

TRANSMISSION CAPITAL DELIVERY ELECTRICITY - DESIGN MANAGEMENT

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PURPOSE AND SCOPE

This procedure is an implementation of the specific requirements in the Network Development Process Map and its associated UKBP_TP500, 'Network Development Process Map Enabling Document' relating to Design Management tasks which are the responsibility of National Grid, Capital Delivery Technical Assurance (CDTA) and a definition of the minimum required deliverables of the Contractor Design Approval (i.e. design production) process which is the responsibility of the respective Contractor

Note: The system design activities undertaken by National Grid Electrical Transmission Asset Management (ETAM) are exempt from this procedure.

The purpose of this procedure is to define arrangements that ensure the following;

- a) That National Grid discharges its legal obligations with regard to health, safety and environmental requirements
- b) That project design is undertaken in accordance with National Grid technical policy and the suite of technical specifications and supporting documents.
- c) That the design solution is fully specified, integrated and holistic across all technical disciplines, and is executed efficiently both to negate errors and to optimise the use of design engineering resources and skills.
- d) That for reasons of maximising both Safety, Health, Environmental & Safety (SHES) performance and power system reliability those undertaking defined project design tasks possess a demonstrable minimum skill set in accordance with the requirements of UKBP_TP14 1.
- e) That project design is undertaken with a demonstrable level of technical governance from both the National Grid and Contractor perspective – resulting in an effective audit trail.
- f) That the project design provides an appropriate balance of practicable compliant design with an efficient cost and effective sustainable solution.

This procedure shall apply to all technical disciplines across all investments which comprise the National Grid Electricity capital programme.

It has been written such that its application is independent of any project contractual arrangements National Grid might have in place and in this context its jurisdiction is limited to decisions relating to the technical content of the design only. Where the contract mandates a specific requirement (for example the Project Managers contractual acceptance of design) this procedure shall be applied to support that process not supersede or replace it. All those with defined responsibilities (see below) shall ensure that the relevant contractual requirements are appropriately observed at all times.

A diagram showing the key stages of the project design process relevant to this procedure is provided within UK_BP500 – Section 4.

It is recognised that for investments that fall in to the category of single asset replacement /refurbishment/recondition (as defined in UKBP_TP236) then the full application of this TP may not provide the most cost efficient means of delivering that investment and hence TP minimum requirements as defined in UKBP_TP236 can be applied.

These minimum requirements are defined for each type of single asset replacement/ refurbishment/ recondition investment and are presented as separate appendices in UKBP_TP236. e.g. Appendix B CB Replacement (with CT's) & (without CT's)

Amendments to this procedure shall be reflected in UKBP_TP236 Appendices (if required) and may result in re-issue of UKBP_TP236 within the same period.

PART 1 – PROCEDURAL

1 RESPONSIBILITIES

1.1 Development Manager (OHLC or Substations)

During Network Development Process 4.2 – Select Option and 4.3 – Develop and Sanction Stages, the Development Manager is responsible for:

- a) Ensuring that appropriate resources (e.g. Front End Engineering Design (FEED)) are appointed and managed to develop the scheme throughout NDP4.2 and 4.3 stages.
- b) Implementation of this Design Management Procedure, ensuring delivery of the Project Development requirements and activities detailed within this document.
- c) Signing Technical Deviation Request Forms, as detailed in Section 2.20 of this document.

1.2 Engineering Assurance Manager (OHLC or Substations)

The Engineering Assurance Manager is responsible, throughout the Network Development Process (NDP) lifecycle, for ensuring that:

- a) Design Engineers (Assurance) are appointed to represent each of the relevant 'Core' Design Disciplines. Design Specialists and other Designers shall be appointed as and when deemed necessary.
- b) The Contractor has a Design Management Procedure that facilitates the Assurance activities detailed within this document and to ensure that this is appropriately enacted on the project.
- c) During NDP 4.2 and 4.3 Stages the Design Assurance role is not undertaken by an individual that has been integral either in the production, development and/or approval of the design proposal.
- d) During NDP 4.4 Stage an individual does not enact the Contractor Design Approval and Assurance role on the same project. i.e. a Designer shall not 'Assure' work they have previously 'Design Approved'.

1.3 Lead Design Engineer (Assurance)

The Lead Design Engineer (Assurance) is responsible for:

- a) Leading the Project Design Engineering (Assurance) Team in terms of representation, spokesman, inter technology coordination and interfacing for a specific investment/site(s).
- b) They shall ensure that the National Grid Project Manager or, dependent on the contract strategy, other individual with contractual responsibility for accepting the design on behalf of the client, is promptly provided with a copy of every fully completed Design Compliance Audit Assurance Report (DCAAR).
- c) Producing and implementing a Design Compliance Audit Strategy
- d) Agreeing and signing (where applicable) on behalf of the Assurance design teams the following.
 - i. Whole Life Value Report (Optioneering Report) - (Network Development Process 4.2 – Select Option Stage)
 - ii. System Design Specification (SDS) (approval stage - Gate B).
 - iii. Construction Design Specifications (CDSs) (approval stage – Gate C)
 - iv. Technical evaluation process during Tender stage (as a member of the tender review panel)
 - v. Design Intent Document (DID)
 - vi. Technical Deviation Requests (see Section 2.20)
- e) Ensuring that the statements of TP141 Assessments within the above documents are complete and that the TP141 Assessed Contractor Design Approval Engineer has signed off work undertaken by other non TP141 Assessed designers.
- f) Attend and ensure that appropriate Engineering Assurance representation attends the Design Review Meetings and Hazard Review Meetings.
- g) Ensuring that the design change management process is enacted and that all design Assurance discipline comments/responses are recorded.
- h) Confirming the adequacy of any changes to the design during development, detailed design, installation and commissioning.
- i) Maintaining and making available for audits at all stages of the Network Development Process the Design Confirmation Schedule (Form UKBP/TP188.02).
- j) At the commencement of NDP4.3, identify whether there is a requirement for Contractor Design Approval where level of detailed design prior to pre-tender warrants it.
- k) To assist the development engineer in assessing the requirement and utilisation of FEED.
- l) Highlight to Asset Policy any items of proposed equipment that are currently not type Registered to seek their agreement to proceed with contract award. (See Form UKBP/TP188.11 Contractors Type Registered Equipment Declaration Schedule).

1.4 Design Engineer (Assurance)

The Design Engineer (Assurance) is responsible, in their particular core discipline for:

- a) Supporting the Lead Design Engineer (Assurance) in discharging their responsibilities as defined in 1.3.
- b) Undertaking Design Compliance Audit(s) (see Section 2.10).
- c) Provide engineering design support to the development team during NDP4.2 and 4.3, including advice, where necessary, regarding the need for FEED or other specialist resources
- d) Ensuring that the Contractor's proposed plant/equipment is suitable for its intended use and has no design restrictions that would adversely impact on the design solution.

1.5 Capital Delivery –Senior Project Manager

During Network Development Process 4.4 – Project Execution Stage, the Capital Delivery – Senior Project Manager is responsible for:

- a) Ensuring that the Contractor has a design management procedure that facilitates a design approvals process prior to Assurance activities detailed within this document and to ensure that this process is appropriately enacted on the project.
- b) Signing Technical Deviation Request Forms, as detailed in Section 2.20 of this document.

1.6 Development Engineer (DE)

The Development Engineer shall during 4.2 & 4.3 is responsible:

- a) Co-ordinating the FEED process and ensuring the co-operation, communication & Co-ordination between designers is occurring
- b) Ensuring a Design Programme is prepared, maintained & implemented where applicable.
- c) For ensuring that, so far as reasonably practicable, the conceptual design is developed without risks to health or safety
- d) Attending the Hazard Review meetings chaired by the PD Rep (Pre-Contract).
- e) Identify and agree Key meeting dates (including Design Reviews) in a timely manner in order to enable full participation, preparation and to secure dates in diaries.
- f) Convening and chairing Design Review meetings (in NDP4.2 & NDP4.3) and ensure there is suitable and effective coordination and cooperation between contributors and those required for the aspects being tabled are in attendance (or suitable representation provided), minutes are recorded and circulated to all affected parties for consideration.
- g) Ensure the PD Rep (Pre-Contract) is in attendance at the Design Review meetings
- h) Ensuring that all design providers are given (or given access to) all information which may affect their design activity, including work which may be undertaken by others (e.g. Bulk Purchase Equipment – see UKBP_TP211) and that further information is being provided in a timely manner to affect decision making.

1.7 Principal Designer Rep (Pre Contract) (PD Rep (Pre Contract))

The Principal Designer (Pre Contract) shall, during NDP 4.2, 4.3 and 4.4 (pre-contract award) Stages appoint a PD Rep (Pre Contract) in accordance with the requirements identified in UKBP_TP137

The responsibilities of the PD Rep (Pre Contract) are defined in UKBP_TP137

1.8 Lead Contractor Design Approval Engineer / Principal Designer (Design and Build)

All National Grid projects shall have a Principal Designer (PD) from commencement of NDP4.2 Stage through to completion of NDP4.4 Stage, unless at Contract Award it is confirmed that the project works will be undertaken by a single contractor in which case a PD will not be required in NDP4.4 stage.

Principal Designer duties shall be carried out in accordance with the Construction (Design and Management) Regulations 2015 (CDM 2015) and the Client's (NGET) Transmission Procedures.

At NDP4.4 Stage Design and Build contracts will require the Principal Contractor to undertake the PD role from Contract Award until completion of the works unless specific derogation is obtained from CDTA or the project is defined in UKBP_TP236.

On projects where the main works construction contractor is appointed separately from the main works design contractor, the design contractor will be appointed as PD from appointment until completion of construction work.

The Principal Designer appointment shall cease on completion of the contract or at an earlier stage if confirmed in writing by the client.

The Principal Designer organization shall appoint an individual as their Principal Designer Representative (PD Rep) who shall be a competent 'Designer' as defined in CDM 2015 and deemed competent by their Employing Organisation to discharge the role as defined in UKBP_TP137. For design and build contractors where the Contractor has been appointed as the Principal Designer then it is generally expected that the Lead Contractor Design Approval Engineer will undertake the duties and responsibilities of the Principal Designer Representative.

For projects where a single contractor is involved, there is no requirement for a Principal Designer (Design & Build) to be appointed, however the duties defined in UKBP_TP137 for the PD Rep (Design & Build) shall be undertaken by the Lead Contractor Design Approval Engineer.

1.8.1 **Lead Contractor Design Approval Engineer (LCDAE)**

The LCDAE is responsible for:

- a) Leading the Contractor Design Team in terms of representation, spokesman, inter technology coordination and interfacing for a specific investment/site(s).
- b) Ensuring a Design Programme is produced, maintained and implemented. The LCDAE shall also send the design programme (and subsequent updates) to the PD Rep (Design & Build) for review.
- c) Agreeing/approving as signatory on behalf of the Contractor design team the following:
 - d) Design Intent Document (DID)
 - e) Design Compliance Audit (See Section 2.10)
 - f) Technical Deviation Requests (See Section 2.20)
 - g) The LCDAE shall send signed copies of DID, Design compliance audits and Technical Deviations to PD Rep (Design & Build).
 - h) Ensuring that the UKBP/TP141 process is enacted with regard to statements of assessment within the above items are complete and that an assessed contractor design approval engineer has signed off work undertaken by other non-assessed designers.
 - i) For ensuring that, so far as reasonably practicable, the detailed design is developed without risks to health or safety
 - j) Attending the Hazard Review meetings chaired by the PD Rep (Design & Build).
 - k) Ensuring all defined pre-construction hazard information has been fully considered and where practicable eliminated or controlled and that its management requirement(s) are defined within the Construction Phase Plan
 - l) Identify and agree Key meeting dates (including Design Reviews) in a timely manner in order to enable full participation, preparation and to secure dates in diaries.
 - m) Convening and chairing Design Review meetings (in NDP4.4) and ensure there is suitable and effective coordination and cooperation between contributors and those required for the aspects being tabled are in attendance (or suitable representation provided), minutes are recorded and circulated to all affected parties for consideration
 - n) Ensure PD Rep (Design & Build) attends Design Review meetings.

- o) Ensuring that all design providers are given (or given access to) all information which may affect their design activity, including work which may be undertaken by others (e.g. Bulk Purchase Equipment – see UKBP_TP211) and that further information is being provided in a timely manner to affect decision making.
- p) Ensuring that the design change management process is enacted and that all Contractor Design Approval Engineer disciplines' comments/responses are recorded. Furthermore the LCDAE shall provide a copy of the design change management process to the Principal Designer (Design and Build). Furthermore all design changes shall be notified to the Principal Designer (Design and Build).
- q) Making available, as requested by the Design Engineer (Assurance), the Contractor's internal design review minutes, forms, correspondence etc. which form a part of their Design Approval process.
- r) Ensuring that all formally issued project drawings are provided in accordance with the requirements of UKBP/TP135 – Drawing Management.
- s) Enacting the duties prescribed to the PD Rep (Design & Build) as per UKBP_TP137 in the event of a single contractor project (as defined in UKBP_TP137)

1.8.2 Principal Designer Rep (Design and Build)

At contract award NG shall appoint a Principal Designer who shall nominate a PD Rep (Design & Build) in accordance with the requirements identified in UKBP_TP137

The responsibilities of the PD Rep (Design & Build) are defined in UKBP_TP137

1.9 Contractor Design Approval Engineer

The Contractor Design Approval Engineer shall be responsible, in their particular core discipline for ensuring that:

- a) The design solution at each of the following key stages is complete and design approved to the point where a Design Assurance audit may be undertaken.
 - i. Design Intent Document (DID)
 - ii. Design Compliance Audit (See Section 2.10)
- b) Ensure all design changes are managed in accordance with the requirements identified in Design Change Control (See Section 2.8)
- c) Where required, they attend Design Review and Hazard Review Meetings and support the LCDAE (PD Rep (Design and Build)) in discharging their responsibilities. The attendees shall be as appropriate for the disciplines and interfaces being discussed.
- d) Ensure that the proposed plant/equipment is suitable for its intended use and has no design restrictions that would adversely impact on the design solution.

2 PRINCIPLES

2.1 Design Management

The Design Confirmation Schedule (DCS) (Form UKBP_TP188.02) shall be completed to provide an audit trail to confirm that each stage has been satisfactorily completed. Responsibility for confirmation of completion of the DCS shall be vested in the LCDAE and the Lead Design Engineer (Assurance). The Project Engineer shall be kept informed of the DCS status to allow contractual acceptance.

Note: Signatures of the LCDAE and the Lead Design Engineer (Assurance) are not required on the Design Confirmation Schedule (DCS).

To facilitate this objective this procedure shall be read and implemented in conjunction with UKBP_TP137 (CDM)

2.2 Engineering Support to Development

During NDP 4.2 and 4.3 Stages there may be a requirement to employ a design resource to support the optioneering and subsequent development process. This support is defined as Front End Engineering Design (FEED) and can be either externally provided via the FEED framework or internally provided from a specialist engineering function within National Grid.

2.3 Contractor Design Approval

During NDP 4.4 Project Execution Stage, the **LCDAE** shall ensure that all project design outputs this shall include all the drawings, schedules, diagrams etc used to construct, install and commission the works in its entirety, are formally and demonstrably confirmed to comply with the National Grid technical and procedural requirements. It shall confirm the approach to the design is holistic and each element is complimentary to all others and does not compromise any other part via internal Contractor's procedures designed to deliver the requirements of this document plus (it is assumed) those additional tasks appropriate to achieving the Contractor's own design objectives.

All project design outputs shall be undertaken in full compliance of the requirements detailed in UKBP/TP135 – Drawing Management

Additionally it shall be the Contractor Design Approval responsibility to engage with other Contractors as is necessary to ensure that the project design is as cost effective a solution as is practicable without comprising any other objectives stated in this document.

With regard to the design task each Contractor is a producer and Contractor Design Approval is a task which shall be fully enacted prior to the appropriate design output being forwarded for 'Design Assurance'.

2.4 Design Assurance

Design Assurance is a Client (i.e. National Grid) responsibility whereby selected design outputs are inspected to confirm compliance with the National Grid technical and procedural requirements relevant to the stage of the Network Development Process at which that particular design output is required. Design Assurance shall be achieved by enacting the requirements of this procedure and by adopting a risk based approach – focusing on issues such as type of work, technical complexity and/or novelty, Health and Safety implications and power system integrity - in determining which aspects of the design initially require examination and then the breadth and depth of the subsequent scrutiny. It shall also, as far as reasonably practicable, ensure that the development and subsequent contractor's design has produced a cost effective design solution.

The philosophy of Design Assurance shall be that the design shall deliver a fully compliant, holistic and cost effective design solution throughout the lifecycle of the Network Development Process. In other words Design Assurance shall function on the basis that all aspects of the design output are fully compliant unless proven otherwise. Consequently and dependent on the outcomes of the selective inspections Design Assurance shall either permit the design process to proceed accordingly or ensure that no further progress is made until all identified issues have been satisfactorily resolved. It shall be noted that the philosophy of Design Assurance, that is "right until proven wrong", and therefore the scope of the selective inspection regimes may necessarily change (i.e. increase) as a result of any non-compliances. In such events Design Approval shall also ensure that not only are all non-compliances rectified but also that the underlying procedural causes are investigated and resolved.

From the procedural perspective Design Assurance is a sequential task following from the Contractor Design Approval. In order to ensure the whole design process progresses efficiently Design Assurance shall engage Contractor Design Approval proactively in an ongoing fashion with a view to ensuring that the key procedural activities, particularly those necessitating document signatures, are as much of a formality as is practical.

To ensure that all design work undertaken complies with National Grid requirements the Design Engineer (Assurance) Team shall carry out a formal review of the following key stages of each and every project. Confirmation of satisfactory audit shall be by the Lead

Design Engineer (Assurance) signing on (where applicable) to the documentation relevant to the particular stage of the project, as shown in the following table:

Stage of the project	Documentation to be signed by Lead Design Engineer (Assurance)
NDP 4.2 – Select Option	Whole Life Value Report (Optioneering Report) System Design Specification (SDS) The Design Confirmation Schedule (DCS)
NDP4.3 – Develop and Sanction	Construction Design Specifications (CDSs) as detailed within the Project Execution Plan (PEP) Single Line Diagram (SLD) The Design Confirmation Schedule (DCS)
NDP 4.4 – Project Execution	Design Intent Document (DID) Design Compliance Audit Assurance Report The Design Confirmation Schedule (DCS)

The formal review shall be carried out by the appropriate Design Engineers (Assurance) Design Engineers (Assurance) shall also attend design review meetings and be an integral part of the project team. In addition to carrying out an audit role, Design Engineers (Assurance) shall additionally provide advice and guidance on National Grid documentation and requirements. In doing so this does not remove the Contractor's responsibility for delivering a compliant design.

2.4.1 Unlicensed Work

Where the Unlicensed Client or Party for whom Unlicensed Work is being undertaken has opted to use the National Grid design assurance process UKBP/TP188, this shall be enacted in full with the Capital Delivery - Project Engineer advising the Development Engineer of any requirements for Client comments.

When there is no contractual requirement for NG to undertake design assurance on the Client's behalf, Contractor Design Approval activities enacted within the supplier shall remain unchanged except that the drawings for the unlicensed work shall be submitted to the Capital Delivery - Project Engineer instead of the Design Engineer (Assurance) for onward transmittal to the Client for comments.

2.5 Project Design Teams

Every construction project shall include a Contractor Design Approval Engineer Team and a Project Design Assurance Team (see Appendix B)

The Project Design Teams shall each comprise a LCDAE, a PD Rep (Design and Build) and a Lead Design Engineer (Assurance) who shall be responsible for the management of Technology Specific Design Teams drawn from one or more of the 'Core' Design Discipline as necessary.

The Contractor Design Approval Team on a Non-mainstream projects may alternatively or additionally comprise of one or more Specialist Contractor Design Approval Teams – See Section 2.7

2.6 Designer Authorisations/Assessments

2.6.1 Contractor Design Approval Engineer

Individuals enacting the roles of Technology Specific Contractor Design Approval Engineer shall have 'FULL' assessment in accordance with the requirements of UKBP/TP141.

An individual with 'FULL' Assessment may enact the Contract Design Approval roles on any relevant construction project for the duration of their certification.

'LIMITED' Assessment shall only apply to Design Specialists on a particular project, as detailed within UKBP/TP141. It is not automatically transferable to another project.

2.6.2 Design Engineer (Assurance)

Individuals enacting the roles of Technology Specific Design Engineer (Assurance) shall have 'FULL' authorisation in accordance with the requirements of UKBP/TP141.

An individual with 'FULL' Authorisation may enact either (but not both) of the appropriate Design Assurance or Design Approval roles on any relevant construction project for the duration of their authorisation/assessment.

'LIMITED' Authorisation shall only apply to Design Specialists on a particular project. It is not automatically transferable to another project.

2.7 Technology Specific Design Teams

Technology Specific Design Teams shall, between them, represent the full technical scope of the project design requirements and shall have the same representation within each of the Contractor Design Approval Team and Assurance Design Team. For example if there is a Protection and Control Contractor Design Approval Team there shall also be a Protection and Control Design Assurance Team and so on.

Each of the Technology Specific Design teams (i.e. Design Approval and Assurance) shall report to and via a Designer TP141 Authorised or TP141 Assessed in the Core Design discipline appropriate to that team.

Note: There is no requirement for authorised 'Substation Civil' Design Engineers on Cables or OHL projects. In these instances the procedural requirements are enacted entirely by Authorised Cable or OHL Design Engineers (Design Approval) and (Assurance) as appropriate who shall be supported by Civil Design Engineers as they deem necessary acting purely in a 'Specialist' Design role (See Section 2.15).

2.8 Detailed Design Change Control

Following the initial Design Compliance Audit (See Section 2.10) all subsequent changes to a particular aspect of the design shall be implemented via a design change control procedure produced, implemented and maintained by the Contractor and forming a part of their Design Management Procedure. This procedure shall mandate that all design changes are formally agreed by the appropriate Contractor Design Approval Engineer and Design Engineer (Assurance).

All design changes shall be signed off by the appropriate Contractor Design Approval Engineer prior to site installation. However in order to facilitate the construction process it shall be acceptable for the Contractor's design change control procedure to include a risk assessment methodology to determine whether the significance of the change also necessitates prior sign off by the Design Engineer (Assurance) via the DCAAR process as detailed in this document. Where the outcome of this assessment determines that the change may be implemented without such sign off, the Contractor Design Approval Engineer shall record the basis of their decision and installation may proceed on the understanding that the Design Engineer (Assurance) will be requested to give their consent within 10 working days via a Design Change Form. Where a Design Change Form is used, the changes shall be marked up on the site drawings/documents and incorporated into the 'as built' records upon completion of the site works.

The Design Change Form shall form part of the Contractor's design change control procedure and shall as a minimum, include the following information:

- Unique reference number
- Date of change
- Drawing/document no. affected by change, with associated DCAAR reference
- Description of change with sketch if applicable

- Statement from Contractor Design Approval Engineer confirming endorsement of change prior to site installation
- Statement from Design Engineer (Assurance) confirming consent to change (to be completed retrospectively)
- Option for Design Engineer (Assurance) to request that drawings/documents are updated via Design Compliance Audit process detailed in this document, as opposed to waiting for as built records.

If the Design Engineer (Assurance) considers any such retrospective submissions are of a scale, risk or complexity that the application of this procedural 'shortcut' is not appropriate they shall inform the Technical Assurance Manager as soon as practicable.

All design changes shall be reflected / updated in the Asset Data Template in accordance with the requirements in UKBP/TP221.

Each Contractor shall have its own method for recording and tracking design changes and comments through the projects life. The Contractor shall ensure that the tracking process readily identifies both open and closed comments.

2.9 Document Control

2.9.1 Design Packages

'Design Packages' are related and complimentary drawings and other 'supporting construction documentation' that holistically articulate the full design requirements of a specific sub-set of the permanent works. These will typically comprise, but are not necessarily limited to, one or more of those items listed under the definition of technical discipline (i.e. Substation HV, P&C, Civil, OHL, HV Cables, etc.). See table 2.9.2 below for examples.

All designs submitted via DCAAR shall, unless specifically agreed otherwise with the Technology Specific Design Engineer (Assurance), be grouped in suitable Design Packages.

Design Packages shall have a technology specific identifier together with sequential alphanumeric references which shall form a part of a unique, cross-referenced DCAAR numbering convention. DCAAR's shall be revision (letter) controlled with each subsequent issue referencing all drawings or documents previously issued via that DCAAR with only those new or revised items specifically highlighted (e.g. previous items may be 'greyed out'). If any drawing or document is subsequently removed from the DCAAR it shall be shown scored out on subsequent revisions. See table 2.9.2 below for examples.

The same drawing or document shall not appear on more than one specific DCAAR.

The proposed scope & number of each Design Package to be submitted shall be outlined in the DID with the proposed submission dates shown on the Design Programme.

2.9.2 Design Package Example Table

The table below provides examples of Design Packages only, the Contractor shall be responsible for identifying each Design Package within the DID with regard to the unique technology specific sequential alphanumeric reference.

Technology Specific	Examples of Specific Design Packages	Technology Specific Design Package Reference
Substations HV	Eathing, Switchgear, LVAC, Busbars, Connectors, Support Structures, etc.	SUB-DP01, SUB-DP02, etc.
P&C	Electrical Interlocking, Busbar Protection, Feeder Protection, Remote End Works, etc.	P&C-DP01, P&C-DP02, etc.
Civil	Foundations, Access Roads Transformer Bund, Oil Containment, Drainage, etc.	CE-DP01, CE-DP02, etc.
OHL	Tower Foundation, Lattice Tower Structure, Conductor Fittings, etc.	OHL-DP01, OHL-DP02, etc.
Cable	Cable, Link Box, Earth Bonding, Cable Sealing Ends, etc.	HVC-DP01, HVC-DP02, etc.

2.9.3 Drawing Revision Control

With reference to UKBP/TP135, all drawings shall be revision controlled as follows;

- Drawings issued for Design Assurance shall use sequential alphabetic revision identifiers commencing with 'A' (UKBP/TP135, 4.1.6 refers)
- Drawings issued for Design Assurance shall be marked with the status 'Preliminary' (UKBP/TP135, Appendix E, 'Identifier A' refers)
- Revision identifiers for drawing statuses not specifically recognised by NG (i.e. the 6 'Identifiers' and 'Stamps' in UKBP/TP135, Appendix E) should not be shown on the drawings formally issued to National Grid

2.9.4 Design Compliance Audit

- The DCAAR submissions shall be design package based as identified in Section 2.9.2
- A DCAAR shall be issued upon conclusion of the Design Review Process. A DCAAR should not be issued prior to the completion of a Design Review process for that element of the works
- The DCAAR shall list all drawings/documents which will be issued to site that are relevant to that design pack
- The expectation is that any drawing/document issued to site for construction/installation purposes shall be identified on a signed DCAAR. Note that for the avoidance of doubt, this does not infer that all drawings/documents which are being issued to site are subject to a detailed design review by Design Assurance.
- In order to ensure an audit trail exists between a signed (accepted) DCAAR and the cross referenced drawings used to construct the works the accepted drawings shall retain the same revision identifier and status as indicated on the DCAAR and shall be 'over stamped' (electronically or manually) with the status 'Accepted For Construction'. (UKBP/TP135, Appendix E, 'Identifier B' refers)
- Drawings accepted with comments on the DCAAR may be treated as the previous bullet point with any subsequent changes necessitated by those comments captured via the contractors design change control procedure.
- Drawings not accepted on the DCAAR shall be amended as necessary and re-submitted via a revised DCAAR as detailed in this procedure i.e. revised to the next available letter and marked 'Preliminary'.