	Yes	
60	Assets	Other switchgear	Earth Switch (AIB)	400kV	Each	Yes	Yes	
61	Assets	Other switchgear	Busbar (AIB)	<=33kV	metre	No	No	
62	Assets	Other switchgear	Busbar (AIB)	132kV	metre	No	No	
63	Assets	Other switchgear	Busbar (AIB)	275kV	metre	No	No	
64	Assets	Other switchgear	Busbar (AIB)	400kV	metre	No	No	
65	Assets	Other switchgear	Busbar GIB (ID)	<=33kV	metre	No	No	
66	Assets	Other switchgear	Busbar GIB (OD)	<=33kV	metre	No	No	
67	Assets	Other switchgear	Busbar GIB (ID)	132kV	metre	No	No	
68	Assets	Other switchgear	Busbar GIB (OD)	132kV	metre	No	No	
69	Assets	Other switchgear	Busbar GIB (ID)	275kV	metre	No	No	
70	Assets	Other switchgear	Busbar GIB (OD)	275kV	metre	No	No	

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
71	Assets	Other switchgear	Busbar GIB (ID)	400kV	metre	No	No	
72	Assets	Other switchgear	Busbar GIB (OD)	400kV	metre	No	No	
73	Assets	Other switchgear	Switchgear Other	33kV	Each	Yes	Yes	
74	Assets	Other switchgear	Switchgear Other	33kV	Set	Yes	Yes	
75	Assets	Overhead Tower Line	Tower	<=33kV	Each	Yes	Yes	Overhead Lines
76	Assets	Overhead Tower Line	Tower	132kV	Each	Yes	Yes	
77	Assets	Overhead Tower Line	Tower	275kV	Each	Yes	Yes	
78	Assets	Overhead Tower Line	Tower	400kV	Each	Yes	Yes	
79	Assets	Wound plant	Transformer	132kV<=90MVA	Each	Yes	N/A	Transformers
80	Assets	Wound plant	Transformer	132kV>90MVA	Each	Yes	N/A	
81	Assets	Wound plant	Transformer	275kV<240MVA	Each	Yes	N/A	
82	Assets	Wound plant	Transformer	275kV>=240MVA	Each	Yes	N/A	
83	Assets	Wound plant	Transformer	400kV<500MVA	Each	Yes	N/A	
84	Assets	Wound plant	Transformer	400kV>=500MVA	Each	Yes	N/A	
85	Assets	Wound plant	Shunt Reactor	132kV	Each	Yes	N/A	Reactors
86	Assets	Wound plant	Shunt Reactor	275kV	Each	Yes	N/A	
87	Assets	Wound plant	Shunt Reactor	400kV	Each	Yes	N/A	
88	Assets	Wound plant	Series Reactor	132kV	Each	Yes	N/A	
89	Assets	Wound plant	Series Reactor	275kV	Each	Yes	N/A	
90	Assets	Wound plant	Series Reactor	400kV	Each	Yes	N/A	
91	Assets	Wound plant	Tertiary connected reactor	<60MVA	Each	Yes	N/A	
92	Assets	Wound plant	Tertiary connected reactor	>=60MVA	Each	Yes	N/A	
93	Assets	FACTS	FACTS Equipment	132kV	Each	Yes	No	FACTS
94	Assets	FACTS	FACTS Equipment	275kV	Each	Yes	No	

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Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
95	Assets	FACTS	FACTS Equipment	400kV	Each	Yes	No	Instrument Transformers
96	Assets	Instrument Transformers	Voltage Transformer (VT)	11kV	Each	Yes	Yes	
97	Assets	Instrument Transformers	Voltage Transformer (VT)	33kV	Each	Yes	Yes	
98	Assets	Instrument Transformers	Voltage Transformer (VT)	132kV	Each	Yes	Yes	
99	Assets	Instrument Transformers	Voltage Transformer (VT)	275kV	Each	Yes	Yes	
100	Assets	Instrument Transformers	Voltage Transformer (VT)	400kV	Each	Yes	Yes	
101	Assets	Instrument Transformers	Current Transformer (CT)	11kV	Each	Yes	Yes	
102	Assets	Instrument Transformers	Current Transformer (CT)	33kV	Each	Yes	Yes	
103	Assets	Instrument Transformers	Current Transformer (CT)	132kV	Each	Yes	Yes	
104	Assets	Instrument Transformers	Current Transformer (CT)	275kV	Each	Yes	Yes	
105	Assets	Instrument Transformers	Current Transformer (CT)	400kV	Each	Yes	Yes	
106	Assets	Instrument Transformers	High Accuracy Metering Combined (CT/VT)	132kV	Each	Yes	Yes	
107	Assets	Cable	Substation Cable - 1 core per phase	<=33kV	km	Yes	Yes	Substation Cables
108	Assets	Cable	Substation Cable - 2 core per phase	<=33kV	km	Yes	Yes	
109	Assets	Cable	Substation Cable - >=3 core per phase	<=33kV	km	Yes	Yes	
110	Assets	Cable	Substation Cable - 1 core per phase	132kV	km	Yes	Yes	
111	Assets	Cable	Substation Cable - 2 core per phase	132kV	km	Yes	Yes	
112	Assets	Cable	Substation Cable - >=3 core per phase	132kV	km	Yes	Yes	
113	Assets	Cable	Substation Cable - 1 core per phase	275kV	km	Yes	Yes	
114	Assets	Cable	Substation Cable - 2 core per phase	275kV	km	Yes	Yes	
115	Assets	Cable	Substation Cable - >=3 core per phase	275kV	km	Yes	Yes	
116	Assets	Cable	Substation Cable - 1 core per phase	400kV	km	Yes	Yes	
117	Assets	Cable	Substation Cable - 2 core per phase	400kV	km	Yes	Yes	

RIIO-3 Business Plan Guidance – Annex 1: Investment Decision Pack Guidance

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
118	Assets	Cable	Substation Cable - >=3 core per phase	400kV	km	Yes	Yes	Cables
119	Assets	Cable	Circuit Cable - 1 core per phase	<=33kV	km	Yes	N/A	
120	Assets	Cable	Circuit Cable - 2 core per phase	<=33kV	km	Yes	N/A	
121	Assets	Cable	Circuit Cable - >=3 core per phase	<=33kV	km	Yes	N/A	
122	Assets	Cable	Circuit Cable - 1 core per phase	132kV	km	Yes	N/A	
123	Assets	Cable	Circuit Cable - 2 core per phase	132kV	km	Yes	N/A	
124	Assets	Cable	Circuit Cable - >=3 core per phase	132kV	km	Yes	N/A	
125	Assets	Cable	Circuit Cable - 1 core per phase	275kV	km	Yes	N/A	
126	Assets	Cable	Circuit Cable - 2 core per phase	275kV	km	Yes	N/A	
127	Assets	Cable	Circuit Cable - >=3 core per phase	275kV	km	Yes	N/A	
128	Assets	Cable	Circuit Cable - 1 core per phase	400kV	km	Yes	N/A	
129	Assets	Cable	Circuit Cable - 2 core per phase	400kV	km	Yes	N/A	
130	Assets	Cable	Circuit Cable - >=3 core per phase	400kV	km	Yes	N/A	LVAC
131	Assets	Batteries	Batteries at 132kV Substations	132kV	Each	Yes	Yes	
132	Assets	Batteries	Batteries at 275kV Substations	275kV	Each	Yes	Yes	
133	Assets	Batteries	Batteries at 400kV Substations	400kV	Each	Yes	Yes	HVDC
134	Assets	HVDC	Convertor Transformer	HVDC	Each	Yes	No	
135	Assets	HVDC	Submarine cable	HVDC	km	Yes	No	
136	Assets	HVDC	HVDC onshore cable	HVDC	km	Yes	No	
137	Assets	HVDC	HVDC Convertor	HVDC	Each	Yes	No	
138	Assets	HVDC	HVDC Overhead Conductor	HVDC	km	Yes	No	
139	Assets	HVDC	HVDC - Other	HVDC	Each	Yes	No	Overhead Lines
140	Assets	Overhead Pole Line	OHL (Pole Line) High Temperature Low Sag (HTLS) Conductor	132kV	Each	Yes	Yes	
141	Assets	Cable	Submarine cable	220kV	km	Yes	N/A	Cables

RIIO-3 Business Plan Guidance – Annex 1: Investment Decision Pack Guidance

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
142	Substation auxiliary systems	LVAC	Substation Auxiliary Supplies at substations		Per Site	Yes	Yes	LVAC
143	Substation auxiliary systems	LVAC	Diesel Generators & LVAC Boards		Per Site	Yes	Yes	
144	Substation auxiliary systems	LVAC	LVAC cabling		km	Yes	Yes	
145	Protection	Protection & Control	Feeder Protection	<=33kV	Each	Yes	Yes	Protection and Control
146	Protection	Protection & Control	Feeder Protection	66kV	Each	Yes	Yes	
147	Protection	Protection & Control	Feeder Protection	132kV	Each	Yes	Yes	
148	Protection	Protection & Control	Feeder Protection	220kV	Each	Yes	Yes	
149	Protection	Protection & Control	Feeder Protection	275kV	Each	Yes	Yes	
150	Protection	Protection & Control	Feeder Protection	400kV	Each	Yes	Yes	
151	Protection	Protection & Control	Substation Control Systems (SCS)		Each	Yes	Yes	
152	Protection	Protection & Control	Mesh Corner Busbar Protection		Each	Yes	Yes	
153	Protection	Protection & Control	Circuit Breaker Fail (CBF): MC & DBB Protection		Each	Yes	Yes	
154	Protection	Protection & Control	QB Control		Each	Yes	Yes	
155	Protection	Protection & Control	Mesh Corner Delayed Auto Reclose (DAR)		Each	Yes	Yes	
156	Protection	Protection & Control	Operational Tripping Scheme (OTS)		Each	Yes	Yes	
157	Protection	Protection & Control	Auto Switching (Auto Close and Hot Standby Units)		Each	Yes	Yes	
158	Protection	Protection & Control	Automatic Reactive Switching (ARS)		Each	Yes	Yes	
159	Protection	Protection & Control	Cable SCADA System		Each	Yes	Yes	
160	Protection	Protection & Control	Gas Density Monitoring (GDM)		Each	Yes	Yes	
161	Protection	Protection & Control	Settlement Metering		Each	Yes	Yes	

RIIO-3 Business Plan Guidance – Annex 1: Investment Decision Pack Guidance

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
162	Protection	Protection & Control	Back-up Protection		Each	Yes	Yes	
163	Protection	Protection & Control	Circuit Breaker Fail (CBF): MC & DBB Protection. End of life unit replacement		Each	Yes	Yes	
164	Protection	Protection & Control	Wound Plant Protection	<132kV	Each	Yes	Yes	
165	Protection	Protection & Control	Wound Plant Protection	132kV	Each	Yes	Yes	
166	Protection	Protection & Control	Wound Plant Protection	275kV	Each	Yes	Yes	
167	Protection	Protection & Control	Wound Plant Protection	400kV	Each	Yes	Yes	
168	Protection	Protection & Control	Low Impedance Busbar Protection	132kV	Each	Yes	Yes	
169	Protection	Protection & Control	Low Impedance Busbar Protection	275kV	Each	Yes	Yes	
170	Protection	Protection & Control	Low Impedance Busbar Protection	400kV	Each	Yes	Yes	
171	Protection	Protection & Control	High Impedance Busbar Protection	132kV	Each	Yes	Yes	
172	Protection	Protection & Control	High Impedance Busbar Protection	275kV	Each	Yes	Yes	
173	Protection	Protection & Control	High Impedance Busbar Protection	400kV	Each	Yes	Yes	
174	Protection	Protection & Control	Reactive Equipment Mechanically Switched Capacitor (MSC)	132kV	Each	Yes	Yes	
175	Protection	Protection & Control	Reactive Equipment Mechanically Switched Capacitor (MSC)	275kV	Each	Yes	Yes	
176	Protection	Protection & Control	Reactive Equipment Mechanically Switched Capacitor (MSC)	400kV	Each	Yes	Yes	
177	Protection	Protection & Control	Reactive Equipment: Dynamic compensation		Each	Yes	Yes	
178	Protection	Protection & Control	Automatic Voltage Control (AVC): End of life replacement		Each	Yes	Yes	
179	Protection	Protection & Control	Cable SCADA System: End of life replacement		Each	Yes	Yes	
180	Protection	Protection & Control	Fault Recorder with dynamic system monitoring		Each	Yes	Yes	
181	Protection	Protection & Control	Fault Recorder: End of life replacement		Each	Yes	Yes	
182	Protection	Protection & Control	Bus Coupler & Section Protection		Each	Yes	Yes	
183	Civils	Substation Platform	Substation Platform	N/A	Each	Yes	Yes	Civils

Asset Descriptions					Units	Applicable EJP	Grouping	
Assets	Asset Heading	Asset Category	Asset Sub-Category Primary	Voltage	Units	Lead Portfolio	Non-Lead Portfolio	Non-Lead High Volume (Possible EJPs Groupings)
184	Civils	Circuit Breaker	Circuit Breaker	N/A	Each	Yes	Yes	
185	Civils	Wound Plant	Wound Plant	N/A	Each	Yes	Yes	
186	Civils	Switchgear Other	Switchgear Other	N/A	Each	Yes	Yes	
187	Civils	Tower Line	Tower Line	N/A	Each	Yes	Yes	
188	Civils	Pole Line	Pole Line	N/A	Each	Yes	Yes	
189	Civils	HVDC	HVDC	N/A	Each	Yes	Yes	
190	Civils	Cable	Cable	N/A	Each	Yes	Yes	