Network Standard

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Supersedes Network Standard (NETWORK) NW000-S0103 Amendment No.0

NW000-S0103 **NS136 ASSESSMENT AND MANAGEMENT OF LOW VOLTAGE PARALLELS**

ISSUE

For issue to all Ausgrid and Accredited Service Providers' staff involved with the management process for low voltage parallels within Ausgrid, and is for reference by field, technical and engineering staff.

Ausgrid maintains a copy of this and other Network Standards together with updates and amendments on www.ausgrid.com.au.

Where this standard is issued as a controlled document replacing an earlier edition, remove and destroy the superseded document.

DISCLAIMER

As Ausgrid's standards are subject to ongoing review, the information contained in this document may be amended by Ausgrid at any time. It is possible that conflict may exist between standard documents. In this event, the most recent standard shall prevail.

This document has been developed using information available from field and other sources and is suitable for most situations encountered in Ausgrid. Particular conditions, projects or localities may require special or different practices. It is the responsibility of the local manager, supervisor, assured quality contractor and the individuals involved to make sure that a safe system of work is employed and that statutory requirements are met.

Ausgrid disclaims any and all liability to any person or persons for any procedure, process or any other thing done or not done, as a result of this Standard.

All design work, and the associated supply of materials and equipment, must be undertaken in accordance with and consideration of relevant legislative and regulatory requirements, latest revision of Ausgrid's Network Standards and specifications and Australian Standards. Designs submitted shall be declared as fit for purpose. Where the designer wishes to include a variation to a network standard or an alternative material or equipment to that currently approved the designer must obtain authorisation from the Network Standard owner before incorporating a variation to a Network Standard in a design.

External designers including those authorised as Accredited Service Providers will seek approval through the approved process as outlined in NS181 Approval of Materials and Equipment and Network Standard Variations. Seeking approval will ensure Network Standards are appropriately updated and that a consistent interpretation of the legislative framework is employed.

Notes: 1. Compliance with this Network Standard does not automatically satisfy the requirements of a Designer Safety Report. The designer must comply with the provisions of the Work Health and Safety Regulation 2017 (NSW - Part 6.2 Duties of designer of structure and person who commissions construction work) which requires the designer to provide a written safety report to the person who commissioned the design. This report must be provided to Ausgrid in all instances, including where the design was commissioned by or on behalf of a person who proposes to connect premises to Ausgrid's network, and will form part of the Designer Safety Report which must also be presented to Ausgrid. Further information is provided in Network Standard (NS) 212 Integrated Support Requirements for Ausgrid Network Assets.

2. Where the procedural requirements of this document conflict with contestable project procedures, the contestable project procedures shall take precedent for the whole project or part thereof which is classified as contestable. Any external contact with Ausgrid for contestable works projects is to be made via the Ausgrid officer responsible for facilitating the contestable project. The Contestable Ausgrid officer will liaise with Ausgrid internal departments and specialists as necessary to fulfil the requirements of this standard. All other technical aspects of this document which are not procedural in nature shall apply to contestable works projects.

INTERPRETATION

In the event that any user of this Standard considers that any of its provisions is uncertain, ambiguous or otherwise in need of interpretation, the user should request Ausgrid to clarify the provision. Ausgrid's interpretation shall then apply as though it was included in the Standard, and is final and binding. No correspondence will be entered into with any person disputing the meaning of the provision published in the Standard or the accuracy of Ausgrid's interpretation.

KEYPOINTS

This standard has a summary of content labelled "KEYPOINTS FOR THIS STANDARD". The inclusion or omission of items in this summary does not signify any specific importance or criticality to the items described. It is meant to simply provide the reader with a quick assessment of some of the major issues addressed by the standard. To fully appreciate the content and the requirements of the standard it must be read in its entirety.

AMENDMENTS TO THIS STANDARD

Where there are changes to this standard from the previously approved version, any previous shading is removed and the newly affected paragraphs are shaded with a grey background. Where the document changes exceed 25% of the document content, any grey background in the document is to be removed and the following words should be shown below the title block on the right hand side of the page in bold and italic, for example, Supersedes – document details (for example, "Supersedes Document Type (Category) Document No. Amendment No.").

KEY POINTS OF THIS STANDARD

Scope and Risks Addressed

This network standard defines the management process for low voltage parallels within Ausgrid and applies to.

- ☐ Underground and overhead LV networks throughout the Ausgrid supply area.

Identification and Management of LV Parallels

The requirements of the standard include the following:

- ☐ Complying with the Electrical Safety Rules
- ☐ The responsibilities of Ausgrid's employees and Contract workers including ASPs when working with LV parallels
- ☐ Assessing the network capacity to operate within design constraints should LV parallels be applied
- ☐ Managing the location and status of LV parallels applied to the network
- ☐ Timely removal of LV parallels

Where to for more information?

Section 5 - 9

Where to for more information?

Section 1, 2

Tools and Forms

None.

Network Standard
NS136
Assessment and Management of Low Voltage Parallels

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1.0 PURPOSE

Network Standard NS 136 defines the management process for low voltage parallels within Ausgrid.

This network standard:

- Clearly defines the responsibilities for the management of Low Voltage parallels within Ausgrid,
- Requires that the status of low voltage interconnection on the LV Network is known at all times,
- Requires that systems be established by both System Control and any Service Provider(s) to effectively manage LV parallels. These systems must support compliance to the item above,
- Requires that the adequacy of LV parallels is satisfactorily assessed prior to installation,
- Minimise the exposure of Ausgrid to damage claims from customers that are a result of LV parallels

2.0 SCOPE

This document covers the minimum requirements for the assessment and management of parallels that are installed on Ausgrid's Low Voltage Network.

It defines the responsibility for the assessment of parallels and responsibility for their installation, removal and management.

3.0 REFERENCES

3.1 General

A list of other documents (standards, codes, acts, annexure, policies and other procedures etc) related to the document being prepared or updated. Internal documents that are referenced are those that are above or at peer level of the document in the document hierarchy.

3.2 Ausgrid documents

- Form – Network Technical Document Endorsement and Approval
- Procedure – Network Technical Document Endorsement and Approvals
- Procedure – Production/Review of Engineering Technical Documents within BMS
- Electrical Safety Rules
- Electricity Network Safety Management System Manual
- NS181 Approval of Materials and Equipment and Network Standard Variations
- NS212 Integrated Support Requirements for Ausgrid Network Assets

3.3 Other standards and documents

- ENA Doc 001-2008 National Electricity Network Safety Code

3.4 Acts and regulations

- Electricity Supply Act 1995(NSW)
- Electricity Supply (General) Regulation 2014 (NSW)
- Electricity Supply (Safety and Network Management) Regulation 2014
- ENA Doc 001-2008 National Electricity Network Safety Code
- Work Health and Safety Act 2011 and Regulation 2017

4.0 DEFINITIONS

Accredited Service Provider (ASP)	An individual or entity accredited by the NSW Department of Planning and Environment, Energy, Water and Portfolio Strategy Division, in accordance with the Electricity Supply (Safety and Network Management) Regulation 2014 (NSW).
Business Management System (BMS)	An Ausgrid internal integrated policy and procedure framework that contains the approved version of documents.
Document control	Ausgrid employees who work with printed copies of document must check the BMS regularly to monitor version control. Documents are considered "UNCONTROLLED IF PRINTED", as indicated in the footer.
Electrical Safety Rules	Document containing the minimum rules to work on or near the company's electrical network.
Network Standard	A document, including Network Planning Standards, that describes the Company's minimum requirements for planning, design, construction, maintenance, technical specification, environmental, property and metering activities on the distribution and transmission network. These documents are stored in the Network Category of the BMS repository.
Review date	The review date displayed in the header of the document is the future date for review of a document. The default period is three years from the date of approval. However a review may be mandated at any time where a need is identified due to changes in legislation, organisational changes, restructures, occurrence of an incident or changes in technology or work practice.

5.0 ELECTRICAL SAFETY RULES

The Electrical Safety Rules require that the System/Area Operator is informed of the installation and removal of all LV parallels. This Network Standard clearly re-inforces that requirement.

6.0 RESPONSIBILITIES

It is the responsibility of:

- System Control to manage all LV parallels for Ausgrid, regardless of who assesses and installs the parallel.
- System Control to ensure a management system is in place that complies with the "Management Systems" section below,
- Service Providers to comply with the requirements laid down in this standard,
- System Control to ensure that all Service Providers comply with the requirements regarding the management of LV parallels,
- System Control to audit the process of LV parallel management, record the results of audits and follow-up on non-conformances,
- The originator of the LV parallel to assess the low voltage network for the electrical capability to adequately support the installation of a LV parallel,
- The originator of the LV parallel to make necessary arrangements for the timely installation and removal of LV parallel,

- The Service Provider that installs and removes the parallel to have a system in place that ensures System Control is informed of the necessary details in order to allow the efficient management of the LV Network.

7.0 ASSESSMENT OF NETWORK CAPACITY

It is essential that the electrical Network be assessed to determine whether the capacity exists to enable the LV parallel to be installed. Particular reference must be made to:

- The ability of the adjacent substations and associated LV distributors to feed the paralleled load without exceeding their assigned rating, for the whole time the parallel is in place.
- The voltage levels at the extremities of the newly formed distributor(s), and that these levels are kept within acceptable limits, for the whole time the parallel is in place.

Additional consideration must be given to:

- Only connecting the minimum number of adjacent substations and distributors necessary to satisfy the capacity requirements for the parallel,
- Identifying cross-zone and cross-power source paralleling points. These must not be closed without the permission of System Control

There is a small risk of the low voltage parallel feeding into a high voltage feeder fault (LV backfeed through a transformer). This condition arises when some of the relevant protection devices fail to isolate a fault from all sources of supply. In configuring the LV parallel, the following measures (singularly or in combination) shall be considered, and implemented wherever practicable:

- Locate all paralleling substations on the same feeder section that is protected by a protective device (eg the same UG feeder panel, or the same OH feeder section protected by a recloser), so that if a protective device operates, all paralleling substations become de-energised.
- Use an MG set, instead of LV parallel, to support the load where feasible.
- In all cases, keep the duration of the LV parallel as short as possible, and as a minimum achieve the targets set in Section 9 “Parallel Installation and Removal”.

8.0 MANAGEMENT SYSTEMS

System Control shall ensure that there is a management system for LV parallels, and that any Service Provider installing parallels complies with the system.

The management system for LV parallels must contain as a minimum:

- A record of every parallel nominated to be installed and installed, the installing service provider, when it was installed, and an itemised listing of every switching point in the parallel,
- A record confirming the installation of each point in the parallel,
- A record confirming the removal of each point in the parallel,
- A central record of all LV parallels (on a point by point basis) that are in place on the LV Network at any time,
- Procedures to be followed during storm conditions to ensure all information is recorded,
- A system of follow-up to ensure parallels are removed in accordance with the targets set in the section “Parallel Removal”,
- An audit regime to ensure that procedures are being followed and parallels are completely removed. Audits shall be conducted at least twice annually,
- A record of audit results, which includes a record of actual performance against target for “Parallel Removal” targets.

Service Providers shall have a system to manage the LV parallels that they install which complies with the system used by System ControlSuch a system shall contain sufficient detail as is required by the System Control.

9.0 PARALLEL INSTALLATION AND REMOVAL

For all work the parallel shall be installed on the day of the work commencing and shall be removed immediately after restoration of the network that necessitated the need for the parallel.

System Control shall monitor the status of the LV system to ensure these targets are met.

10.0 RECORDKEEPING

The table below identifies the types of records relating to the process, their storage location and retention period.

Table 1 – Recordkeeping

Type of Record	Storage Location	Retention Period*
Approved copy of the network standard	BMS Network sub process Standard – Company	Unlimited
Draft Copies of the network standard during amendment/creation	HPRM Work Folder for Network Standards (HPRM ref. 2014/21250/284)	Unlimited
Working documents (emails, memos, impact assessment reports, etc.)	HPRM Work Folder for Network Standards (HPRM ref. 2014/21250/284)	Unlimited

* The following retention periods are subject to change eg if the records are required for legal matters or legislative changes. Before disposal, retention periods should be checked and authorised by the Records Manager.

11.0 AUTHORITIES AND RESPONSIBILITIES

For this Network Standard the authorities and responsibilities of Ausgrid employees and managers in relation to content, management and document control of this Network Standard can be obtained from the Company Procedure (Network) – Production/Review of Network Standards. The responsibilities of persons for the design or construction work detailed in this Network Standard are identified throughout this standard in the context of the requirements to which they apply.

12.0 DOCUMENT CONTROL

Content Coordinator : System Operations Manager

Distribution Coordinator : Senior Engineer – Guidelines, Policies & Standards.

Annexure A – Low Voltage Parallels Process

Table A1 – Low voltage parallels process

Purpose	This document outlines the procedure and process for working with low voltage parallels. It clearly identifies the roles and responsibilities for those who work with low voltage parallels.
Applies to	All Ausgrid staff and contractors who work on or near the low voltage network; all Ausgrid staff and contractors who plan for work to occur on the low voltage network; all Ausgrid staff who are responsible for the management of the low voltage network.
Introduction	This procedure should be read in conjunction with Network Standard 136 – Assessment and Management of Low Voltage Parallels.
Overview	Content: Low voltage parallel process for planned work Low voltage parallel process for unplanned work

Low Voltage Parallel Process for planned work

A1 Introduction

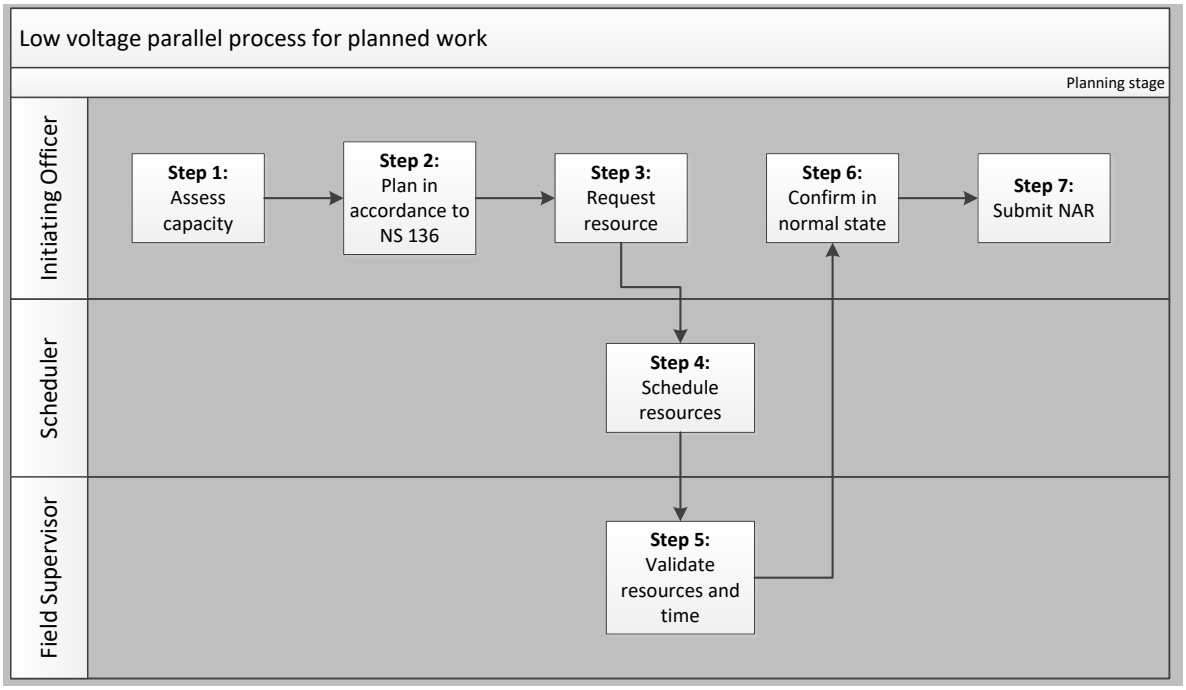
The following stages (Planning, Checking, Installation, Removal, Close out, and Audit) and their relevant steps form the process for working with low voltage parallels for planned work. The description in each step describes the activities required to be completed by the relevant person/role as identified in the 'who' column. All verbal communications with the control room must be through official telephone numbers or the GRN (Government Radio Network) when out of range.

A2 Planning stage

The planning stage happens several weeks before the work is due to occur, or in the case of urgent works, the day before or the day of works.

Step	Who	Description
1	Initiating officer	Assess if capacity exists to enable the LV parallel to be installed – using the Low voltage parallel guide.
2	Initiating officer	Plan for parallels to be installed and removed in accordance with NS136.
3	Initiating officer	Request resources for the installation and removal of parallels – noting time requirements.
4	Scheduler	Schedule resources for the installation and removal of parallels.
5	Field Supervisor	Validate resources and time requirements to install and remove parallels.
6	Initiating officer	Confirm via desktop exercise that nominated parallels are in normal state.
7	Initiating officer	Submit Network Access Request (NAR) nominating LV parallel points – using NSEC007 Submitting SRR Tasks, Disconnect and Reconnect and System Alteration Orders.

A3 Process flow

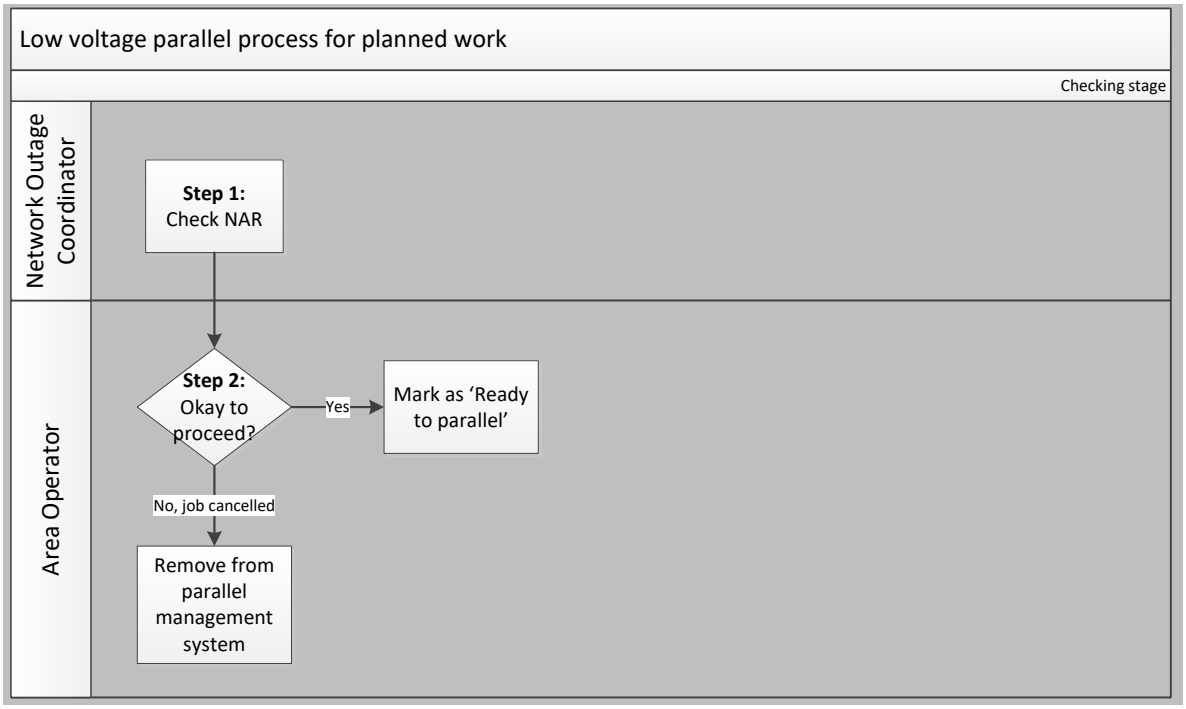


A4 Checking stage

The checking stage happens before the work is due to occur and the timeframe is covered as part of the System Control planned work process.

Step	Who	Description
1	Network Outage Coordinator	Check NAR and ensure that low voltage parallels are in the system.
2	Area Operator	Check if job is okay to proceed the day before and mark low voltage parallels as 'Ready to Parallel'. If job is cancelled, ensure that the parallels are removed from parallel management system.

A5 Process flow

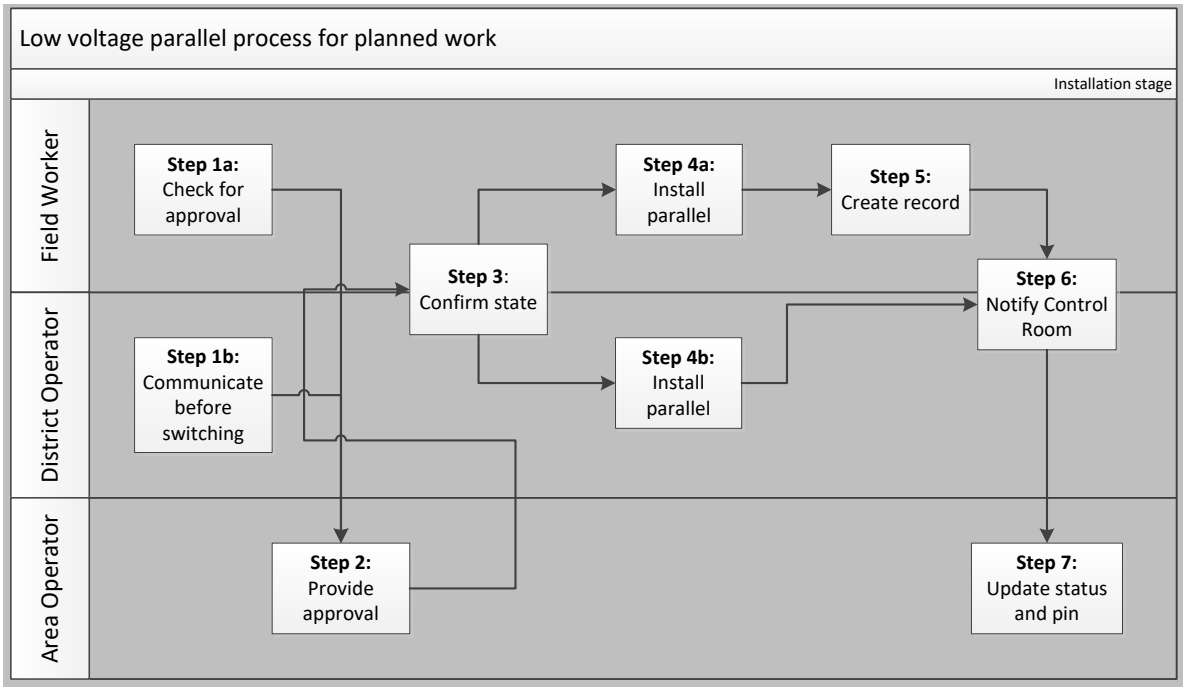


A6 Installation stage

The installation stage happens on the day of the planned works.

Step	Who	Description
1a	Field Worker	Check with Control Room for approval before installing parallels.
1b	District Operator	Communicate with Control Room before the commencement of switching.
2	Area Operator	Provide field worker with approval for the installation of parallels.
3	Field Worker & District Operator	Check and confirm as found state of nominated parallels.
4a	Field Worker	Install parallels. If nominated parallels found in abnormal state: - Stop, escalate to Control Room and notify initiating officer.
4b	District Operator	Install parallels nominated for District Operator. If nominated parallels found or notified by Field Worker to be in abnormal state: - Stop, investigate, contact Control Room and rectify. If not possible, cancel job
5	Field Worker	Create record of installing parallels.
6	Field Worker & District Operator	Notify Control Room of parallels installed.
7	Area Operator	Receive notification from Field Worker or District Operator that parallels have been installed. Investigate and create abnormality report if required. Update status of low voltage parallels as 'In parallel' Pin the centres that are in parallel for planned work that goes over a day.

A7 Process flow

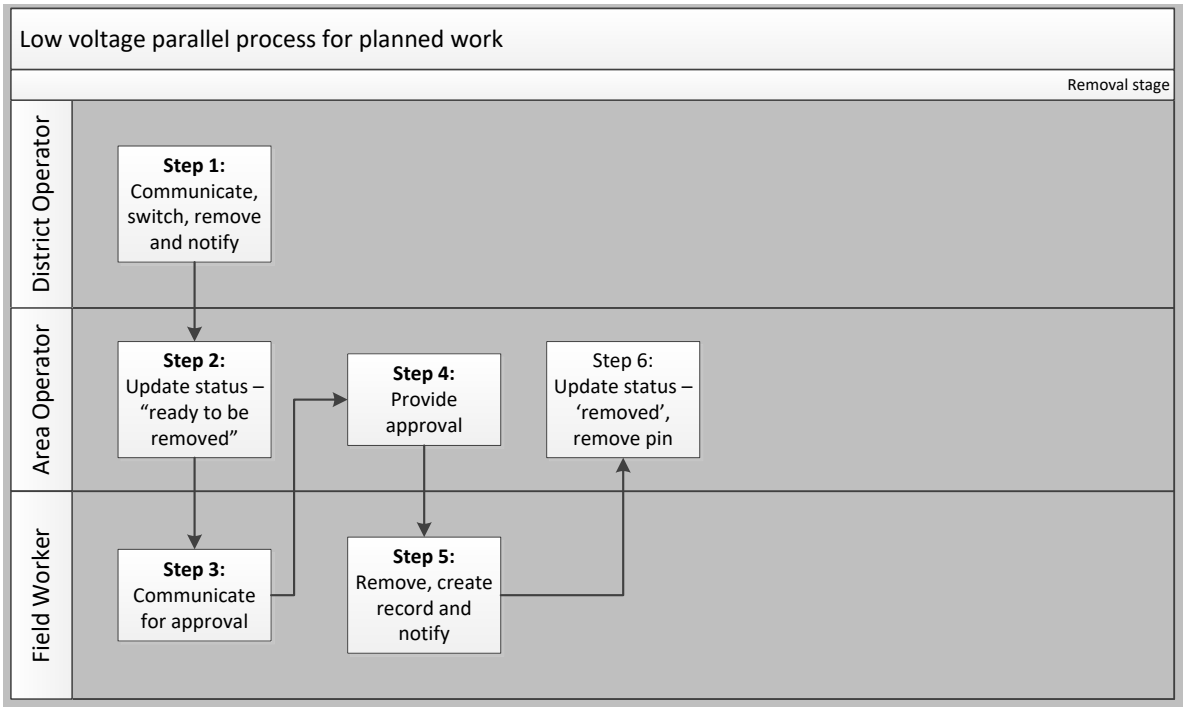


A8 Removal stage

The removal stage happens immediately after restoration of the network that necessitated the need for the parallel.

Step	Who	Description
1	District Operator	Communicate with Control Room before commencement of restoration switching. Carry out switching. Remove parallels nominated for District Operator. Notify Control Room of parallels removed or need to be removed by others.
2	Area Operator	Receive confirmation from District Operator that switching has occurred and low voltage parallels are ready to be removed. Update status of low voltage parallels as 'Ready to be removed'.
3	Field Worker	Communicate with Control Room for approval before removing parallels.
4	Area Operator	Provide Field Worker with confirmation for the removal of parallels.
5	Field Worker	Remove parallels. Create record of removing parallels. Notify Control Room of parallels removed.
6	Area Operator	Receive notification from field worker that parallels have been removed. Update status of low voltage parallel as 'LV parallel complete'. Remove pins from the centres that were in parallel.

A9 Process flow

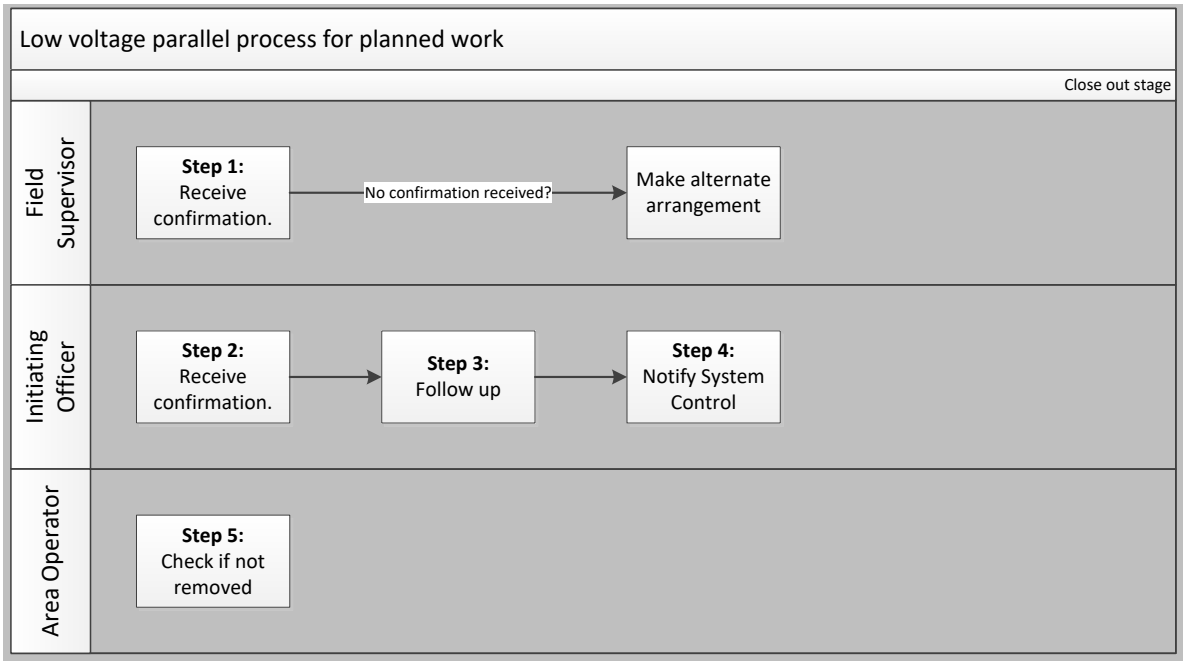


A10 Close out stage

The close out stage happens after the planned works have occurred, and the purpose of the stage is to ensure that parallel works have been carried out according to the plan, and that parallels have been removed within the timeframe.

Step	Who	Description
1	Field Supervisor	Receive confirmation from Field Worker that parallels installed/removed. Make alternate arrangements for other crews to remove parallels if not completed by scheduled crew.
2	Initiating Officer	Receive confirmation from Field Supervisor that installation and removal of parallels completed.
3	Initiating Officer	Follow up if confirmation not received within timeframe set out in NS136.
4	Initiating Officer	Notify System Control if parallels need to stay in longer than originally anticipated.
5	Area Operator	As part of daily duties, check with initiating officers if parallels not removed within timeframe set out in NS136.

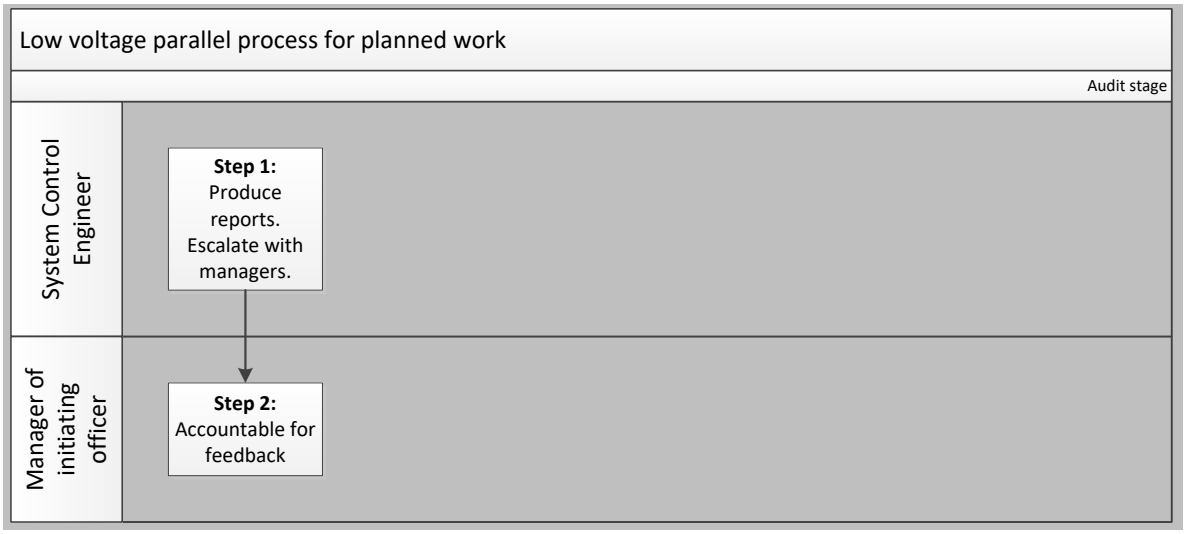
A11 Process flow



A12 Audit stage

Step	Who	Description
1	System Control Engineer	On a weekly basis, produce reports. Escalate parallels with managers of initiating officers.
2	Manager of Initiating Officer	Accountable for providing feedback to low voltage parallel data audit and holding initiating officer responsible for parallels.

A13 Process flow



Low voltage parallel process for unplanned work

A14 Introduction

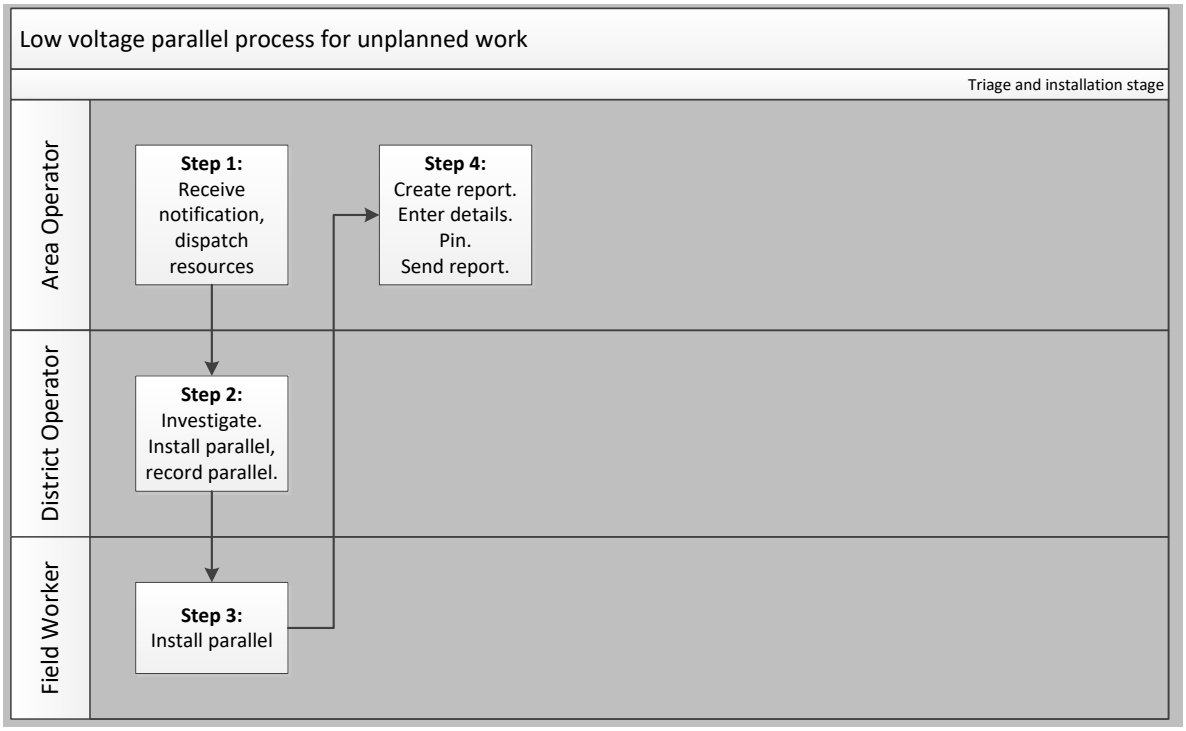
The following stages (Triage and installation, Repair and restore, Removal, Close out and Audit) and their relevant steps form the process for low voltage parallels for unplanned work. The description in each step describes the activities required to be completed the by relevant person/role as identified in the 'who' column.

A15 Triage and installation stage

The triage and installation stage can occur at any time before the work occurs, as faults can occur at any time

Step	Who	Description
1	Area Operator	Receive notification of no supply. Dispatch resources (usually a District Operator) to investigate.
2	District Operator	Investigate fault/no supply. In conjunction with Control Room, restore supply via switching, utilising field worker if required. Record parallels on permit or switching tag, issue access permit if required. Provide Control Room with information recorded on permit or switching tag.
3	Field Worker	Install LV parallels under the direction of Control Room/District Operator. Create record of installing parallels.
4	Area Operator	Create interruption and defective mains and apparatus report, record parallels installed. Enter details of parallels into parallel management system, and record ID# from parallel management system on defective mains and apparatus report. Pin the centres that are in parallel. Send defective mains and apparatus report to resolver group.

A16 Process flow

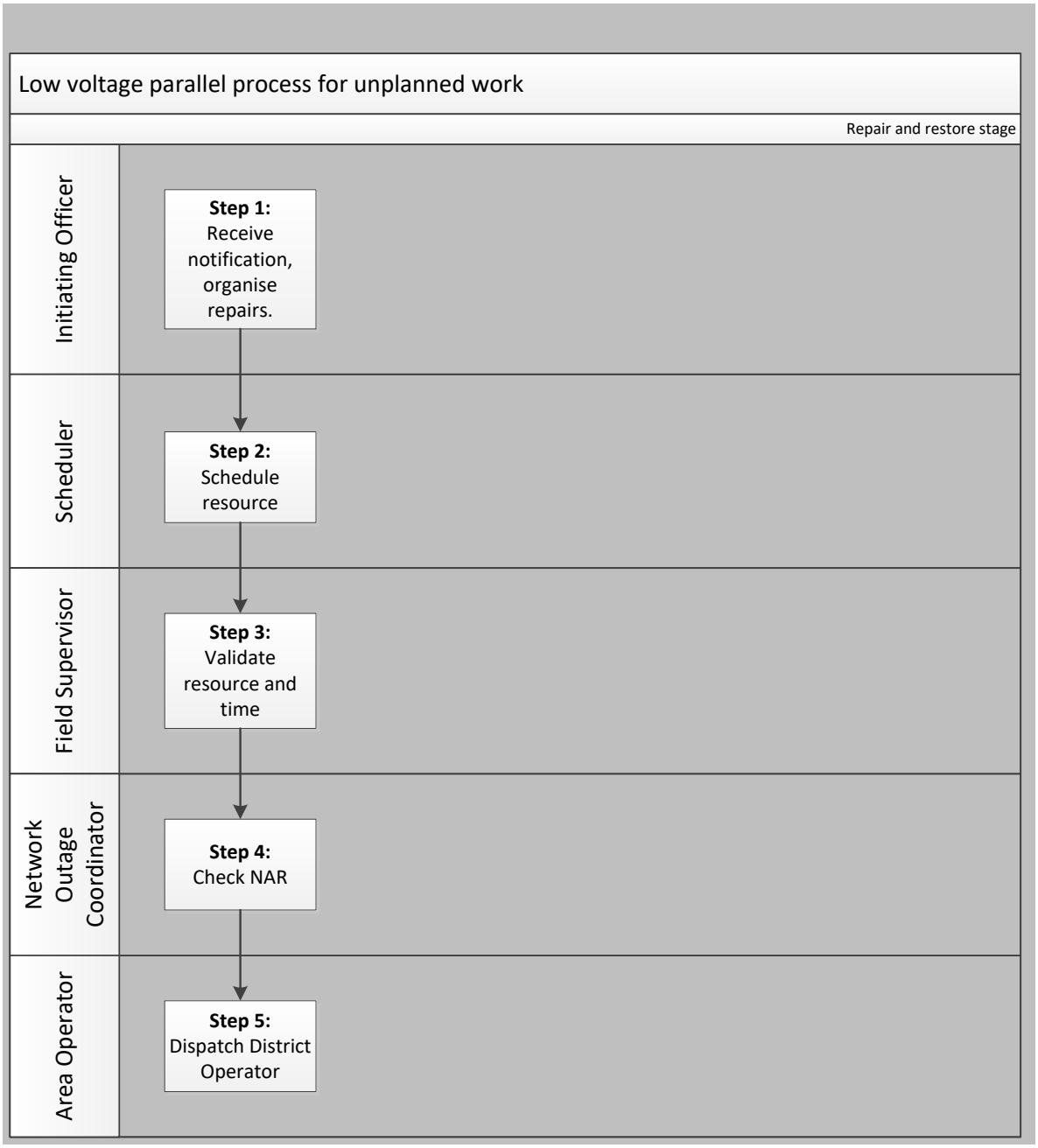


A17 Repair and restore stage

The timeframe around the repair and restore stage may vary due to the category of the fault (HV or LV), and complexity of the repairs.

Step	Who	Description
1	Initiating Officer	Receive notification of defective mains and apparatus (DMA) – including permit details and parallels installed. Organise repairs and return to service by submitting Network Access Request (NAR) for work for DMA over three days. Request for field resources for the removal of parallels – noting time requirements for parallels.
2	Scheduler	Schedule resources for the removal of parallels.
3	Field Supervisor	Validate resources and time requirement to remove parallels.
4	Network Outage Coordinator	Check NAR and ensure that low voltage parallels are in the system.
5	Area Operator	Dispatch District Operator to return defective mains and apparatus to service.

A18 Process flow



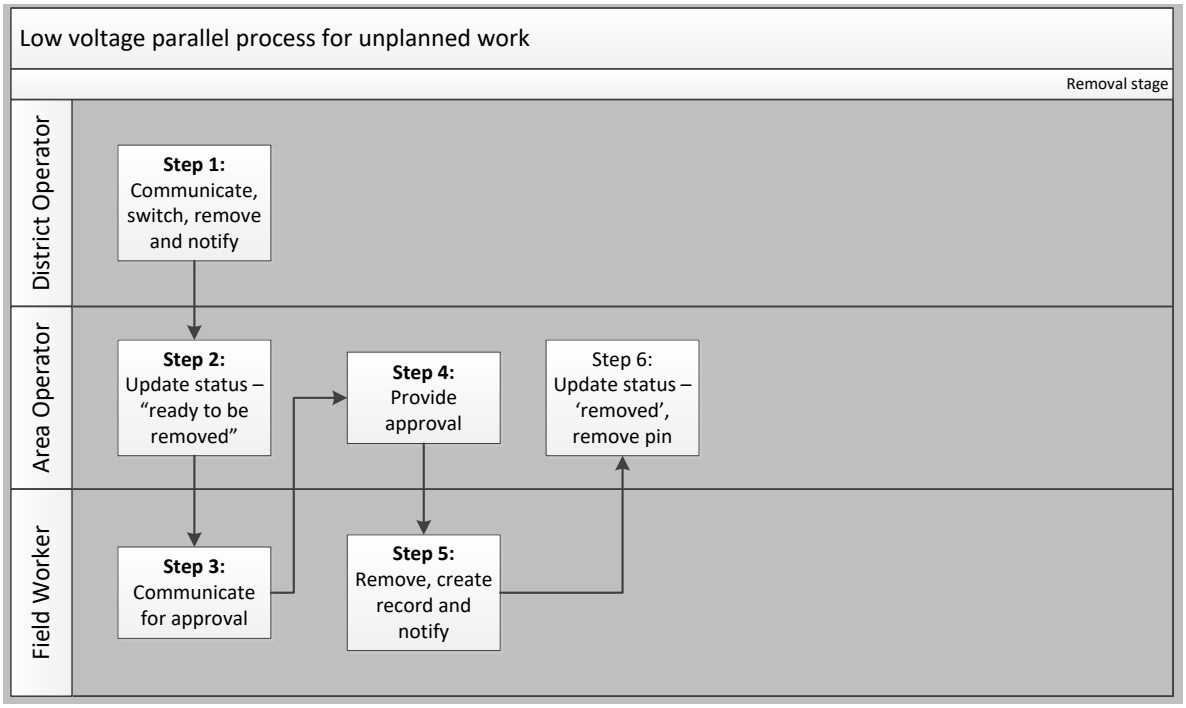
A19 Removal stage

The removal stage happens on the day the defective mains and apparatus are returned to service. The steps are identical to the removal stage for planned works.

Step	Who	Description
1	District Operator	Communicate with Control Room before commencement of restoration switching. Carry out switching. Remove parallels nominated for District Operator. Notify Control Room of parallels removed or need to be removed by others.

Step	Who	Description
2	Area Operator	Receive confirmation from District Operator that switching has occurred and low voltage parallels are ready to be removed. Update status of low voltage parallels as 'Ready to be removed'.
3	Field Worker	Communicate with Control Room for approval before removing parallels.
4	Area Operator	Provide Field Worker with confirmation for the removal of parallels.
5	Field Worker	Remove parallels. Create record of removing parallels. Notify Control Room of parallels removed.
6	Area Operator	Receive notification from field worker that parallels have been removed. Update status of low voltage parallel as 'LV parallel complete'. Remove pins from the centres that were in parallel.

A20 Process flow

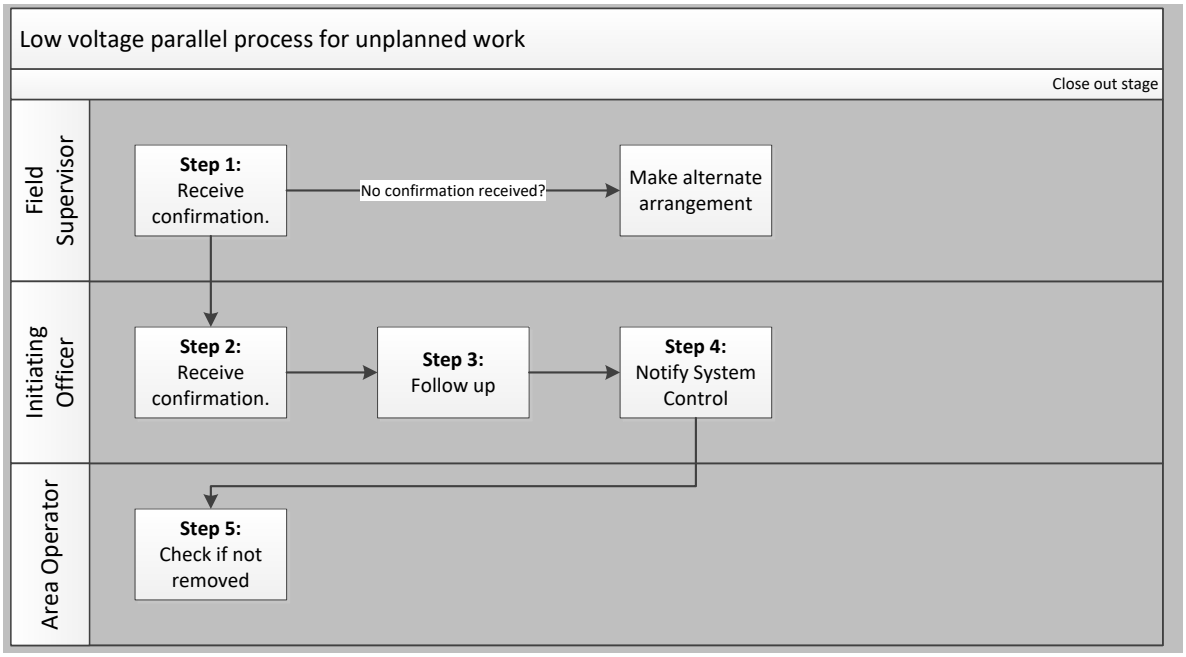


A21 Close out stage

The close out stage happens after the restoration for defectives have occurred, and the purpose of the stage is to ensure that parallel removal have been carried out according to the plan, and that parallels have been removed within the timeframe.

Step	Who	Description
1	Field Supervisor	Receive confirmation from Field Worker that parallels are removed. Make alternate arrangements for other crews to remove parallels if not completed by scheduled crew.
2	Initiating Officer	Receive confirmation from Field Supervisor that removal of parallels is completed.
3	Initiating Officer	Follow up if confirmation not received within timeframe set out in NS136.
4	Initiating Officer	Notify System Control if parallels need to stay in longer than originally anticipated.
5	Area Operator	As part of daily duties, check with initiating officers if parallels not removed within timeframe set out in NS136.

A22 Process flow



A23 Audit stage

The audit stage is similar to the audit stage for planned work but will require coordination by the System Control Engineer as part of the returning defective mains and apparatus procedure to determine the initiating officers responsible for organising repairs and return to service.

Step	Who	Description
1	System Control Engineer	On a weekly basis, produce reports. Escalate defectives with managers of initiating officers responsible for organising repairs and return to service.
2	Manager of Initiating Officer	Accountable for providing feedback to low voltage parallel data audit and holding initiating officer responsible for parallels.

A24 Process flow