WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

a nationalgrid company

Company Directive

STANDARD TECHNIQUE: NC2F/5

Relating to Design Approval

Policy Summary

This document describes the procedure for approving an Independent Connection Provider's design for electrical infrastructure as part of the contestable work for a New Connections scheme.

It should be read in conjunction with POL: NC2 which provides an overview of the New Connections procedure.

Author: **Kyle Smith**

Implementation Date: **April 2022**

Approved by

Kester Jones

Connections Strategy Manager

Date: **12th April 2022**

Target Staff Group	**Network Services**
Impact of Change	**Amber**
Planned Assurance checks	**To be checked by Connection Strategy Manager**

IMPLEMENTATION PLAN

Introduction

This document has been revised to provide clarification in regards to unmetered connection applications not requiring a parent enquiry or design approval.

Main Changes

Addition of 8.4 within section 8, for unmetered connections. Review of ST.

Impact of Changes

The changes allow clarification of the process for unmetered connection applications and design approval.

Implementation Actions

Planners and operational teams involved in the provision of connections to ICP customers should be made aware of this change.

Implementation Timetable

This policy shall be implemented with immediate effect.

REVISION HISTORY

Document Revision & Review Table		
Date	**Comments**	**Author**
April 2022	• 8.4 Added to clarify the unmetered connection process and design approval. • Document Reviewed.	Kyle Smith
March 2018	• New Section 12 added to provide for partial design approval submissions and assessment.	S Hennell / P Jewell
September 2015	• New Section 11 added to provide for generic design submissions and assessment.	S Hennell / P Jewell
October 2014	• Document Reviewed. • 2.1 & 2.2 Old Text relating to the ECSG has been removed. • 3.1 Text amended for clarification. • 9.1 & 9.2 Reference to the 33, 66 and 132kV process.	Paul B Smith
February 2014	• 7.4 revised to refer to Network Access and Adoption Agreement.	Paul B Smith

Contents

1.0 INTRODUCTION

1.1 This document describes the procedure for approving an Independent Connection Provider's (ICP's) design for electrical infrastructure as part of the contestable work for a New Connections Scheme.

1.2 It should be read in conjunction with POL: NC2 which provides an overview of the New Connections procedure.

2.0 CONTESTABLE ELEMENTS UNDER LICENCE CONDITION 13

2.1 The ICP is able to provide the design for all connections infrastructure which is deemed contestable works in WPD's Statement of Methodology and Charges for Connection.

3.0 NEW CONNECTION ENQUIRY FROM THE CUSTOMER

3.1 An enquiry from a Customer may not initially state that they wish to contest any of the work. A Customer who asks WPD for an estimate of the Connection Charge for both the non-contestable and contestable work should be given a Connection Offer that includes a breakdown of all the non-contestable and contestable elements

3.2 At this stage, although a design may have already been prepared by the Planner, it should not be forwarded to the Customer. The design shall only be submitted when the Customer confirms in writing that it does not wish to contest the design work.

3.3 A Customer who confirms in writing that they do not wish to contest the design work and then, following receipt of the design, subsequently change their mind shall be asked to pay WPD for design costs incurred.

4.0 NEW CONNECTION ENQUIRY FROM AN INDEPENDENT CONNECTION PROVIDER

4.1 An ICP who has been appointed by a Customer to install the electrical infrastructure should notify WPD of its intention to carry out the work in accordance with licence condition 15.

5.0 PROVISION OF POINT OF CONNECTION INFORMATION

5.1 A Connection Provider wishing to carry out the design work will need to establish the exact location of the point of connection to WPD's existing distribution system. This information should be given, using an appropriately scaled plan, at the time the Connection Offer for the non-contestable work is given. See also ST: NC2A for further information relating to the preparation of a Connection Offer.

5.2 No charge shall be made at the time the Point of Connection information is given as part of the Connection Offer, although the costs incurred in carrying out the non-contestable design element will be included within the Fees.

6.0 PROVISION OF TECHNICAL INFORMATION

6.1 An ICP should be furnished with technical information to assist them with the site design and procurement and installation of materials. The following documentation is available on WPD's website and should be referred to in the Connection Offer:

Electricity Association Engineering Recommendation G81,

- Part 2 - Materials Specification Framework Document + WPD's Framework Appendix
- Part 3 - Installation and Records Framework Document + WPD's Framework Appendices Parts 1, 2 and 3

And where the ICP is carrying out the design;

- Part 1 - Design & Planning Framework Document + WPD's Framework Appendix

6.2 The Design & Planning Framework Document outlines design requirements including:

- Voltage regulation
- Maximum earth loop resistance
- Cable ratings
- HV/LV substation ratings

6.3 The ICP will be expected to work to the National Framework documents and the associated WPD Framework Appendices.

6.4 No direct charge shall normally be made for the provision of technical information.

7.0 REQUESTS FOR ADDITIONAL DESIGN REQUIREMENTS

7.1 On occasion WPD may elect to opt for a design that exceeds the requirements of the Framework Documents, for example to provide additional LV linking or increase conductor sizing to permit later network extension not covered by the ICP's programme of works.

7.2 A written request should be made to the ICP detailing the changes required. The changes may be in excess of the minimum cost scheme therefore it will be necessary to pay an allowance to the ICP equating to the difference between the asset chosen as a requirement of the minimum cost scheme and the asset installed. See Standard Technique NC2B for further information.

7.3 Any request for additional design requirements should be made at an early stage and, if possible, before the ICP commences the design work.

7.4 Any agreement on actual assets to be installed and the level of allowance given should be provided for under the terms of the Network Access and Adoption Agreement.

8.0 DESIGN SUBMISSION HV and LV

8.1 The ICP shall submit its design to WPD for approval. The design must comply with all applicable engineering standards and statutory legislation as identified in G81, Part 1 - Design & Planning Framework Document and WPD's Framework Appendix.

8.2 Use of the same design tool as WPD will simplify the approval process therefore it is recommended that the Planner discusses this with the ICP prior to the commencement of design work. WPD cannot however, insist on which design tool the ICP ultimately uses.

8.3 The design shall include:

- copies of input and output from the design package used;
- a statement of the design parameters used;
- a drawing showing the network layout to a suitable scale showing, routes, joint positions, cable sizes, link boxes and LV phase connections;
- Confirmation that the design meets the requirements of the Framework document as supplemented by the WPD Appendix.

8.4 Unmetered connections which do not require significant mains extension or HV works can go straight to the LJNC process without the need for a parent enquiry and formal design approval. The ICP will include their design at the same time as the jointing request.

9.0 EHV and 132kV

9.1 For 33, 66 and 132kV the ICP shall submit its design to WPD for approval. The design shall comply with all applicable engineering standards and statutory legislation.

To assist ICP's in the development of their designs and also to identify the requisite elements of a comprehensive design submission, the following documents are available:

- Outline Design Guide for Customers Seeking WPD Adoption of Indoor 33kV Switchgear Within Associated Switch-rooms/Housings;
- Outline Design Guide For Customers Seeking WPD Adoption of 66Kv Switchgear, Associated Equipment, Compound & Control Room;
- Outline Design Guide For Customers Seeking WPD Adoption of 132Kv Switchgear, Associated Equipment, Compound & Control Room

9.2 For each 33, 66 and 132kV design submission, a number of respondents within WPD will need to assess respective technical elements of the submission. To facilitate this process, the Primary System Design Engineer will:

- communicate to respondents the deadline for response
- create a response form (held within U:\Distribution\Shared Resources\ICP Design Submissions)
- will send a hyperlink to the electronic documents that comprise the submission
- Will send a hyperlink to relevant offer documents.

10.0 DESIGN APPROVAL

10.1 Following receipt WPD shall study the ICP's design and either provide confirmation of approval, or an explanation for rejection. Such rejection shall not be unreasonably withheld.

As an alternative to a full single submission then the design may be approved using either the Generic Approval method in section 11 or the Partial Approval method in section 12.

10.2 Design approval is governed by a Standard of Performance in accordance with licence condition 15. Acceptance or reasoned rejection must be given within 10 working days of receipt of the design for schemes requiring LV and/or HV works. For schemes involving EHV works acceptance or reasoned rejection must be given within 20 working days of receipt of the design. All design submissions shall be recorded in Crown routing and tracking.

10.3 Charges for providing Design Approval will be recovered by inclusion of the Fees within the Connection Offer. The Design Approval Fees must align with those published in WPD's Statement of Methodology and Charges for Connection.

11.0 GENERIC DESIGN APPROVAL

11.1 WPD will consider generic design arrangements for EHV connections for approval, where a standard arrangement is to be used in multiple locations by a customer, ICP or manufacturer. Submissions for generic design approval should be made via the WPD Policy Manager.

11.2 The generic design arrangement must include all the non-site-specific elements such as switchgear, buildings and battery chargers. Individual elements will not be approved in isolation.

11.3 Generic designs will be approved for use in England Non-ASC areas; England ASC areas; and/or Wales. It should be made clear at the enquiry stage which or all of these areas are to be covered by the generic design.

11.4 Generic designs are considered to be outside of the Standards of Performance in accordance with licence condition 15, however they will be assessed in a timely manner by WPD and the timescales in 10.2 above will be endeavoured to be met.

11.5 The non-site specific elements that are to be submitted for review and assessment are listed in Appendix A.

Other documents may be requested as necessary to provide additional information or clarify other submitted documents.

11.6 Once approved, designs shall be given a unique reference number to be quoted whenever the design is utilised.

A copy of the final accepted documents forming part of the approved design will be marked and returned to the customer, ICP or manufacturer making the submission; along with a control sheet detailing the documents and versions forming part of the generic design assessment.

11.7 A copy of the documents forming part of the approved generic designs shall be held centrally in P:\Policy\ICP Generic Design.

11.8 An application where a generic design is to be utilised will have the site specific aspects and elements assessed in accordance with 10.0 "Design Approval" above.

The site specific elements that are to be submitted for review and assessment are: listed in Appendix B.

Other documents may be requested as necessary to provide additional information or clarify other submitted documents.

11.9 On an annual basis, holders of approved generic designs will confirm the specifications and details remain unchanged from the original information submitted for generic design assessment.

If changes are made by the holder of an approved generic design to their generic design between annual confirmations, then the generic design must be resubmitted for assessment and approval. The revised generic design shall not be used until WPD assessment has been completed and a new unique reference number issued.

11.10 Where WPD makes revision to its policy and/or standards document then the generic design shall be modified by the customer, ICP or manufacturer and submitted for re-assessment within 1month. Once Approved by WPD then this generic design shall be used for all new submissions.

Approved generic designs continue to be used for submissions for a period of 3months after a change to WPD policy and/or standards, after which time acceptance of its use will be suspended by WPD.

Designs which have been submitted and the site specific aspects assessed and approved may continue to be constructed in accordance with the approved version.

11.11 Where the approved generic design is being used by a third party who is not the holder of the registered approved generic design, then changes shall not be made by the third party to the generic design. Where changes are made by a third party to a generic design then the design will be assessed as in 10.0 above and the advantages of using the generic design shall be lost.

11.12 In the event that in the light of site installation experience modification is required to a generic design by WPD, then this shall be completed within 1 month by the holder of the approved generic design and the modified generic design submitted for re-assessment. Once approved the modified generic design shall be applied to all generic designs in the process of construction, installation and/or commissioning.

12.0 PARTIAL DESIGN APPROVAL

12.1 WPD will consider partial design arrangements for EHV connections for approval. Submissions for partial design approval should be made via the normal process with WPD planners and customers should make clear their requirement for a partial design approval.

12.2 A design submission can be split into a maximum of four Parts to help accelerate the progression of the site works, rather than submitted as a single wholesale submission once all the detailed design is complete. The parts allow for design approval to progress alongside the customer's scheme progression. The parts are:

- Part 1 - High level electrical design and plant approval
- Part 2 - Cable and Overhead line technical design
- Part 3 - Site Civil works and infrastructure
- Part 4 - Full detailed design

12.3 **High level electrical design and plant approval** is aimed at facilitating the Customer /ICP to order long lead plant items such as circuit breakers, Isolators, transformers, etc. However, the plant proformas cannot be reviewed independently, and have to be reviewed in the context of the proposed scheme and functionality. Therefore, the Part 1 pack will consist of the following:

- High level Electrical Design i.e. Overall Single Line Diagram, main connections and protection diagram.
- Appropriate proposed plant (Switchgear, isolators, transformers, CTs, VTs, etc.) detailed specifications i.e. plant proforma, General Arrangement diagram and Single Line Diagram

12.4 **Cable and Overhead line technical design** is aimed at facilitating the customer/ICP to order the relevant overhead conductors and/or underground cables, where applicable. Therefore, the Part 2 pack will consist of the following:

- Overhead Line design (including proposed conductors and ratings)
- Underground Cable Design (including proposed cable size and ratings)

12.5 **Site Civil Works and Infrastructure** is aimed at facilitating the Customer/ICP to physically start the civil works. Therefore, the Part 3 pack will consist of the following:

- Proposed Substation physical layout design
- Detailed Earthing Design
- Flooding Studies and Structural design details
- Substation Communication support Infrastructure e.g. masts.

12.6 **Full Detailed Design** is the completion of the Approval Process. This will be the complete wholesale design submission, and is expected to conform with the relevant WPD Metered Connections Guidance for Substation Designers document. Therefore, the Part 4 pack will be expected to consist of all the components outlined in Parts 1-3 as well as the following:

- Detailed full electrical design including the AC/DC wiring
- DC Battery System Design
- Protection Panels/Relays
- Power Quality Report

12.7 If a customer options for a partial design approval approach, then all the relevant components of that Part are expected to be submitted. This to ensure that an objective assessment can be done and ease coordination. Therefore, WPD are unable to accept individual drawings. The ICP will be responsible for ensuring subsequent design Part submissions remain compatible and interface correctly with future submissions. The digital size and format of the partial design submissions must not exceed those as outlined in the formal process.

12.8 WPD will endeavour to review each Part submission as quickly as possible; however this may take up to 20 working days.

12.9 The ICP must indicate that they are submitting a partial submission, and that they understand and accept the terms of the process. The formal Standards of Performance consideration for the design submission will only be made against the substantive design submission (Part 4). The ICP must submit a full and complete design (part 4) for final approval. Submission of this full design will trigger the Standards of Performance timescales. This can be submitted at any time.

12.10 The partial design section responses will remain provisional only until Part 4 sign off. WPD reserves the right to require design modifications of previously 'approved' parts, where necessary, to ensure overall compliance with relevant WPD standards and specifications although this will be only be in exceptional circumstantial circumstances. WPD will not energise the site without a fully approved design submission.

12.11 Partial designs are considered to be outside of the Standards of Performance in accordance with licence condition 15, however they will be assessed in a timely manner by WPD and the timescales in 10.2 above will be endeavoured to be met. A partial design submission will be managed directly between the WPD planner and the ICP representative, both of whom will be responsible for the progression to Part 4. Only when the Part 4 stage is reached will the normal enquiry routing monitors and Standards of Performance timescales commence.

APPENDIX A

GENERIC ELEMENTS OF A DESIGN ASSESSMENT

The non-site specific elements that are to be submitted for review and assessment are:-

- Electrical Design

  Overall single line diagram / network design of typical Customers installation
  Overall main connections and protection diagram
  Mechanical and Electrical interlocking diagram

- Switchgear Design

  Switchgear manufacturers' specification indicating make, type, variant, ratings, etc
  Copy of the Manufacturers Schedule of Equipment
  General arrangement drawings including cabling and holding down details
  Switchgear Main Connections and Protection Diagrams
  Single line diagram showing physical arrangements
  Schematic diagrams (AC & DC) showing protection, instrumentation and metering arrangements and terminal block presentation
  List of protection relays with full model numbers
  Schedule for multicore/SCADA connections

- Substation physical design

  Civil drawings, showing superstructure and substructure materials and construction, access doors, cable trench details etc.
  Electrical equipment layout drawings (also showing LV fit-out)
  Heating and dehumidifying equipment

- DC Battery System Design

  110v battery/charger manufacturer, type, ratings, and supporting specification/information
  110V battery/charger/DC distribution board general arrangement drawings / schematic drawings
  48v battery/charger manufacturer, type, ratings, and supporting specification/information
  48V battery/charger/DC distribution board general arrangement drawings / schematic drawings

- Underground Cable Design

  Cable, joint and termination manufacturer, type, ratings and supporting specification/information
  Standard trench and laying specifications
  Arrangements and material specifications for providing support to cables within the trench under the switchgear

Other documents may be requested as necessary to provide additional information or clarify other submitted documents.

APPENDIX B

SITE SPECIFIC ELEMENTS OF A DESIGN ASSESSMENT

The site specific elements that are to be submitted for review and assessment are:

- Overhead Line Design – route, construction details, equipment details and ratings etc
- Wayleaves and Consents
- Substation location plan, showing access roads from the public highway
- Geotechnical Report
- Specific Civil requirements/foundation design as a result of Geotechncial Report
- Power Quality Study / Design
- Earthing Study and Design
- Flood Risk Assessment
- Cable aspects particular to site including route, special installation arrangements (eg directional drilling), joint positions, cable CSA (based on connection capacity etc,
- Network design of customer installation equipment (SLD etc)
- Source and arrangements for LV supply for substation containing WPD equipment

Other documents may be requested as necessary to provide additional information or clarify other submitted documents.

APPENDIX C

SUPERSEDED DOCUMENTS

This document supersedes ST: NC2F/4 dated March 2018 which has now been withdrawn.

APPENDIX D

RECORD OF COMMENT DURING CONSULTATION

Link to the comments table:

Comments Table.

APPENDIX E

ANCILLARY DOCUMENTS

The Electricity Act 1989 as amended by the Utilities Act 2000
The Electricity (Connection Charges) Regulations 2002
The Electricity Safety Quality and Continuity Regulations 2003
Western Power Distribution (South West) plc's Distribution Licence
Western Power Distribution (South Wales) plc's Distribution Licence
Western Power Distribution (East Midlands) plc's Distribution Licence
Western Power Distribution (West Midlands) plc's Distribution Licence
Statement of Methodology and Charges for Connection to Western Power Distribution (South West) plc's Electricity Distribution System;
Statement of Methodology and Charges for Connection to Western Power Distribution (South Wales) plc's Electricity Distribution System;
Statement of Methodology and Charges for Connection to Western Power Distribution (East Midlands) plc's Electricity Distribution System;
Statement of Methodology and Charges for Connection to Western Power Distribution (West Midlands) plc's Electricity Distribution System.
POL HS9 and associated STs - CDM Regulations
POL: NC2 New Connections
WPD Manual of Earthing Practices

APPENDIX F

KEY WORDS

Network Access and Adoption Agreement, Connection Offer, Design Approval, ICP, SLC15.