



Commissioning/decommissioning - policy and process

Abridged version created to illustrate third party
asset owner requirements

T R A N S P O W E R A P P R O V E D S T A N D A R D

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If you would like to make suggestions to improve this document, please use the "Controlled Document Feedback Form" located at the rear of this document or online via the Controlled Documentation homepage of the Transpower website at www.transpower.co.nz

REVIEW DATE

This document is due for review not later than February 2009.

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1. PURPOSE

The purpose of this abridged document for third party asset owners is to provide an outline of the process to follow through:

- commissioning (4 stages):
 - planning
 - prior to commissioning
 - during commissioning
 - on completion of commissioning; and
- decommissioning.

This document encompasses the entire commissioning process that Transpower follows when commissioning a:

- third party's asset¹; or
- Grid Owner asset that has a significant impact on the power system.²

The document contains the information in the form of process flow charts and as role responsibilities.

2. POLICY

2.1 General

The policies in this standard only cover requirements relevant to the commissioning/decommissioning process.

Each asset owner is responsible for meeting all other equipment connection requirements as set out in Section III of Part C and Technical Code A of Schedule C3, Part C of the Electricity Rules and regulations (EGRs).

Note: For equipment additions and changes that can affect the power system and require the use of the commissioning process, the asset owner must have prior approval from the System Operator, to confirm those additions/changes meet the requirements of Technical Code A of the EGRs before the commissioning process can be implemented.

Technical Code A also includes the following obligations on the System Operator:

2.4 System operator responsibilities

The system operator will give the assessment referred to in 2.2.2* within a reasonable time frame of the request and will supply the asset owner with all information which supports its assessment. Any permission granted by the system operator to any asset owner to conduct commissioning of any asset or configuration of assets shall permit

¹ Where the asset does not have a significant impact on the power system, a simplified version of this process will apply with respect to interaction required with the System Operator. The asset owner should contact the System Operator as to what is required.

² In such cases the Grid Owner must follow the relevant parts of the process (as jointly determined by the parties). This includes following the During Commissioning process and ensuring the ACS, test programme and secondary systems information obligations are met. Where the asset does not have a significant impact on the power system, the process defined in the Transpower commissioning/decommissioning service requirements (TP.SS 07.31) should be used.

* 2.2 Requirements on asset owners for assets to be connected to the grid

All asset owners will provide the system operator with an asset capability statement, and any other information reasonably required by the system operator, to allow the system operator to assess compliance of its asset or any configuration of assets with the requirements of the asset owner performance obligations and technical codes at each of the following times:

2.2.1 During the planning stage

Prior to the completion of planning for the construction of that asset or configuration of assets; and

2.2.2 Prior to the commissioning

At, or prior to, the completion of construction but prior to the commissioning of that asset or configuration of assets except that the asset owner will put in place a commissioning plan in accordance with rule 2.6 to minimise the impact of commissioning tests on the system operator's ability to comply with its principal performance obligations and will adhere to this plan during commissioning, unless otherwise agreed to by the system operator.

connection of the asset (or configuration of assets) solely for the purposes of commissioning.

2.2 Criteria for determining when to apply this policy

This policy applies to the following power system equipment:

- (a) all primary equipment;
- (b) protection systems (but not protection settings), but note that;
With modern electronic relays, a setting change may change the functionality of the relay. As a change in relay functionality constitutes a change to the station relay diagram, when setting changes result in a relay functionality change, a commissioning plan is required.
- (c) communications equipment when changes are made to data sent;
- (d) SCADA/RTU systems;
- (e) market, metering and other software systems.

Note: This policy can apply to a connected party's equipment, system and/or processes where changes can have an effect on the delivery of Transpower's transmission services or security, quality and/or reliability of Transpower's transmission system.

A commissioning/ decommissioning project should follow the process outlined in this document when:

- (a) the asset being commissioning is a third party's asset³;
- (b) the Transpower asset has a significant impact on the power system (eg the HVDC, Static Var Controllers (SVC) or Reactive Power Control (RPC)); or
- (c) the Investigations Manager, System Operations, has determined this process should be used.

In all other circumstances the process defined in the Transpower commissioning/ decommissioning service requirements (TP.SS 07.31) should be used.

2.3 Exception to using this policy

In a grid emergency situation, as defined in Rule 4.1 of Technical Code B, Schedule C3, Part C of the EGRs, when urgent equipment, systems or process changes are required and the urgency of the work makes it impractical to follow the defined commissioning process, the commissioning plan and process to be used:

- (a) must be agreed to by all affected parties, and;
- (b) be approved by the System Operations (Real Time) Manager, in consultation with the Investigations Manager.

In all other circumstances the commissioning/ decommissioning process must be followed.

2.4 Criteria for determining when a commissioning plan is required

The asset owner must provide the System Operator with a commissioning plan to the requirements of Rule 2.6 of Technical Code A, Schedule C3, Part C of the EGRs when approved equipment changes result in alterations to:

- (a) the station operating single line diagram;
- (b) the relay/instrument diagram;
- (c) any equipment ratings and/or capabilities;
- (d) the physical connection configuration of equipment, e.g. removal of bus sections, transfer buses, changes to transformer and circuit terminations etc;
- (e) power system control, and/or monitoring systems and/or processes, or;
- (f) the power system is used to test primary or secondary equipment, or;
- (g) there are any other asset changes that may affect the System Operator's ability to plan to comply, or to comply with its principal performance obligations.

³ Where the asset does not have a significant impact on the power system, a simplified version of this process will apply with respect to interaction required with the System Operator. The asset owner should contact the System Operator as to what is required.

Where an asset owner is unsure whether the commissioning or connection of an asset may impact on the System Operator's ability to plan to comply, and to comply, with the principal performance obligations they should contact the System Operator for advice.

3. EXPECTED OUTCOMES

The commissioning/decommissioning process requirements have been met when:

- (a) the relevant contracts between the asset owner and Transpower have been signed (including the new investment agreement);
- (b) planning studies in relation to equipment meeting the requirements of Section III of Part C of the EGRs have been completed before the commissioning of equipment, and its in service operational performance has been verified to comply with its ACS and all AOPOs;
- (c) associated documentation (including planning ACS, pre-commissioning ACS, connection plan, protection settings, SCADA and IT information, commissioning plan and test programme) for equipment has been provided to the System Operator as required by Technical Code A of Schedule C3, Part C of the EGRs;
- (d) the commissioning plan provided by the asset owner has been assessed for power system impact, all affected parties have been consulted, the final plan approved, and its implementation has resulted in no material impact on security, quality and reliability of the power system;
- (e) a final ACS has been provided to the standard requested by the System Operator;
- (f) operational tools updated (SCADA/EMS, SPD etc.);
- (g) all commissioning/decommissioning activities have been safely completed;
- (h) all relevant operating information is available, documentation systems have been updated and distributed to affected parties as appropriate;
- (i) any training and/or new equipment familiarity requirements have been completed.

4. DEFINITIONS

Terms in this guide are used as defined in **TP.OG 45.03** *Dictionary of operating terms*, the **TP.AG 10.02** *Transpower Glossary* and the EGRs. Other definitions are below.

Account Manager:	the person within Customer Services who is the commercial point of contact with Transpower customers
Asset Capability Statement (ACS): (from EGRs)	a statement of capability and operational limitations that applies to specific assets during the normal and abnormal conditions which may arise on the grid, provided to the System Operator in accordance with Technical Code A of Schedule C3 of Part C. Updated by asset owner during commissioning process and supplied at planning, pre-commissioning and post-commissioning stages.
asset owner:	a participant who owns assets used for the generation or conveyance of electricity and persons who operate such assets and, in the case of Part C, includes consumers with a point of connection to the grid
Asset Owner Performance Obligations (AOPO): (from EGRs)	a performance obligation specified in Section III of Part C, with which asset owners must comply for the System Operator to plan to comply and

	comply with its principal performance obligations
Asset Owner (AO) Test Plan:	a document produced by the System Operator to assist asset owners in preparing test plans
Capital Works:	Grid Owner process to enable and manage future upgrade and new build projects on the grid
commissioned:	the operational state of equipment which has undergone the commissioning process
commissioning:	to verify the correct operation of new or modified equipment to a state available for normal operations
commissioning plan:	a document that is used to plan and control the process of connecting new or modified equipment to, or permanently withdrawing equipment from, the power system. This is provided by the asset owner in accordance with Rule 2.6 of Technical Code A, Schedule C3, Part C of the EGRs.
connections contract:	the contract signed by the asset owner and Transpower which sets out the terms covering the connection of the asset owner's assets to the national grid and making the national grid available to convey electricity
decommissioned:	the status of equipment which is permanently disconnected from the power system, made permanently inoperable, and free of any operational identification
decommissioning:	the process by which an asset is decommissioned
Detailed Solution Development (DSD) contract:	the contract signed by the asset owner and Transpower to determine how Transpower evaluates the proposal
dispensation:	<p>From EGRs:</p> <p>an exclusion from compliance with an AOPO or technical code granted by the System Operator in accordance with the process set out in Rule 7 of Section III of Part C, and includes an interim dispensation granted under Rule 1 of Section II of Part I</p> <p>From connection policy:</p> <p>a dispensation has no adverse effect on the performance characteristics or managements of the grid assets or on other connected parties</p>
ems:	energy market services. The reconciliation and metering service provider to the electricity industry
EGRs:	the Electricity Governance Rules and Regulations 2003

Equivalence (from EGRs):	an arrangement put in place in accordance with the process set out in Rule 7 of Section III of Part C
Grid Owner Point of Contact:	acts as the point of contact into the Grid Owner division
New Investment Agreement:	signed by the asset owner and Transpower to enable plant to be constructed that connects to the national grid
pre-commissioning:	the activities carried out prior to Commissioning
project overview document:	a document agreed between by the asset owner and Transpower, as soon as the asset owner is committed to project completion and has signed a new Investment Agreement, which sets out the timeline and expectations during the course of the commissioning process
Real Time Point of Contact:	the person who manages the commissioning activities and acts liaison with the asset owner during real time
Regional Operator:	the person who carries out power system equipment operating and/or control functions to the requirements of the System Operator and Grid Owner and (where agreed) the owner of specific network assets
secondary systems information:	information such as protection settings, SCADA and IT information evaluated by the Grid Owner, and metering as evaluated by ems (energy market services), as part of the Prior to Commissioning stage
System Operator Point of Contact:	acts as the point of contact into the System Operator division. Post commissioning the System Operator Point of Contact is the Transpower liaison with the asset owner
system test: (from EGRs)	a test conducted on assets, with that asset connected to the grid, to assess the interaction of that asset with the grid
Test Plan:	a document that is used to plan and control the process of carrying out system tests on new or modified equipment. This is provided by the asset owner in accordance with Rule 2.6 of Technical Code A, Schedule C3, Part C of the EGRs.
Test Programme:	forms part of, and is used to define the timing of the tests specified in, the Test Plan.
Transpower Project Director:	acts as the liaison with the asset owner for the latter part of the Planning stage and all the Prior to Commissioning stage.

5. COMMISSIONING/DECOMMISSIONING PROCESS

5.1 Overall commissioning process

A diagram to illustrate the high level process for commissioning assets is shown in Figure 1.

5.2 Overall decommissioning process

A diagram to illustrate the high level process for decommissioning assets is shown in Figure 2.

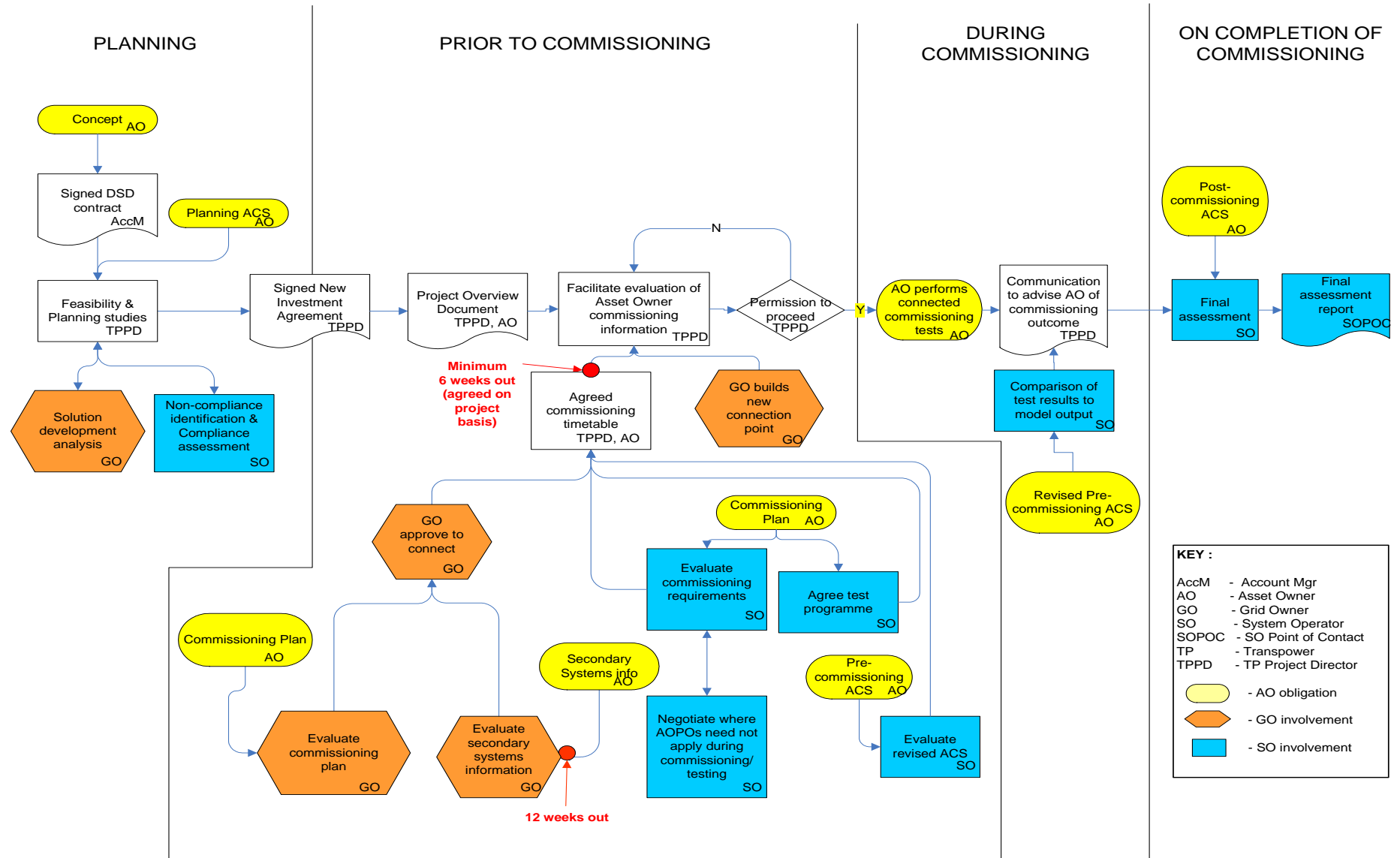


Figure 1

DECOMMISSIONING

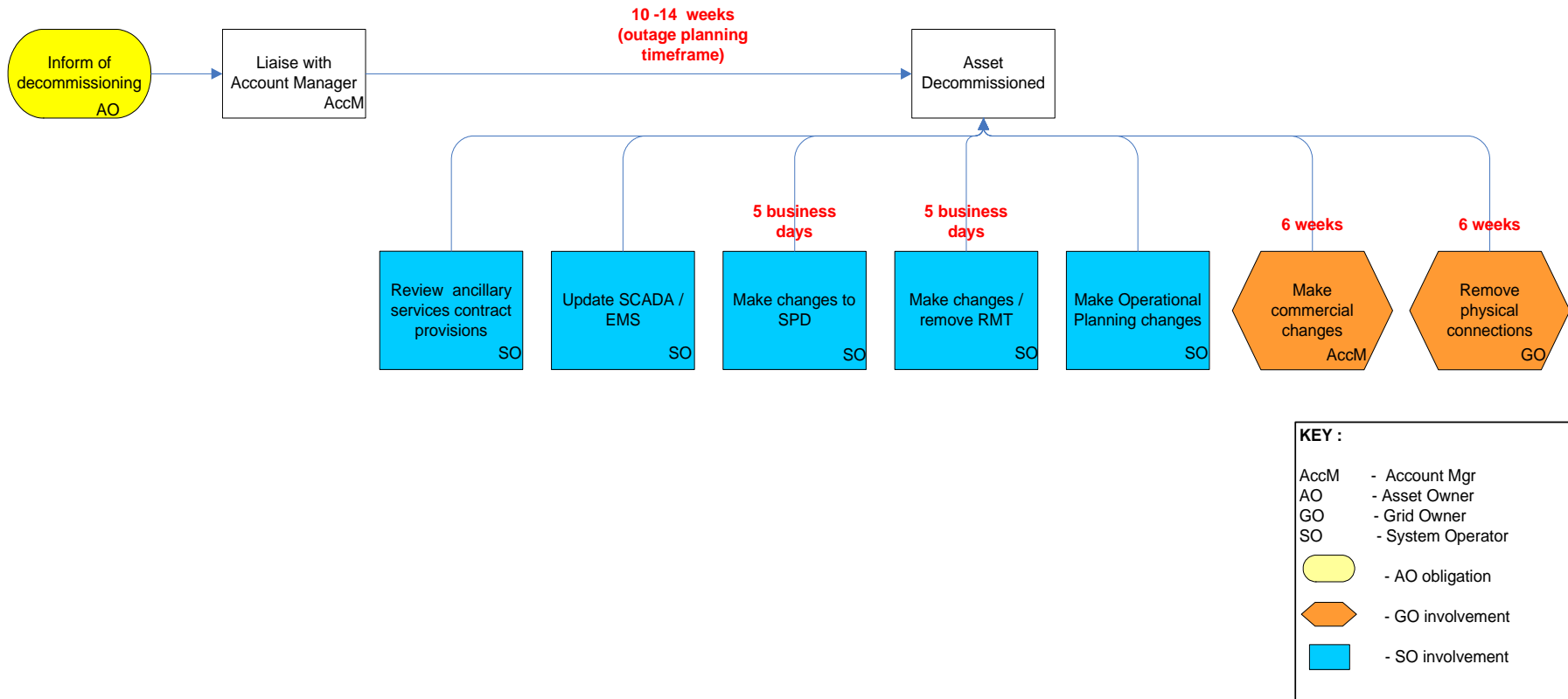


Figure 2

6. RESPONSIBILITIES

This section describes the role required of the asset owner to complete a commissioning project. The tasks the asset owner needs to perform are itemised for each of the stages in the process.

6.1 Asset Owner

Planning

- Develop concept
- Approach Transpower with concept and agree timeline for concept evaluation
- Agree (disagree) to proceed with the initial concept, on receipt of completed study report, and inform Account Manager of decision
- If decision is to proceed then sign a Detailed Solution Development (DSD) contract, including timeline expectations, with Customer Services Manager
- Provide planning ACS to TP Project Director
- Accept (or reject) Grid Owner and System Operator planning reports and inform TP Project Director of decision
- If planning reports have been rejected, inform TP Project Director if want to proceed with development
- If planning reports have been rejected but want to proceed with development, provide additional information to TP Project Director (in the form of an updated planning ACS)
- Sign New Investment Agreement with Customer Services Manager, GM (National Grid) or CEO and give to TP Project Director
- Inform TP Project Director if want to progress development

Prior to commissioning

- Work with TP Project Director to produce project overview document
- Supply commissioning plan to TP Project Director
- Supply secondary systems data to TP Project Director
- Supply commissioning plan and test plan to System Operator mailbox (system.operator@transpower.co.nz)
- Consult with TP Project Director on test plan
- Submit pre-commissioning ACS to System Operator mailbox (system.operator@transpower.co.nz)
- (with Transpower) sign Connection contract
- (with TP Project Director) agree timeline for Commissioning

During commissioning

- Contact either TP Project Director or the Regional operators (@ RoC) when ready to commission
- Agree timing for commissioning with Real Time Point of Contact
- Perform system tests in consultation with System Operations (Real Time), Operations Planning, IT&T Portfolio Manager – Stations & Metering and Regional Operators (@RoCs)
- Supply system test results to Real Time Point of Contact on request
- Complete pre-commissioning ACS (including change sheet) and give to Real Time Point of Contact
- Amend tests or data, following receipt of Transpower report, and supply to Real Time Point of Contact

On completion of commissioning

- Complete post-commissioning ACS and sends to SO Point of Contact
- Apply for dispensation / equivalences to Investigations

Decommissioning

- Inform the Account Manager that plant will be decommissioned

- Liaise with the Account Manager on what is required for decommissioning
- Perform deconstruction of asset (if required)

7. COMMISSIONING/DECOMMISSIONING PROCESS REQUIREMENTS

Abbreviations: SO – System Operator , GO – Grid Owner

7.1 Planning

Data provision

- Customer request form (Asset Owner)
- Planning ACS (Asset Owner)

Analysis

- Evaluation study (Transpower SO & GO)
- Basic feasibility study (Transpower GO)
- Solution Development Analysis (Transpower GO)
- Non-compliance identification (Transpower SO)
- Compliance assessment (Transpower SO)

Reports/Contracts

- Solution study report (Transpower SO & GO)
- Detailed Solution Development contract (Asset Owner & Transpower)
- New Investment Agreement (Asset Owner & Transpower)

7.2 Prior to Commissioning

Data provision

- Notification letter (Asset Owner)
- Commissioning Plan (Asset Owner)
- Secondary Systems information (Asset Owner)
- Test programme (Asset Owner)
- Pre-commissioning ACS (Asset Owner)

Analysis/Construction

- If appropriate, building of the Connection point (Transpower GO)
- Commissioning Plan analysis (Transpower GO)
- Secondary Systems analysis (Transpower GO)
- Commissioning requirements analysis (Transpower SO)
- If applicable, agree on the situations where AOPOs need not apply during commissioning/testing (Transpower SO)
- ACS evaluation (Transpower SO)

Reports/Contracts/Decisions

- Project Overview document, including test plan and test programme (Asset Owner & Transpower)
- Connection Contract (Asset Owner & Transpower)
- Commissioning timeline (Asset Owner & Transpower)
- Permission to proceed (Transpower)

7.3 During Commissioning

Data provision

- ACS change summary sheet (Asset Owner)
- Test results (Asset Owner)
- Updated test programme (Asset Owner)
- Test plan – if amended (Asset Owner)

Analysis/Testing

- If offering IR, check offers received (Transpower SO)
- System tests (Asset Owner)
- Comparison of test results and model outputs (Transpower SO)

Reports/Contracts/Decisions

- Results of comparison of test results and model outputs (Transpower SO)

7.4 On completion of Commissioning

Data provision

- Post-commissioning ACS (Asset Owner)
- Applications for dispensations/equivalences (Asset Owner)

Analysis/Testing

- Final assessment of compliance (Transpower SO)
- Processing dispensations/equivalences (Transpower SO)

Reports/Contracts/Decisions

- Final assessment report (Transpower SO)

7.5 Decommissioning

Data provision

- Decision to decommission (in writing) (Asset Owner)
- Written notice of intention to provide ancillary services (Asset Owner)

Changes made

- Update SCADA/EMS / Market Systems (Transpower SO)
- Changes/removal of RMT (Transpower SO)
- Operational Planning changes (Transpower SO)
- Changes to Commercial documentation (Transpower)
- Removal of physical assets (Transpower GO)

Reports/Contracts/Decisions

- Written notice of asset decommissioned (Transpower)

Project Overview Document

<<Name of Commissioning Project>>
<<Date>>

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Note : Numbers in this table of contents refer to the page numbers in the abridged document for ease of reference.

GENERAL

1.1 Purpose

The Project Overview Document is prepared by Transpower and it identifies the basic requirements for commissioning of equipment owned by connected parties into the National Grid owned by Transpower, in compliance with EGR requirements.

This document will identify information which needs to be exchanged between Transpower (Grid Owner), Transpower (System Operator) and the Connected Party (<<name of asset owner>>) in various areas and facilitate information exchange in a timely manner.

It is essential that the contents of the document be reviewed and agreed to between the three parties involved, prior to commissioning of equipment to be connected to the National Grid.

This is only the first draft of the document; it is a "living" document that reflects the agreed methodology and processes involved in the commissioning of grid equipment. Any agreed changes to the commissioning process during the commissioning period shall be documented.

It is essential that this document:

- is to be kept up to date by both parties during the commissioning process
- is subject to version control.

This document is not a substitute for the commissioning and test plans. The commissioning and test plans are detailed engineering documents whose content is prescribed in the EGR requirements. The Project Overview is aimed for a more general audience and is a means by which the key elements of the project are recorded in one place. Transpower (System Operator) should use the Project Overview document to describe the general scope of their requirements. <<name of asset owner>> should use the Project Overview document to describe the overview of the project and its timelines.

1.2 Version Control

Version number	Author	Date	Reason for revision	Changes made

1.3 *Summary*

1.3.1 Change in Asset Capability

1.3.2 New equipment (inc size) - <<name of asset owner>>

- New Transformers – current and voltage
- Static Var Compensators
- Circuit breakers
- Disconnectors
- High Voltage Bus Systems
- New Generator

1.3.3 New equipment (inc size) - Transpower (Grid Owner)

- New Transformers – current and voltage
- Static Var Compensators
- Circuit breakers
- Disconnectors
- High Voltage Bus Systems

1.3.4 Where and how connected

- Geographic location
- Grid connection point

1.3.5 Key commissioning dates

- Transpower (Grid Owner) equipment
- <<name of asset owner>> equipment

1.4 *Timeline*

Project timeline/Gantt chart attached showing key dates/critical dates and milestones
(**Note** this is not specific to this document)

1.5 Critical Items - “Show stoppers”

Critical Item	Date item was last actioned		Current action pending	Who is responsible for action pending (GO/SO/AO)	Status
Protection					
Indications and Measurements					
Arrangements for Reserves					
Commissioning/ Test Plan					
ACS					
Genco					
SPD / EMS / RMT					
Metering					
SCADA					

1.6 Contacts

Company	Personnel	Contact details	Responsibility

1.7 *Reference Documents/Drawings*

The following list shows common interest documents, not confidential to any party

Reference Documents /Drawings	Version	Date last updated	File location (or attached)

2 INFORMATION REQUIRED BY TRANSPOWER

Report/Document/Contract name and content	Delivery date	Status

3 INFORMATION REQUIRED BY <<NAME OF ASSET OWNER>>

Report/Document/Contract name and content	Delivery date	Status

4 TESTING

Depending on the type and magnitude of tests undertaken, the System Operator is likely to request tests that may have an effect on system voltage and/or frequency are carried out during normal working hours when the system load (hence inertia) is significant. Test will generally be expected to be undertaken between 09:00 and 16:30 to avoid system peak load.

The commissioning/test plan is required to cover:

- Proposed tests to validate relevant dynamic models and/or plant capabilities (eg. plant component responses to step-changes in power/voltage/frequency set-points, plant response to localised 'drop load' events, etc.)
- List of measurement parameters for data capture (electronic data to be provided to Transpower), and an indication of where measurement is physically derived. Sufficient data is required that will allow the System Operator to validate all dynamic models against test results.
- Profiles (time-based) of relevant test signals proposed, generator loading, etc. It is expected these may not be too accurate initially, but we would like to be advised of estimated magnitudes and test durations as soon as possible to assist in system planning.

4.1 <<name of asset owner>> Tests

Proposed test	Prerequisite tests	How test will be carried out	Proposed timing for test

4.2 Transpower (Grid Owner) Tests

Proposed test	Prerequisite tests	How test will be carried out	Proposed timing for test

5 OTHER INFORMATION

5.1 *Dispensations*

Dispensation	From (EGR / Connection Policy)	Status

5.2 *Other Issues which may impact on the commissioning*

-
-
-