Company Directive

Policy Directive: DSO4/1

Planning and Network Development

Summary

This directive sets requirements and roles for the processes followed when NGED forecasts changes in customers' electrical demand and generation, identifies network constraints, and selects solutions to resolve those constraints. It expands upon the level 1 process Planning and Network Development that is established in Parent Directive DSO. The creation of NGED's overall network investment plan by Asset Management in response to the combination of all investment drivers is outside of the scope of this directive.

Author: **Stephen Quinn and Oliver Spink**

Implementation Date: **March 2025**

Approved by

Cathy McClay

Managing Director of DSO

Date: **10th March 2025**

Target Staff Group	**DSO: System Planning, Flexibility Markets, DSO Operations. DNO: Field Operations, Control Centre.**
Impact of Change	**Amber – minor update to standardise and develop existing processes.**
Planned Assurance checks	**To be reviewed by as part of Second Line Business Assurance of DSO governance**

IMPLEMENTATION PLAN

Introduction

This directive sets requirements and roles for the processes followed when NGED forecasts changes in customers' electrical demand and generation, identifies network constraints, and selects solutions to resolve those constraints. It expands upon the level 1 process Planning and Network Development that is established in Parent Directive DSO. The creation of NGED's overall network investment plan by Asset Management in response to the combination of all investment drivers is outside of the scope of this directive.

Main Changes

Policy Directive DSO4 (previously titled Distribution System Planning) is updated with:

- Title changed from Distribution System Planning to Planning and Network Development to align with process name and DSO role.
- Rewritten in process-orientated format that standardises and improves existing de facto processes.
- Scope focussed on System Planning department processes to deliver the Planning and Network Development role; the following have been removed from scope:
    - Distribution impact of transmission connections, see Policy Directive DSO6.
    - Asset condition, see AM (Asset Management) series of policy.
    - Customer connections, see NC (New Connections) series of policy.

Impact of Changes

Target Staff Group	**DSO: System Planning, Flexibility Markets, DSO Operations. DNO: Field Operations, Control Centre.**
Impact of Change	**Amber – minor update to standardise and develop existing processes.**

Implementation Actions

The authors have made a presentation with voiceovers explaining the changes, it can be viewed here.

Further process implementation actions will be set in Standard Techniques in the DSO4 series in due course.

Implementation Timetable

This directive takes effect from the date of issue, but each process has its own implementation plan aligned to upcoming triggers for that process. This is intended to ensure a smooth transition where processes are changing.

REVISION HISTORY

DOCUMENT REVISION & REVIEW TABLE			
Issue	**Date**	**Comments**	**Author**
1	07/03/2025	• Title changed from Distribution System Planning to Planning and Network Development to align with process name and DSO role. • Rewritten in process-orientated format. • Scope focussed on System Planning department processes to deliver the Planning and Network Development role.	Stephen Quinn and Oliver Spink
0	02/08/2023	Initial issue of Policy Directive DSO4	Stephen Quinn and Oliver Spink

CONTENTS

1.0 INTRODUCTION

1.1 Scope and Purpose

This directive expands upon the level 1 process Planning and Network Development that is established in Parent Directive DSO. The purpose of Planning and Network Development is:

- To understand how our customers will use the distribution network into the future and provide insight to the wider business; and

- To direct the general reinforcement activity of NGED by analysing the network and identify future investment requirements.

1.1.1 Other Related Subjects

The following related subjects are outside of the scope of this directive:

- The distribution impact of transmission connections and changes, which will be addressed in Policy Directive DSO6, Transmission-Distribution Interface Coordination.

- The creation of NGED's overall network investment plan by Asset Management in response to a range of investment drivers:

    - General reinforcement activity triggered through the Recommend Distribution Network Option level 2 process in this directive.

    - Customer connections, which are addressed in the New Connections (NC) series of policy.

    - Works triggered by asset condition and environmental requirements, which are addressed in the AM (Asset Management) series of policy.

1.2 About the DSO

The Distribution System Operator (DSO) is a directorate within National Grid Electricity Distribution (NGED) that is responsible for:

- Core level 1 processes that deliver the DSO Roles set by Ofgem as part of the DSO Incentive in RIIO-ED2:

    1. Planning and Network Development

    2. Network Operation

    3. Market Development

- Supporting level 1 processes that enable delivery of the DSO Roles.

Further information about the DSO can be found in Parent Directive DSO.

1.3 Roles

The Head of System Planning is accountable for the Level 1 Process Planning and Network Development. They may approve the issue, amendment and withdrawal of Standard Techniques and Specifications in the DSO4 (Planning and Network Development) series to implement the requirements of this directive.

1.4 Interpretation

Where the term “should” is used in this directive it means the provision is a recommendation, which is normally followed. The term “may” is used to express permission. Where the term “shall” or “must” is used in this document it means the provision is mandatory, which must be followed.

> Info: explanatory information is given in blue-outlined boxes adjacent to some provisions of this directive. The explanatory information neither expresses permission nor sets mandatory requirements.

Technical terms shown in **bold** are defined in the DSO Glossary, available internally at https://sharepoint.westernpower.co.uk/sites/wpd/dso/public/Lists/DSO%20Glossary.

An excerpt of relevant terms from the DSO Glossary is included here as appendix A.

References to processes and other proper nouns are shown in Title Case (i.e. first letter of each word capitalised).

1.5 Application

Where any difficulty is encountered with the application of this directive, the authors shall be notified, who shall consider whether to recommend a variation to the approver.

2.0 CONSTITUENT LEVEL 2 PROCESSES OF PLANNING AND NETWORK DEVELOPMENT

This directive subdivides the level 1 process Planning and Network Development into the following level 2 processes:

- DFES Creation in section 4.0
- Best View Creation in section 5.0
- DFES and Best View to Power and Energy in section 6.0
- **Constraint** Identification in section 7.0
- Solution Triage in section 8.0
- Publish DNOA in section 9.0
- Solution Shortlisting in section 10.0
- Recommend Distribution Network Option in section 11.0

General technical requirements applicable to several of these processes are set in section 3.0

For each of these level 2 processes, the following are established:

- The purpose of the process
- How the process is triggered
- High-level requirements for the process, with references to further detail in Standard Techniques and/or Specifications. The detailed requirements sometimes differ between **secondary distribution** and **primary distribution**; in these cases, two sets of references are given.
- An implementation plan for the process

The relationship between these level 2 processes and other key processes and systems is shown in Figure 1 below. The critical path of Planning and Network Development is shown in red. Process flows are shown by solid arrows, data flows are shown by dotted arrows.

2.1 Other DFES and Best View Applications

The DFES and Best View have a wide range of applications in NGED. In addition to their use in the **Constraint** Identification process established in section 7.0:

- The power and energy forecasts are aggregated and presented as growth coefficients, which are used for the following regulatory submissions where a forecast of electrical demand and/or generation is required on an annual basis:
    - Long Term Development Statement (LTDS) Table 3
    - Data exchange with National Energy System Operator to comply with Grid Code requirements (week 24 submission)

- Use of System Charges
- Creation of demand forecasts for planning assumptions used when assessing new connection requests

- The DFES and Best View data is used ad hoc in other NGED business activities, including:
  - Regulatory price control submissions.
  - Strategic business planning.
  - Shared with wider stakeholders to understand the scale of potential growth of customer connections, demand, and generation.

2.2 Flowchart of Relationship Between Level 2 Processes

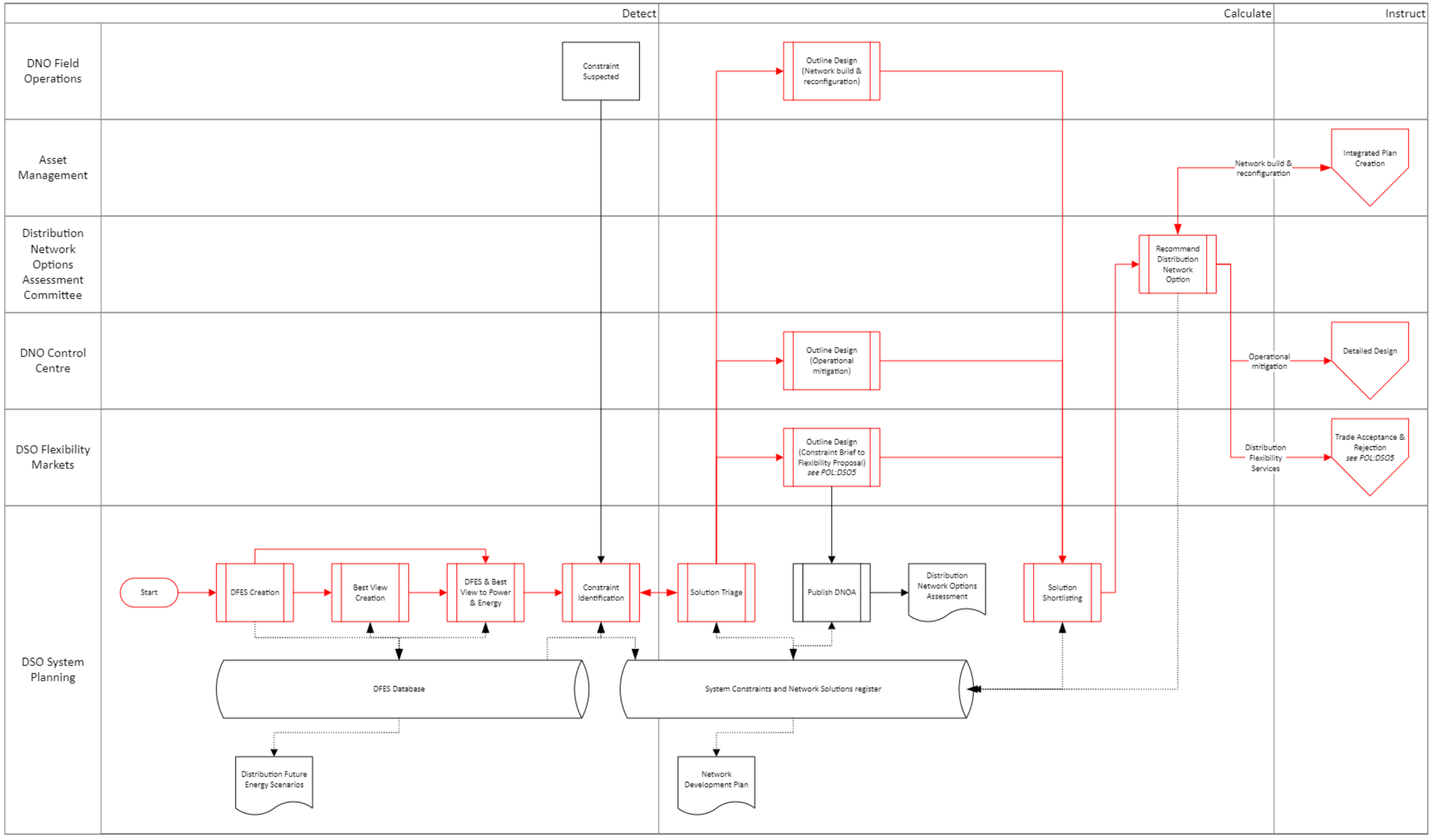

Figure 1: Component Level 2 processes of Network Planning and Development, and their relationships to other processes, aligned to the stages of the General Constraint Management Process

3.0 GENERAL TECHNICAL REQUIREMENTS

3.1 Planning for Operability

The electricity distribution system shall be planned in such a way as to facilitate its subsequent operation in accordance with the DSO7 (Distribution System Operations) series of directives.

> Info: Compliance with system planning standards does not automatically result in an efficient, co-ordinated, and economical system of electricity distribution. It is necessary to consider operational practicalities in pursuit of these aims.

3.2 General Constraint Management Process

All **Constraint**s shall be managed by following these steps:

1. Detect the **constraint**.
2. Calculate how to resolve or mitigate the **constraint**.
3. Instruct the resolution or mitigation.
4. Implement the resolution or mitigation.
5. Record & review the **constraint** and how it was resolved or mitigated.

These steps are equally applicable in operational and investment planning timescales.

4.0 LEVEL 2 PROCESS: DFES CREATION

4.1 Purpose

To create the Distribution Future Energy Scenarios (DFES) comprising:

- Future changes in customers connected to the electricity distribution system and their electrical demand and generation that would occur under different PESTLE[1] scenarios; and
- Projections of these future changes, geospatially referenced to:
    - Local authority boundaries;
    - Electricity Distribution Licence area boundaries; and
    - The boundaries of areas supplied by individual electricity distribution substations.

4.2 Trigger

This process shall be completed at least once per year. This is necessary to account for rapidly changing PESTLE factors which can impact the future requirements of distribution networks.

4.3 Requirements

4.3.1 High-Level Requirements

The Head of System Planning or their delegate:

1. Shall create Distribution Future Energy Scenarios of future changes in customers connected to the electricity distribution system and their electrical demand and generation. The Distribution Future Energy Scenarios:
    a. Shall be formatted as projections of the volumes of electrical demand and generation being commissioned and decommissioned, in quantifiable units appropriate to each type of electrical demand and generation.

> Info: suitable quantifiable units will depend on the type of demand or generation. Most types of generation can be counted in MW of installed or registered capacity. A broader range of units is necessary for demand; examples include road vehicle electrification which is counted both as the number of EVs and the installed capacity of EV chargers, and new commercial buildings which are counted in m² of floorspace.

[1] The combination of Political, Economic, Social, Technological, Legal and Environmental factors that influence customers and their use of electricity.

b. Should comprehensively include both existing and anticipated types of electrical demand and generation.

c. Shall include multiple scenarios and/or pathways to net zero that:

i. Should encompass future uncertainty and collectively form an envelope of credible Political, Economic, Social, Technological, Legal and Environmental futures around the Best View created by Best View Creation.

ii. Should align to scenarios and pathways to net zero used by other industry parties, such as NESO's Future Energy Scenarios. Where suitable scenarios and pathways to net zero are available from the Regional Energy System Planner, these should be used.

d. Shall extend at least ten years into the future, and should extend to 2050.

e. Should consider the views and aspirations of stakeholders.

f. Shall be disaggregated into geospatial areas representing the intersection of:

i. Electricity Supply Areas (ESAs), which are groups of customer premises supplied by individual electricity distribution circuits or substations at a level of granularity suitable for the **Constraint** Identification process;

ii. Local authority boundaries; and

iii. Electricity Distribution Licence area boundaries.

2. Shall publish Distribution Future Energy Scenarios (DFES) reports and data based upon the outputs of this process.

4.3.2 Reference to detailed requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course. These include:

- Standard Technique DSO4A, DFES Creation

4.4 Implementation Plan

This process standardises the prior de facto process, so shall be implemented from the date of issue.

5.0 LEVEL 2 PROCESS: BEST VIEW CREATION

5.1 Purpose

To define a single forecast outlining the expected outturn of volume projections.

5.2 Trigger

This process shall be triggered by the creation of new scenario projections to be used for system planning purposes.

5.3 Requirements

5.3.1 High-Level Requirements

The Head of System Planning or their delegate:

1 Shall develop and maintain a process to determine a Best View that is aligned to Ofgem's funding mechanisms for the current and next price controls. This shall take due account of:

a. How technologies are driven by factors which are outside of the direct control of NGED.

b. How technologies are impacted by governmental policy directions and ambitions at a national, sub-national or local level.

c. Input from the Regional Energy System Planner and other industry experts.

d. Feedback from outturn against previous scenario projections.

2 Shall implement the process to generate volume projections for the Best View based upon the scenario volume projections and other data sources. The output format shall be consistent with that of DFES Creation.

5.3.2 Reference to detailed requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course.

5.4 Implementation Plan

This process standardises the prior de facto process, so shall be implemented from the date of issue.

Info: The detail of the Best View Creation process is expected to change over the coming years in response to increased national policy direction to decarbonise.

6.0 LEVEL 2 PROCESS: DFES AND BEST VIEW TO POWER AND ENERGY

6.1 Purpose

To translate the volumes of electrical equipment output by DFES Creation and Best View Creation into electrical parameters that can be used:

- As electrical models of the capacity and behaviour of demand and generation for power system analysis of networks for the purposes of **Constraint** Identification.
- When estimating energy metrics and related costs, including when designing **distribution flexibility services**.
- For other applications of the DFES and Best View.

6.2 Trigger

This process shall be triggered by each of:

- Updated outputs from DFES Creation or Best View Creation.
- The availability of new information and data regarding the likely electrical behaviour of customers and their equipment.
- Changes to Offline Master Models that affect the mapping of demand and generation to buses.

6.3 Requirements

6.3.1 High-Level Requirements

The Head of System Planning or their delegate:

1. Shall develop and maintain processes for translating volumes of electrical equipment into **Constraint** Power Profiles of electrical power behaviour appropriate for the **Constraint** Identification process. The **Constraint** Power Profiles:

    a. Shall be described in units of real power (e.g. MW) and, where necessary, reactive power (e.g. MVAr).

    b. Shall represent the reasonably foreseeable worst case for each season of the year, aligned to the seasons used to assign ratings to electricity distribution circuits.

> Info: electricity distribution networks are predominantly constrained by the peak power flowing through them, rather than the average power flow or total energy delivered.

c. Should be tailored to the characteristics of the electrical equipment, the customers using the equipment, and the distribution networks supplying them where this has a material effect on electrical behaviour.

> Info: examples of these characteristics include the size of the electrical equipment (e.g. differences between electric vehicle chargers intended for cars and those intended for lorries), the location of the equipment (e.g. differences between electric vehicle chargers on private driveways and those at motorway service areas), and changes in how the equipment is used over time (e.g. reduced heating requirements as building insulation is improved).

d. Shall take account of the diversity between multiple electrical demands and generators. This:

i. Should be profiled to represent time-dependent electrical behaviour of the course of a representative day.

> Info: some electrical equipment has predictable time-dependent behaviour such as commercial air-conditioning peaking during daylight, and domestic cooking peaking in the evening. Identifying the reduced coincident peak power flows that result from this can avoid unnecessary investment in network capacity.

ii. Should be statistically robust for the size of the population of customers and equipment relative to the distribution network supplying the population.

> Info: there is typically more diversity of electrical behaviour in a large population of customers and equipment than a small population.

2. Shall maintain methods for translating volumes of electrical equipment into Energy Profiles of typical electrical energy behaviour. Where suitable methods are available from the Regional Energy System Planner, these should be used. The Energy Profiles:

a. Shall be described in units of energy (e.g. kWh).

b. Shall represent the expected energy behaviour in a typical year.

3. Shall make the outputs of requirements 1 and 2 available in a database that:

a. Shall include mapping of demand and generation to buses of the applicable Offline Master Model at an appropriate level of granularity for the required analysis.

b. Allows outputs to be selected by their characteristics.

c. Makes the data available in formats compatible with the systems used for **Constraint** Identification and other applications.

d. Makes the data available scaled to the volumes of:

   i. The Best View; and

   ii. Each scenario of the Distribution Future Energy Scenarios

e. Should facilitate both API access and human-readable presentation of data (e.g. dashboards).

6.3.2 Reference to Detailed Requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course.

6.4 Implementation Plan

This process standardises the existing de facto process and shall be implemented from the date of issue.

7.0 LEVEL 2 PROCESS: CONSTRAINT IDENTIFICATION

7.1 Purpose

To identify and describe **Constraint**s that will occur on NGED's distribution system under the Best View forecast.

7.2 Trigger

This process:

- Shall be carried out at least once every two years for each area of network;
- Should also be triggered early if updates to the Best View forecast or changes to the network mean that previous results are likely to have become invalid;
- Shall also be triggered by the Solution Triage process and the Solution Selection process to:
    - Confirm that the solution under consideration resolves the **Constraint**(s) it is intended to; and
    - Identify any further **Constraint**s that:
        - Are created by the solution under consideration; or
        - Were masked by other **Constraint**s in previous iterations of this process.
- May also be triggered by the DNO where they suspect that general load growth will trigger a **Constraint**.

7.3 Requirements

7.3.1 <u>High-Level Requirements</u>

The System Planner:

1. Shall use robust electrical analysis techniques to comprehensively identify **Constraint**s in the network area being assessed.
2. Shall use data inputs to that analysis including:
    a. **Constraint** Power Profiles from DFES and Best View to Power and Energy based upon the latest Best View forecast from Best View Creation
    b. The applicable Offline Master Model of the network under assessment (see Policy Directive DSO3, Electrical Modelling & Analysis)
    c. Information on how the network is operated, both manually and by Load Management Schemes

3. Shall identify **Constraint**s by assessment against the requirements of the applicable Policy Directive in the System Design suite[2] for the following types of **Constraint**[3]:

    a. Customer Security

    b. Network Capability

    c. Network Complexity

    d. Voltage regulation

    e. Step Voltage Change

    f. Fault-level capability of switchgear

4. Shall, when identifying **Constraint**s, consider how scenarios that differ from the Best View forecast could trigger different **Constraint**s, or the same **Constraint**s earlier or later than in the Best View. This should be by "sensitivity analysis" where the demand and generation models based on the Best View are replaced by those based on other scenarios from DFES Creation.

5. Shall describe each **Constraint** (or group thereof) in a **Constraint** Brief which shall be:

    a. Recorded in the System **Constraint**s and Network Solutions register; and

    b. Submitted to the Solution Triage process.

6. Shall, if an existing or imminent **Constraint**[4] is identified, notify DSO Operations promptly.

    The Primary System Planning Manager or their delegate:

7. Shall collate and summarise the **Constraint** Briefs relating to the **primary distribution** system into the Network Development Plan (NDP) that is required by Standard Licence Condition 25B.

7.3.2 Reference to detailed requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course. These include:

- Standard Technique DSO4DP, Primary System **Constraint** Identification

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[2] Policy Directive SD2 for 132kV networks, Policy Directive SD3 for 66kV and 33kV networks, Policy Directive SD4 for 11kV and 6.6kV networks, Policy Directive SD5 for Low-Voltage networks.
[3] Earthing, protection (including Low-Frequency Demand Disconnection), and power quality are Network Design matters, so outside of the scope of this requirement.
[4] A **Constraint** which will occur before a solution selected through the subsequent processes in this directive could resolve it.

7.4 Implementation Plan

For the **primary distribution** system, this process is a development of the existing de facto process and shall be implemented from the date of issue except for:

- Requirement 3.e (Step Voltage Change) which shall be implemented by March 2026; and

- Requirement 3.f (Fault-level capability of switchgear) which shall be implemented by March 2026.

For the **secondary distribution** system, this process shall be implemented from April 2025.

8.0 LEVEL 2 PROCESS: SOLUTION TRIAGE

8.1 Purpose

To identify and triage possible solutions to **Constraint**s identified in the **Constraint** Identification process. This:

- Enables transparent decision making in the subsequent Solution Selection process.
- Facilitates holistic assessment of solutions that could benefit multiple **Constraint**s.
- Minimises wasted effort on the part of solution-specialist teams by not triggering Outline Design of unfeasible solutions.

> Info: Whilst System Planners are specialists in identifying **Constraint**s and should have a broad knowledge of the various possible solutions to a **constraint**, they are not specialists in particular solutions. The solution-specialist teams are listed in section 8.3.2 below.

8.2 Trigger

This process shall initially be triggered by receipt of a **Constraint** Brief from the **Constraint** Identification process.

8.3 Requirements

8.3.1 <u>High-Level Requirements for System Planning</u>

The System Planner:

1. Shall consider and assess possible solutions to the **Constraint**(s) described in the **Constraint** Brief. The following types of solution shall all be considered without bias or prejudice, both individually and in combination:
    a. Network build and reconfiguration
    b. **Distribution flexibility services**
    c. Operational mitigation, both manual and by Load Management Schemes
2. Shall assess the feasibility of each solution against the following criteria to make a list of Feasible Solutions:
    a. Can it solve the **constraint**?
    b. Can it be cost-competitive with other solutions under consideration for the **Constraint**(s)? This should take account of:
        i. forecast further demand and generation growth in the network under consideration; and
        ii. other network developments in the area, including those triggered by Customer Connections and Asset Condition.

3. Should develop and assess each potential solution on the basis that it would be implemented using the same standards and current best practice that would be applied by the solution-specialist team during Outline Design.

4. Is not required by this process to perform detailed analysis or design of potential solutions but shall presume that the criteria in requirement 2 are met if high-level assessment is inconclusive.

5. Shall designate one of the Feasible Solutions as the Presumed Solution. This should be the solution that, in the System Planner's engineering judgement, is most likely to subsequently be selected and implemented.

6. Should informally consult counterparts in solution-specialist teams on how they would approach the **Constraint** Brief and any potential flaws in the proposed solution(s) when carrying out requirements 1, 2, 3 and 5.

7. Shall repeat the **Constraint** Identification process with the Presumed Solution included in their network model to identify any further **Constraint**s that were masked by the previous **Constraint** or are caused by the Presumed Solution.

8. May modify or cancel a Feasible Solution or Presumed Solution if subsequent iterations of **Constraint** Identification identify further **Constraint**(s) that invalidate earlier assessments.

9. Shall, once all **Constraint**s have been identified by iterating between Solution Triage and **Constraint** Identification, request an Outline Design for each of the Feasible Solutions from the solution-specialist team named in section 8.3.2 below for that type of solution. The **Constraint** Brief shall be included with each request.

   The Primary System Planning Manager or their delegate:

10. Shall collate and summarise the outputs of this process relating to the **primary distribution** system into the Network Development Plan (NDP) that is required by Standard Licence Condition 25B.

    The Primary System Planning Manager and the Secondary System Planning Manager:

11. Shall jointly coordinate application of this process where:

    a. A **Constraint** or solution is at or adjacent to the interface between the **secondary distribution** and **primary distribution** systems;

    b. A **secondary distribution** solution is considered for a **primary distribution Constraint**s; or

    c. A **primary distribution** solution is considered for a **secondary distribution Constraint**.

12. Shall assign priorities to **Constraint** Briefs so that their counterparts in solution-specialist teams can prioritise the delivery of Outline Designs.

8.3.2 High-Level Requirements for Solution-Specialist Teams

Each solution-specialist team:

13. Shall, when requested in accordance with requirement 9 above, in the priority order set in accordance with requirement 12 above, either:

    a. Create and return an Outline Design that resolves all **Constraint**s in the provided **Constraint** Brief; or

    b. State why their solution type cannot resolve the **Constraint**s in the provided **Constraint** Brief.

14. Each Outline Design shall include:

    a. A summary of what the solution entails, including justification for any deviations from the Feasible Solution.

    b. Single-line diagram of any network build, network reconfiguration, or running arrangement changes included in the solution

    c. Cost estimates made on a best-endeavours basis for:

        i. Capital cost to deliver the solution

        ii. Ongoing operational costs caused or required by the solution

    d. Time estimates made on a best-endeavours basis for:

        i. How long it would take to deliver the solution from instruction to proceed (presuming no backlog of other projects, and up-to-date equipment delivery times), including any complete of key phases of work such as procurement, detailed design, and commissioning.

        ii. Where the solution is not enduring, how long it can be remain in place for.

        iii. Any deadline after which the Outline Design will be invalid.

    e. A log of key decisions and risks relating to the Outline Design

15. Shall coordinate directly with other solution-specialist teams where an Outline Design requires input from other solution-specialist teams.

> Info: examples include establishing a new Primary substation (which requires input from both DNO Primary Network Design and DNO Secondary Network Design) or combining **distribution flexibility services** with a new running arrangement (which requires input from both DSO Flexibility Markets and DNO Asset Management).

16. May, if there are multiple Feasible Solutions to a **Constraint** Brief of the solution type they are responsible for, choose to only proceed to Outline Design with one of the solutions. This solution should be chosen based upon the solution-specialist team's engineering judgement.

Info: an example of this would occur for a **Constraint** Brief describing thermal overload of the transformers at a two-transformer primary substation. The Feasible Solutions could include three network build and reconfiguration options: replace both transformers with larger units, add a third transformer, or establish another primary substation nearby. Primary Network Design could, based upon their engineering judgement, choose to only produce an Outline Design for adding a third transformer.

The solution-specialist teams are:

Solution Type	**Solution required on** primary distribution **system**	**Solution required on** secondary distribution **system**
Network build and reconfiguration	DNO Primary Network Design	DNO Secondary Network Design
Operational mitigation	DNO Control Centre	
Distribution flexibility services	DSO Flexibility Markets	

8.3.3 Reference to detailed requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course. These include:

- Standard Technique DSO4EP, Primary System Solution Triage

8.4 **Implementation Plan**

For the **primary distribution** system, this process is a development of the existing de facto process, with a clearer division of responsibilities between System Planning and solution-specialist teams. It shall be implemented from the date of issue except for:

- Requirement 9 as it applies to **distribution flexibility services**, which shall be implemented by June 2025.

- Requirements 11 to 16, which shall be implemented progressively over the course of financial year 2025/26.

For the **secondary distribution** system, this process shall be implemented from April 2025.

9.0 LEVEL 2 PROCESS: PUBLISH DNOA

9.1 Purpose

To provide transparency in the DSO's identification and assessment of options to resolve network needs.

9.2 Trigger

This process shall be triggered by receipt of Trade Opportunities data from the **Constraint** Brief to Flexibility Proposal level 2 process of Flexibility Market Development.

9.3 Requirements

9.3.1 High-Level Requirements

The Head of System Planning or their delegate:

1. Shall publish a Distribution Network Options Assessment (DNOA) report that summarises the **Constraint** Briefs from Solution Triage, including for each **Constraint** Brief:

    a. A summary of the **Constraint** Brief

    b. The outcome of Solution Triage

    c. Any Trade Opportunities issued by Flexibility Markets

2. Shall collate and summarise the outputs of this process for regulatory reporting as required by Ofgem's Regulatory Instructions & Guidance.

9.3.2 Reference to Detailed Requirements

9.4 Implementation Plan

This process is a development of the existing de facto process that shall be implemented over the course of financial year 2025/26.

10.0 LEVEL 2 PROCESS: SOLUTION SHORTLISTING

10.1 Purpose

To compare between the Outline Designs prepared by solution-specialist teams in response to a **Constraint** Brief and make a recommendation to the Distribution Network Options Assessment Committee.

10.2 Trigger

This process shall be completed at least once per year. This is necessary to ensure that the market for Flexibility Services is adequately notified for upcoming opportunities.

10.3 Requirements

10.3.1 High-Level Requirements

The Head of System Planning or their delegate:

3. Shall, for each **Constraint** Brief where a solution needs to be selected within the next year to facilitate timely delivery before the **Constraint**(s) occur:
    a. Collate the Outline Designs for the **Constraint** Brief received following Solution Triage
    b. Perform cost-benefit analysis for each Outline Design on a net-present-value (discounted cashflow) basis.
    c. Select one Outline Design (or a combination of Outline Designs) based upon the output of the cost-benefit analysis.
    d. Recommend the selected Outline Design(s) to the Distribution Network Options Assessment Committee, triggering the Recommend Distribution Network Option level 2 process. The recommendation shall include:
        i. The **Constraint** Brief;
        ii. The recommended Outline Design(s);
        iii. The outcome of the cost-benefit analysis, including any Outline Designs that are not recommended; and
        iv. The deadline by which a solution must be implemented.

10.3.2 Reference to Detailed Requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course.

10.4 Implementation Plan

This process is a development of the existing de facto process that shall be implemented progressively over the course of financial year 2025/26.

11.0 LEVEL 2 PROCESS: RECOMMEND DISTRIBUTION NETWORK OPTION

11.1 Purpose

For the DSO and the DNO to jointly select and recommend solutions to **Constraint**s triggered by the general growth of demand and generation.

11.2 Trigger

This process shall be triggered by:

1. The Solution Shortlisting process recommending Outline Design(s) to resolve a **Constraint** Brief.
2. Asset Management's Integrated Plan Creation process returning a **Constraint** Brief where a network build and reconfiguration solution cannot be implemented by the deadline set by this process.

This process shall not be retriggered for a **Constraint** Brief where a decision has already been made, unless there is a material change in circumstances that invalidates the previous decision.

11.3 Requirements

11.3.1 High-Level Requirements

The appropriate level of the Distribution Network Options Assessment Committee:

1. Shall, when presented with a recommendation from Solution Shortlisting, choose between the available Outline Designs. This choice should consider:
    a. The recommendation from Solution Shortlisting, include the supporting cost-benefit analysis;
    b. The ability of the DSO to deliver **distribution flexibility services** solutions;
    c. The ability of Field Operations to deliver network build and reconfiguration solutions; and
    d. The ability of Asset Management & Commercial to deliver operational mitigation solutions.
2. Shall, if they choose a network build and reconfiguration solution, strongly recommend it to Asset Management's Integrated Plan Creation process, including:
    a. The **Constraint** Brief
    b. The Outline Design
    c. The deadline by which a solution must be implemented.

3. Shall, if they choose an operational mitigation solution, strongly recommend it to the Control Centre, including:

    a. The **Constraint** Brief

    b. The Outline Design

    c. The deadline by which a solution must be implemented.

4. Shall, if they choose a **distribution flexibility services** solution, instruct DSO Flexibility Markets to proceed with it, including:

    a. The **Constraint** Brief

    b. The Outline Design

    c. The deadline by which a solution must be implemented.

5. Shall notify the solution-specialist teams that created the Outline Designs of the outcome of this process.

    The Distribution Network Options Assessment Committee shall be chaired by its DSO representative and constituted as follows:

Level	**Financial Limit**	**Technical Criteria**	**Regulatory Criteria**	**DSO**	**Field Operations**	**Asset Management & Commercial**
1	No limit	None	None	Managing Director of DSO	Director of Field Operations	Director of Asset Management & Commercial
2	The Head of Network Design's capital expenditure limit set by Policy Directive LE6 (*Financial Authority Levels*)	None	None	Head of System Planning	Head of Network Design	Head of Control Centre

Level	Financial Limit	Technical Criteria	Regulatory Criteria	DSO	Field Operations	Asset Management & Commercial
3 (Primary System)	The Primary Network Design manager's capital expenditure limit set by Policy Directive LE6 (*Financial Authority Levels*)	**Constraint** Brief and solution must relate to the **primary distribution** system only.	Derogation against EREC P2 must not be required.	Primary System Planning Manager	Primary Network Design Manager	Engagement & Resilience Engineer
3 (Secondary System)	The Secondary Network Design manager's capital expenditure limit set by Policy Directive LE6 (*Financial Authority Levels*)	**Constraint** Brief and solution must relate to the **secondary distribution** system only.	Derogation against EREC P2 must not be required.	Secondary System Planning Manager	Secondary Network Design Manager	Engagement & Resilience Engineer

11.3.2 Reference to detailed requirements

Further requirements for this level 2 process and its component level 3 processes will be set in Standard Techniques and Specifications to be issued in the DSO4 series in due course.

11.4 **Implementation Plan**

This is a new process that shall be implemented over the course of financial year 2025/26.

APPENDIX A: GLOSSARY

The following is an excerpt of the DSO Glossary, which is available internally at https://sharepoint.westernpower.co.uk/sites/wpd/dso/public/Lists/DSO%20Glossary.

Term	Definition	Source
Constraint	Distribution **constraint** means any limit on the ability of the licensee's Distribution System, or any part of it, to transmit the power supplied onto the licensee's Distribution System to the location where the demand for that power is situated, such limit arising as a result of any one or more of: (a) the need to not exceed the thermal rating of any asset forming part of the licensee's Distribution System; (b) the need to maintain voltages on the licensee's Distribution System; and (c) the need to maintain the transient and dynamic stability of electricity plant, equipment and systems directly or indirectly connected to the licensee's Distribution System and used by the licensee to operate the licensee's electricity distribution system in accordance with the Act, this licence, or any other requirement of law;	Electricity Distribution Licence - within Standard Condition 31E
Primary distribution	The parts of the distribution system including and upstream of the switchgear on the lower voltage side of each Primary Substation.	
Secondary distribution	The parts of the distribution system including and downstream of the switchgear on the lower voltage side of each Primary Substation.	
Distribution flexibility services	A commercial agreement between the DSO and a **flexibility service provider** to change the electrical behaviour of one or more customers.	

APPENDIX B: SUPERSEDED DOCUMENTATION

This directive supersedes issue 0 of Policy Directive DSO4 (dated August 2023 and titled Distribution System Planning) which has now been withdrawn.

APPENDIX C: KEYWORDS

Network Planning and Development, System Planning, Reinforcement, Load Growth, System Constraints and Network Solutions register, SCaNS