

TP146 and Network Development Process

From 2nd January 2012, existing investment schemes could follow one of the the following processes:

- Network Development Process (steps 4.1 to 4.5) – *link to be provided shortly*

or

- TP146 Investment Process

For guidance on the appropriate investment process to follow for a specific scheme, please contact the responsible Investment Delivery Engineer (Investment Team Leader)

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INVESTMENT PROCESS

TABLE OF CONTENTS

PURPOSE AND SCOPE.....	1
PART 1 – PROCEDURAL	2
1 INVESTMENT TEAM OBJECTIVE	2
2 INVESTMENT PROPOSAL PHASE 1 (IP1) – INVESTMENT PLANNING & DEFINITION.....	2
3 INVESTMENT PROPOSAL PHASE 2 (IP2) - DEVELOPMENT	5
4 INVESTMENT PROPOSAL PHASE 3 (IP3) - PROJECT DESIGN	10
5 DETAILED DESIGN AND PROJECT DELIVERY PROCESS	11
6 INVESTMENT PROPOSAL PHASE 4 (IP4) – PROJECT CLOSURE	12
7 FAST TRACK LOW COST INVESTMENTS	13
8 FORMS AND RECORDS	14
PART 2 – DEFINITIONS AND DOCUMENT HISTORY	14
9 DEFINITIONS	14
10 AMENDMENTS RECORD	17
11 IMPLEMENTATION.....	17
PART 3 – GUIDANCE NOTES AND APPENDICES.....	20
12 INVESTMENT DOCUMENT SUMMARY	20
APPENDIX A - INVESTMENT PROCESS – NON-CUSTOMER CONNECTION DRIVEN INVESTMENTS	22
APPENDIX B – INVESTMENT PROCESS - CUSTOMER CONNECTION DRIVEN INVESTMENTS	23
APPENDIX C - INVESTMENT TEAM MANAGEMENT STRUCTURE AND RESPONSIBILITIES	24
APPENDIX D - RISK MANAGEMENT	30
APPENDIX E - INVESTMENT COST ESTIMATION	31
APPENDIX F - INVESTMENT MONITORING	33
APPENDIX G - INVESTMENT ASSET DATA.....	34
APPENDIX H - SAFETY, HEALTH, ENVIRONMENT AND SECURITY	36
APPENDIX I - DESIGN SOLUTION.....	37
APPENDIX J - PLANNING CONSENT	47

PURPOSE AND SCOPE

The purpose of this procedure is to ensure proper establishment of an Investment Case from a proposed Investment Need identified in the Capital Plan, taking into account all of the internal and external drivers to obtain financial sanction and the maintenance of that Investment Case through delivery to closure.

This procedure sets the framework within which each investment is identified for inclusion within the Capital Plan and should be developed, sanctioned, delivered and closed. Departure from the process set down in this document must be by exception and with the joint agreement of the Asset Investment Manager, System Design Manager and System Strategy Manager in Electricity Network Investment (ENI) and the Construction Technical Assurance Manager. The Investment Team Leader (ITL) shall ensure that the process to be adopted is clearly recorded.

This process is applicable to all load and non load related capital investment in the National Grid Electricity Transmission System. The process is based on the provision of development and project management activities being provided by a Construction Delivery Unit. This procedure does not apply to IT investment. Unlicensed works where intrinsically linked to licensed works should be developed within the framework of this Procedure.

Note: This document regularly references other transmission procedures throughout.

PART 1 – PROCEDURAL

1 INVESTMENT TEAM OBJECTIVE

The objective of the Investment Team is to ensure that each directorate within National Grid is supportive of the proposals put forward for the investment in the Transmission System. The Investment Team is a cross functional team drawing on experience from all areas of National Grid and the Construction Delivery Units to ensure that pertinent issues are considered when determining the appropriate investment to make. Details of the structure of the Investment Team are contained within Appendix C.

2 INVESTMENT PROPOSAL PHASE 1 (IP1) – INVESTMENT PLANNING & DEFINITION

A long-term Capital Investment Plan, which covers the next 10 to 15 years, is prepared and maintained by ENI.

Non-Load Related Investment - ENI shall identify Asset Replacement candidates and submit to the Capital Plan for further development based on asset life, policy, fault and defect history, forensic analysis and family history. ENI Asset Investment is generally the Sponsor for these investments.

Load Related Investment - ENI shall carry out analysis of the electricity transmission system based on known and forecast generation and demand backgrounds to identify possible future infrastructure upgrades against the requirements of the Great Britain Security and Quality of Supply Standard (GBSQSS) and create entries to the long term Capital Plan, typically up to 7 years ahead for financial forecasting. Load related investments can be further categorised as **customer** and **non-customer driven investments**. ENI System Development or System Strategy are generally the Sponsor for these investments.

A continual review of Capital Plan placements is carried out against changes to the generation and demand background and based on the latest asset condition information to ensure optimisation of spend and to avoid unnecessary investment.

The group typically responsible for the Sponsorship of each Investment type is shown in Table 1 below based on the primary driver for the investment. The chosen group will lead the Investment Process. In the case of System Development sponsored investments, the Investment Team Leader (ITL) role may in some cases be transferred to Asset Investment at the completion of the IP2 Development Phase. The role of Sponsor however, remains with System Development. This is discussed in more detail later.

Table 1 – Sponsorship Groups

Voltage	Primary Investment Driver.	Sponsorship
All	New Connections (Load Related - Customer Driven)	System Development
All	Strategic Infrastructure Upgrades (Load Related - Non-Customer Driven)	System Development / System Strategy
400kV or 275kV	Asset Replacement where significant development is required, eg. change of substation configuration	System Development / Asset Investment
400kV, 275kV, 132kV (or below when National Grid is owner)	Asset Replacement like-for-like requiring minor development, e.g. increased overhead line rating required, Emergency Replacement	Asset Investment
400kV, 275kV, 132kV (or below when NG is owner)	Asset Replacement like-for-like	Asset Investment
All	Third Party Issues and Minor CAPEX (i.e. capital repairs and major overhauls), Non-Recurring Revenue (NRR) and Environmental Investments.	Asset Investment

The process to be adopted for the IP1 phase is determined by whether or not the investment is driven by a customer application.

2.1 For **non-customer driven investments**, the IP1 phase involves desktop investigations into the likely scope of the works and the preparation of an Investment Proposal Phase 1 (IP1) document for entry into the Capital Plan. The investment team's Asset Investment Engineer is responsible for production of the IP1 document. This will outline the main drivers and record the supporting asset health and system infrastructure needs for the investment, and an initial programme for the development, sanction and delivery. The cost profile will be developed utilising generic profiles and compatible unit data and will generate key milestone dates. The investment costs shall be allocated against financial categories. An IP1 document should be developed for each identified option with a Net Present Value, or other suitable assessment method carried out to identify the most cost efficient option to be placed in the Capital Plan. The ITL shall select the preferred option based on an assessment of global prioritisation investment score, business risk, deliverability, and the overall economic, efficient and co-ordinated investment test.

The investment is then submitted for inclusion into the Capital Plan. Asset Management shall ensure that opportunities for work bundling are identified and that the overall capital programme can be delivered. Asset Management shall also prioritise the works in the Capital Plan and co-ordinate resources and system access to ensure a deliverable programme of investment. The Construction Delivery Unit may be consulted to ensure the programme for delivery is broadly achievable in terms of resource, outage and procurement lead times and that the cost assumptions being made for the plan entry are reasonable at this early stage of definition. It is possible that the result of this consultation may lead to re-evaluation of options and reselection of capital plan entries.

Non-customer driven investments, both load and non-load related will usually be subject to a 2-stage sanctioning process. Customer driven investments will usually require a 3-stage sanctioning process.

2.2 For **customer driven investments**, there is a requirement to produce a connection offer within 90 days of the application having been deemed competent. Within this period as much development as possible should be done to ensure that the offer being made contains an achievable design, programme and a realistic cost estimate. This section should be read in conjunction with Appendix I Design Solution.

On receipt of the customer connection application the ITL in conjunction with the System Design Engineer shall assess the scale and complexity of the likely investment required. Once the application is deemed competent, an Investment team shall be formed through the Investment Team Nomination group email and the Change Request Process. Further details about the investment team representatives and responsibilities are contained in Appendix C. The Investment Team nomination request and change request should contain details of the Investment drivers (application details) and an initial assessment of the likely scope of development work required (form UKBP/TP146.01 - Development Work Specification (DWS)) to reach Stage 1 sanction and produce an offer.

The DWS is necessary for 2 key reasons:

- a) There are varying degrees of complexity for customer connections and the ITL must make an assessment of what can realistically be delivered in the 90 days and prioritise accordingly. The main impact of this assessment will be to limit the Construction Delivery Unit activities as well as the Design Assurance function in the IP1 phase with specific activities being requested of the Investment Team to de-risk the offer being made.
- b) The funding available at this stage is limited to the application fee, which must cover the costs incurred by all Construction Delivery Units involved as well as National Grid core engineering costs.

There is clearly a need to limit the amount of resource committed to the initial development to Stage 1 sanction and offer, until such a time that further development and design work is both required and financially covered (offer acceptance). It is important to note that even simple investments will still only be developed to a high level by the end of the initial 90-day period and for this reason, full design assurance will be deferred until post-offer acceptance as only the outline System Design Specification (SDS) will be available until that time.

At the first investment team meeting, the ITL should explain the background and scope of the connection, and describe any reinforcements that have already been identified through analysis. The DWS should be discussed and the requirements contained within it and a programme for delivery of these requirements should be agreed by the entire team.

The DWS may request for the Construction Delivery Unit to produce an indicative total scheme cost estimate. If the DWS does not require this cost from the Construction Delivery Unit, then the Asset Investment Engineer shall ensure that an IP1 document is produced to provide this information. The IP1 document will be further developed by the Asset Investment Engineer to produce a Cost Estimating Model.

A Scheme Requirements Document (SRD) is required to be submitted with the sanction paper. If the Construction Delivery Unit is required to produce the SRD, this will be identified in the DWS. If this is not the case, the SRD will be produced by the Asset Investment Engineer on the scheme team. Wherever possible, an outline form UKBP/TP146.03 - SDS and outline form UKBP/TP146.02 - DJR should be part-populated within the IP1 Phase to document the option that had been selected to take forward to Sanction Stage 1. These documents should be posted on Livelink to be further populated by the Construction Delivery Unit in the IP2 Development Phase if the connection offer is signed. The DJR should highlight the main risks and issues associated with each of the considered options, as well as the chosen option.

At Stage 1 Sanction the ITL shall ensure that the documentation appropriate to the extent of development has been completed (See Appendix I). The ITL shall prepare a Sanction Paper in line with the Investment Management Procedure (IMP) seeking approval to make an offer to the customer and approval for the PWS cost of developing the work further to the completion of an IP2 document. Appendix J lists additional steps required prior to Stage 1 Sanction in order to fulfil National Grid's commitments with regards to stakeholder engagement.

In the subsequent offer to the customer, National Grid is bound by the connection date subject to all planning consents being obtained, third party works being complete etc. The costs presented to the customer in the offer are generally indicative as the scope can be modified at a later date as the design is developed. These uncertainties shall be made clear to the sanctioning authority within the investment paper.

After the connection offer has been made, there is a further 90 days in which the customer is allowed to consider the connection offer before deciding to sign or reject. If the offer is signed, there will be a requirement on the customer to put in place security to fund further engineering works.

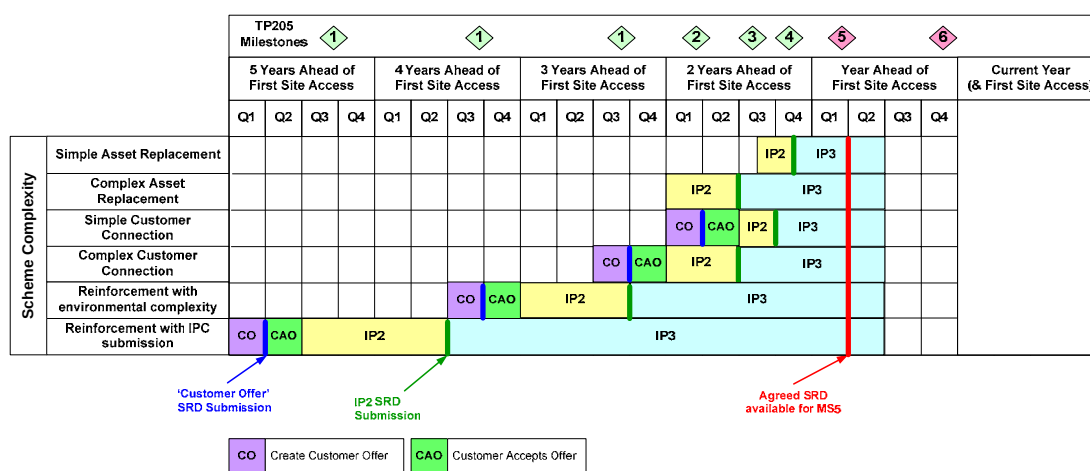
Customer driven investments will usually be subject to a 3-stage sanctioning process, with sanctioning occurring at the end of IP1, IP2 and IP3 (Project Design Phase). In general, Stage 1 sanction seeks authority to make a connection offer to a customer and approval for the spend required to proceed to IP2 Development after the connection offer has been signed and includes a connection date and a high-level proposal of works required, although the actual cost of these works are not being sanctioned at this stage. Formal development of IP2 through the Construction Delivery Unit leading to Stage 2 Sanction shall then be instructed via change control upon receipt of a signed offer from the customer.

2.3 Lead Times for Scheme Development, Design and Sanction

Providing adequate lead time for a scheme's development, design and sanction is important for ensuring it can be accommodated in the plan for delivery in the required year. Insufficient time for design and development increases the risk of late identification of additional requirements (e.g. outages), which can significantly disrupt other work in the annual work plan.

These stages need to be completed such that all schemes have been instructed to IP3 by Milestone 4 (as identified in UKBP/TP205) so that an agreed SRD is available for Milestone 5, and deliverability of the over Work Plan for that year can be assessed from the perspective of outages and National Grid resources.

The complexity of schemes can have a significant impact on the lead times of the development and design phases. The figure below identifies these minimum timescales.



The development and design status of a scheme relative to the Work Planning milestones is identified when submitted for sanction, so the sanctioning authority can understand the potential impact on work already in the plan.

3 INVESTMENT PROPOSAL PHASE 2 (IP2) - DEVELOPMENT

This section should be read in conjunction with **Appendix I Design Solution**.

For **non-customer driven investments**, which have already had an entry into the capital plan during the IP1 phase, the delivery programme will dictate a an IP2 Start milestone by which time an Investment Team should be formed to develop the investment.

For **customer driven investments**, once the connection offer has been signed, the ITL will instruct the Construction Delivery Unit to proceed onto full development of the sanctioned solution, with due regard for other options which may not have been fully explored due to the 90-day time constraint. The original Investment Team will be reconvened to carry out this activity.

Note - It is at these two points (offer signature for customer driven, or IP2 Start milestone for non-customer driven) that the two work stream processes align. The differences between the two is that for non-customer driven investments, the Investment Team is being formed and DWS issued for the first time but for customer driven investments the team is reformed and the DWS is revised and re-issued.

The purpose of the IP2 Development phase is to construct and demonstrate a co-ordinated, efficient and economic investment case for Stage 2 sanction by identifying a preferred and deliverable design solution with an achievable programme and a realistic estimation of outturn costs. The solution identified shall be deliverable within an acceptable and agreed range of risk quantified within the sanction range.

The ITL shall be responsible for the establishment, presentation for sanction and maintenance of the Investment Case and for the management of the Investment Process for the whole Investment Lifecycle. At the Development Stage, the ITL shall establish, (or re-establish in the case of a customer-driven investment) an Investment Team. See Appendix C for team structure and responsibilities. The Asset Investment Engineer shall manage the interface between ENI and the Construction Delivery Unit at a project level to ensure that the Investment Process is managed and delivered and that the contractual obligations for which the ITL is responsible are fulfilled.

This team will comprise nominated representatives from all relevant business units. The ITL shall manage the process through a series of mandatory meetings of the Investment Team and other meetings as deemed appropriate. A set of minutes and/or notes of these meetings shall be prepared and posted within Livelink.

The Investment Team shall be responsible for establishing the scope and extent of development required and the optimum Investment Case for each investment or programme of investment, taking into account Statutory, Transmission Licence and Engineering Policy requirements. The Development Engineer (nominated by the Construction Delivery Unit) shall be responsible for the development of the Design Solutions in terms of design (other than power system design), delivery and outage programme requirements, cost estimation and assessment, management and costing of delivery risk.

NB:- Interfacing substation and overhead line/cable investments which are the subject of separate investment papers, but where line/cable entry changes may impact on overall substation design, must commence, or at least be considered at the same time to ensure synchronisation of design options and decisions.

A Design Engineer (Assurance) shall be requested by the ITL and nominated as a member of the Investment Team by the Design Assurance Manager to ensure that the developed design option is compliant with National Grid design standards and policies.

A CDM Coordinator Representative (see (UKBP/TP137) shall be requested by the ITL at the outset of the development phase. See Appendix H for safety, health, environmental and security requirements.

A design team shall be formed by the Development Engineer reporting to the Investment Team. Design and HAZID Reviews must be undertaken during the development phase as defined in UKBP/TP188.

At the inaugural IP2 meeting of the Investment Team, the ITL shall ensure that all network options considered in the IP1 Phase are discussed and reviewed by the Investment Team. In addition the ITL will set programme and cost constraints within which the Investment Team must deliver the IP2 Development phase. The scope of development required in establishing the Investment Case will be discussed and a scope for the development activity shall be agreed within the Investment Team and recorded in the DWS (form UKBP/TP146.01 - DWS).

The ITL will define the network objectives, business drivers, policies and constraints within which the investment will be developed. The ITL shall ensure that any new options are fully considered and documented alongside those brought forward under IP1. The System Design Engineer will define the fundamental system requirements of the investment and these shall be recorded in the SDS which shall be prepared in draft during the IP2 Development phase (this may have already been initiated in the IP1 Phase for customer-

driven investments). Part 1 of the SDS shall be fully completed and approved on completion of the IP2 Development phase (form UKBP/TP146.03 - SDS).

The Development Engineer shall ensure that a Risk Register is produced to capture the business risks and the main delivery risks (See Appendix D) and shall ensure that these are managed by the design team in the development phase. The Development Engineer shall ensure that all reasonable measures are taken to mitigate risks in the design solution and that an acceptable and agreed risk margin can be presented for sanction.

The Development Engineer must consider a broad range of issues and design criteria on site to ensure that major risks and constraints are exposed to inform the selection process. See Table 2 below and section 4 of DJR. The Development Engineer shall record the option selection process in the DJR as part of the IP2 submission. The Development Engineer shall submit the civil, spatial, routing etc requirements of the design solution in the form UKBP/TP146.04 - Construction Design Specification (CDS).

Table 2 – Issues and Design Criteria

Consideration	Issues
Cost	What are the overall cost implications of each option taking into account capital cost, operational costs, tax and Early Asset Write Off? What risks are there with each option and what is the overall likelihood of these incurring increased construction or operational costs in the future?
Design Compliance	Does the preferred solution comply with National Grid Technical Specifications, policy, Operational Policy, SQSS Requirements? If it doesn't why doesn't it and what is to be done about resolving this issue?
Delivery Programme	The Development Engineer will need to devise a construction programme for sanction taking into account the major stages of the works such as land rights and consents (and associated stakeholder engagement activities), plant lead time, construction and commissioning.
Maintainability	Can the preferred solution be maintained safely and economically for the life of the assets? Does the preferred solution have a negative impact on the maintainability of existing assets on site?
Health and Safety	Identify how these risks will be designed out of the final solution and where those remaining issues will be managed for the life of the assets.
Environmental, Community, EMF, Noise and Visual Amenity	For all Investments the major environmental and community impact issues must be considered. Particularly where it has been identified that the proposal requires an Environmental Impact Assessment (EIA) and/or in the case of new or diverted overhead line routes the visual amenity and noise issues must be considered and fully documented at an early stage to ensure that we begin to build our case should we need to go to Public Inquiry

Consideration	Issues
Ecological	Ecological issues often can affect the programme for projects significantly. It is important to consider these where they are known and to raise these as risk items for resolution during the detailed design phase.
Planning Consent	If required the acquisition of consent(s) can take a significant amount of time and will be a significant part of a programme. Advice should be sought from Land and Development as part of the IP1 process to determine what consents are required and realistic timescales (e.g for major infrastructure projects which are subject to decision by the Infrastructure Planning Commission 40-46 months will be required from project trigger / driver to IPC decision). At the development stage it is important to develop an initial consents strategy and associated stakeholder engagement strategy. See Appendix J.
Flood Risk	Advice from Land and Development should be sought on the Flood Risk Assessment requirements.
Land and Rights Acquisition	The acquisition of land and Rights (e.g. wayleaves and/or easements) for electricity transmission purposes can take a significant amount of time to obtain. Advice from Land and Development should be sought on the likely timescales and costs.
System Access	Outage requirements for investments are placed within ELLIPSE as part of the IP1 process. At the development stage it is important to derive a robust view of the main system outage requirements and document these in the SRD and to seek advice on the feasibility of taking these outages.
Site Access	Access to site for transformers and other Abnormal Indivisible Loads should be considered at this stage. The lay down and construction space should also be considered and whether it is possible to segregate areas of the site for construction.
Build Maintain, Operate and De-commission	Consideration must be given to ensuring the proposed design does not adversely affect adjacent equipment.
Resource Availability	As far as possible the resources required to construct and commission the project must be documented within the SRD and confirmed as available.
Impact of New Technology	If new plant or technology is to be used the impact of bringing this onto the system must be carefully evaluated, especially in relation to spares holdings and service level agreements with suppliers. If the use is required then its introduction must be managed through a risk-assessed approach
System Complexity	Evaluate each option to determine whether additional system complexity is being created. This is generally undesirable and should be avoided if possible. If the complexity is necessary then measures should be taken to reduce to a

Consideration	Issues
	minimum with complexity management measures.
Emergency Return To Service Requirements	The ERTS of the outage programme should be examined to determine whether this can be reduced.
Power System Quality	Power system quality should be considered with specialist advice sought from the appropriate Asset Management group.
Extendibility	Extendibility should be considered and where possible without unnecessary cost provided.
Black Start	Examine the impact of the works on the system as a whole to determine if the black start facilities should be changed or enhanced. In the case of Connection (entry) the connectee may wish to consider contracting for a black start capability. Exit and all non load works should ensure that the LVAC policy is complied with.
Capital Plan	Reference to the sanctioned capital plan should be made to ensure that the proposed investment aligns with the plan and that the sanctioned option contributes to the delivery aspects of that plan.
DNO/GENCO interface	What are the investment synergies with the DNO. How will the licensed works interact with the GENCO works.
Spares Holdings	The impact of the works must be assessed against the current National Grid Spares policy to determine the need to procure additional spares as a result of this investment. The ITL should liaise with Asset Policy to confirm.
OpTel	Where the design or programme of work has an impact on the Operational Telecomms network these should also be addressed at an early stage to determine impact on system and scope any possible works (see UKBP/TP133)

The Development Engineer shall present the developed design options to the Investment Team for evaluation and selection of a preferred option ensuring that the chosen option supports the investment need. Prior to Stage 2 Sanction the ITL shall convene a meeting of the Investment Team to make an appraisal of the investment case and to challenge the developed solution against the investment need in terms of cost, scope of design, risk and programme. The Investment Team shall agree the solution and overall scope of the investment to be taken to sanction, ensuring that the adopted design solution provides the most economic, efficient and coordinated investment and that this can be demonstrated through documentary evidence.

The Development Engineer shall prepare and submit the IP2 documentation to the ITL. (form UKBP/TP146.05 - IP2) The Development Engineer shall ensure that the allocated and appropriate sections of the SDS (form UKBP/TP146.03 - SDS) are completed. See Appendix D for a summary of all other relevant Transmission Procedures related to the investment process.

On completion of the Development stage, the Development Engineer shall provide an indicative total investment cost for sanction as well as a cost to undertake further design work to the completion of IP3. The Asset Investment Engineer shall prepare the overall Cost Estimating Model for sanction from the indicative totals submitted by the Development Engineer.

The Development Engineer shall ensure that information on outage and resource requirements for the project is provided to Network Operations and to Asset Management Planning via the SRD in accordance with UKBP/TP205.

A Sanction Paper shall be prepared and the Investment will be submitted for Stage 2 Sanction by the appropriate sanctioning authority according to the criteria specified within the Investment Management Procedure (IMP). Stage 2 Sanction will request approval from the Sanctioning Authority to spend the specified sum on further design work to enable firm costs and programme to be submitted for IP3 and Stage 3 Sanction. Stage 2 Sanction will also define the Investment Case and provide an indicative expected outturn cost and risk range for the investment. Supporting Statements from Business Units external to ENI will be obtained in accordance with the IMP. Appendix J lists additional steps required in order to fulfil National Grid's commitments with regards to stakeholder engagement.

4 INVESTMENT PROPOSAL PHASE 3 (IP3) - PROJECT DESIGN

This section should be read in conjunction with **Appendix I Design Solution**.

Post Stage 2 Sanction the ITL shall provide the Project Engineer with authority to proceed to the Project Design Phase by approving the IP2. In the case of a connection application the ITL shall authorise the Project Engineer to proceed to the Project Design Phase once the applicant has provided sufficient security to complete the required design work. At this stage, where deemed appropriate, the ITL role may be transferred from the System Development Engineer, to the Asset Investment Engineer. Where this occurs, System Development will retain the Sponsor role throughout and be responsible for maintaining the business case for the investment.

The objective of this phase of the Investment Process is to continue the development and reduce the risks identified at Stage 2 Sanction by preparing a more detailed design specification (as defined in the Design Intent Document (DID) – see UKBP/TP188 for differences between Alliance and non-Alliance delivery models) and delivery programme and confirm the out turn costs. During this stage risk management shall be continuously undertaken to minimise risks and gain advantage from any opportunities that arise (See Appendix D).

The ITL shall revise the DWS in order to agree the scope of survey work to be undertaken in this phase and issue to the Project Manager.

The Design Engineer will provide to the ITL a Project Report throughout the Project Design Phase on progress with the key development activities, design, costs and milestones as detailed in Appendix F.

The Project Engineer shall further develop the project within the financial sanction approved under Stage 2 Sanction, and prepare form UKBP/TP146.06 - Investment Proposal Stage 3 (IP3). For the Alliance delivery model, the Project Engineer shall request the preparation of a DID in accordance with UKBP/TP188, together with a detailed construction outage/resource plan and form UKBP/TP146.08 – IP3 Asset Data Template (see Appendix G) For non-Alliance delivery model, the DID is prepared by the Contractor after contract release (post IP3). All required surveys and studies will be commissioned and carried out to further reduce any uncertainty and risk as identified at Stage 2 Sanction. The DID will be authorised by the Design Engineer (Assurance) as compliant with National Grid Technical Specifications, policy and power system electrical requirements as stated within the SDS.

For Non-Alliance delivered Projects only, the Project Engineer shall further develop the project within the financial sanction approved under Stage 2 Sanction, and prepare a tender document in accordance with UKBP/TP188 which shall be forwarded to the appropriate Suppliers to tender against in accordance with procurement governance. Budgetary figures based upon the tender returns shall be obtained from the suppliers and used as the basis for financial sanction at IP3. The Project Engineer shall prepare form UKBP/TP146.06 – IP3 (read in conjunction with Figure I1.b)

The costed residual delivery risks to the work at the end of this phase shall be agreed with the ITL in order to determine those that should be allocated to the Client, those allocated to the project with definite works to resolve in delivery and those that remain as risks and remain unallocated.

During the project design phase design and HAZID reviews shall be undertaken as required by UKBP/TP188.

Before Stage 3 Sanction, the ITL shall convene a meeting of the Investment Team to make a final appraisal of the investment case and to challenge the developed solution, project design and target costs against the investment case sanctioned at Stage 2. In the case of load-related investments, where the ITL role has been handed over from System Development to Asset Investment, the ITL shall ensure that the sponsor is invited to the Investment Team meeting to ensure that the system requirements are still being fully met by the proposed investment.

The Investment Team, in conjunction with Construction Cost Assurance, shall agree the target cost, residual risk and overall scope of the investment to be taken to Stage 3 Sanction.

On completion of the Project Design Phase, the Project Engineer will prepare and submit the IP3 to the ITL. At this stage the Project Engineer will also present to the ITL the final Target Cost for the investment. The Investment Team will determine whether the total design solution continues to represent an economic, efficient and co-ordinated investment. Appendix J lists additional steps required in order to fulfil National Grid's commitments with regards to stakeholder engagement.

The ITL shall prepare a sanction paper in accordance with the IMP and submit for Stage 3 Sanction. At Stage 3 Sanction, approval is sought for the entire cost to deliver the investment, with timescales for that delivery. Once Sanction has been granted by the Sanctioning Authority then authority to proceed to delivery will be provided to the Construction Delivery Unit by approval of the IP3.

For Non-Alliance delivered Projects, following Stage 3 Sanction and approval of the IP3, a contract to deliver the project will be let by the Project Engineer, via procurement governance, to a contractor.

The Project Engineer shall ensure that information on outage and resource requirements for the project is provided to Network Operations and to Asset Management Planning via the SRD in accord with UKBP/TP205.

5 DETAILED DESIGN AND PROJECT DELIVERY PROCESS

This section should be read in conjunction with **Appendix I Design Solution**.

A Project Engineer shall have accountability for the successful delivery of the Investment within the parameters within the Sanction Paper. The Project Engineer shall continue to provide Project Reporting to the ITL (see Appendix F), throughout delivery, on progress with the works and provide early warning of any likely departure outside the sanctioned parameters in order that corrective measures can be agreed.

The Project Engineer shall provide the updated form UKBP/TP146.08 – IP3 Asset Data Template, Asset Technical Data Workbook, Fixed Asset Confirmation, Disposal and Transfer certificates to the ITL as each asset is commissioned or decommissioned or re-identified on the system.

The ITL retains responsibility to the Sanctioning Authority throughout the life of the investment until closure has been achieved and shall maintain a monitoring role to ensure that investment objectives and supporting strategies are met throughout the delivery phase. The ITL shall convene a meeting of the Investment Team if required to discuss any issues arising during delivery if they impact upon the sanction criteria and determine the course of action to be taken. In the case of load-related investments, where the ITL role has been handed over from System Development to Asset Investment, the ITL shall ensure that the Sponsor is kept informed of any issues arising and is invited to subsequent meetings. In the case of conflicting priorities the Project Engineer will agree their resolution with the ITL.

The Project Engineer will ensure that the asset data for the project is maintained and the form UKBP/TP146.08 – IP3 Asset Data Template is updated throughout the delivery phase as assets are commissioned and decommissioned and reporting as required by Appendix G (Investment Asset Data).

6 INVESTMENT PROPOSAL PHASE 4 (IP4) – PROJECT CLOSURE

This section should be read in conjunction with **Appendix I Design Solution**.

The purpose of the Closure phase is primarily to provide financial closure of the project and to carry out an assessment of the works in terms of design, quality, cost and programme. The Investment Management Procedure tasks the Sanctioning Authority with the dissemination of learning points. Where applicable, this should be accomplished by updating Transmission or local procedures or, if the subject necessitates, tabling proposals to the relevant engineering forum.

The Project Engineer will conduct a Post Project Review which will identify learning points and propose how these shall be implemented on future projects. The Project Delivery Team and ITL will be in attendance. Within three months of the Completion Date, the Project Engineer shall prepare form UKBP/TP146.07 - Investment Proposal Stage 4 (IP4)). At this stage the Project Engineer will also present to the ITL the final cost to completion for the investment in the form of the cost schedules as part of the IP4 documentation. This will detail what works have been completed and what outstanding works are required (with dates for completion) and confirm that all up-to-date records have been received by Asset Management.

To close a project, the ITL shall convene a meeting of the Investment Team to ensure that all internal and external stakeholders have the opportunity to provide feedback on the delivery of the scheme, that the final commissioned scheme has met the requirements of the sanction, that information is correct and that lessons learnt are disseminated and action taken. In the case of load-related investments, where the ITL role has been handed over from System Development to Asset Investment, the ITL shall ensure that the sponsor is invited to the project closure meeting. The ITL shall prepare a Closure Paper in the format indicated in the IMP. Appendix J lists additional steps required prior to scheme closure in order to fulfil National Grid's commitments with regards to stakeholder engagement.

The Project Engineer shall confirm the completion of the updated form UKBP/TP146.08 – IP3 Asset Data Template, Asset Technical Data Workbook, Fixed Asset Confirmation, Disposal and Transfer certificates to the ITL.

7 FAST TRACK LOW COST INVESTMENTS

Occasionally there is a requirement for an investment which has minor scope and / or low cost. An example is a minor modification to an operational tripping investment.

Such investments do not warrant the overhead of the full investment process but still require the same standard of process management. This section defines these requirements.

The decision as to what constitutes a Fast Track Low Cost Investment which is subject to this process shall be jointly agreed by the Electricity Network Investment Manager and the appropriate Construction Delivery Unit Managers or the MDE Manager. The Fast Track Low Cost Investment process shall comprise the following:

- a) The ITL shall convene an Investment Team meeting comprising
 - (i) Project Manager (+ Development Engineer if warranted)
 - (ii) Design Engineer
 - (iii) MDE Engineer
 - (iv) Design Engineer (Assurance)
 - (v) CDMC Representative
 - (vi) Data Delivery Officer
 - (vii) Other members as required
- b) A design specification shall be prepared. The format shall be determined by the Design Engineer (Assurance).
- c) A programme and risk register shall be prepared.
- d) The investment shall be costed by the appropriate Delivery Unit.
- e) The investment shall be subject to a single sanction as determined by the Electricity Network Investment Manager and Construction Manager.
- f) Drawings shall be prepared – agreed by the Design Engineer (Assurance). (UKBP/TP135)
- g) Installation shall accord with the requirements of UKBP/TP163/A tailored to the scale of the work.
- h) Commissioning shall be undertaken in accordance with the abbreviated arrangements allowed by UKBP/TP106.
- i) SHES management shall accord with UKBP/TP137 – tailored for the scale of the work
- j) A closure paper shall be prepared and submitted.
- k) Asset Transactions shall be completed in full (See Appendix G)

8 FORMS AND RECORDS

UKBP/TP146.01	Development Work Specification (DWS)
UKBP/TP146.02	Design Justification Report (DJR)
UKBP/TP146.03	System Design Specification (SDS)
UKBP/TP146.04	Construction Design Specification (CDS)
UKBP/TP146.05	Investment Proposal Stage 2 (IP2)
UKBP/TP146.06	Investment Proposal Stage 3 (IP3)
UKBP/TP146.07	Investment Proposal Stage 4 (IP4)
UKBP/TP146.08	IP3 Asset Data Template

All investment documentation shall be filed in CPM Livelink.

PART 2 – DEFINITIONS AND DOCUMENT HISTORY

9 DEFINITIONS

9.1 CDM

CDM refers to the Construction (Design & Management) Regulations 2007. Implementation of the Regulations in National Grid shall be as detailed in UKBP/TP137.

9.2 Cost Estimation Model

A Cost Estimation Model shall be prepared by the Asset Investment Engineer. This model shall incorporate the costs submitted at various phases by the Construction Delivery Unit for the works under its delivery responsibility. The ITL shall collate these costs, add internal engineering costs and out turn the costs for sanction.

9.3 Development Works Specification (DWS Document)

The DWS is produced and updated by the ITL at the commencement of either the IP1 stage for customer driven investments or the IP2 stage for non-customer driven investments. It records the initial information about the scheme prior to Investment Team Formation and should be updated at the commencement of each new stage until the end of the IP3 stage. Additionally it forms the specification of works that the Development Engineer/Construction Delivery Unit is required to undertake during the development of the investment.

9.4 Final Completion Report (Closure Paper)

As required within the Investment Management Procedure, the ITL will prepare and submit to the relevant sanctioning authority an FCR to enable the financial closure of the investment to be approved.

9.5 Asset Data Template, Fixed Asset Confirmation Certificate, Fixed Asset Disposal Certificate, Fixed Asset Transfer Certificate

Fixed Asset Confirmation Certificates (FACC), Fixed Asset Disposal Certificates (FADC) and Fixed Asset Transfer Certificates (FATC) are required to ensure that the correct financial allocations associated with the investment are made against the assets that are affected by the investment and the Financial Asset Register (SAP) correctly updated. The Project