

System Operations Division Planned Asset Testing while Connected to the Power System

Document Location Map

- 📁 **Level 3 Document User Domain Procedures**
- 📁 **Engineering Assessment (EA) /Asset Cap**
- 📄 **PR-EA-010 Planned Asset Testing while Connected to the Power System**

Document Status: **Approved**

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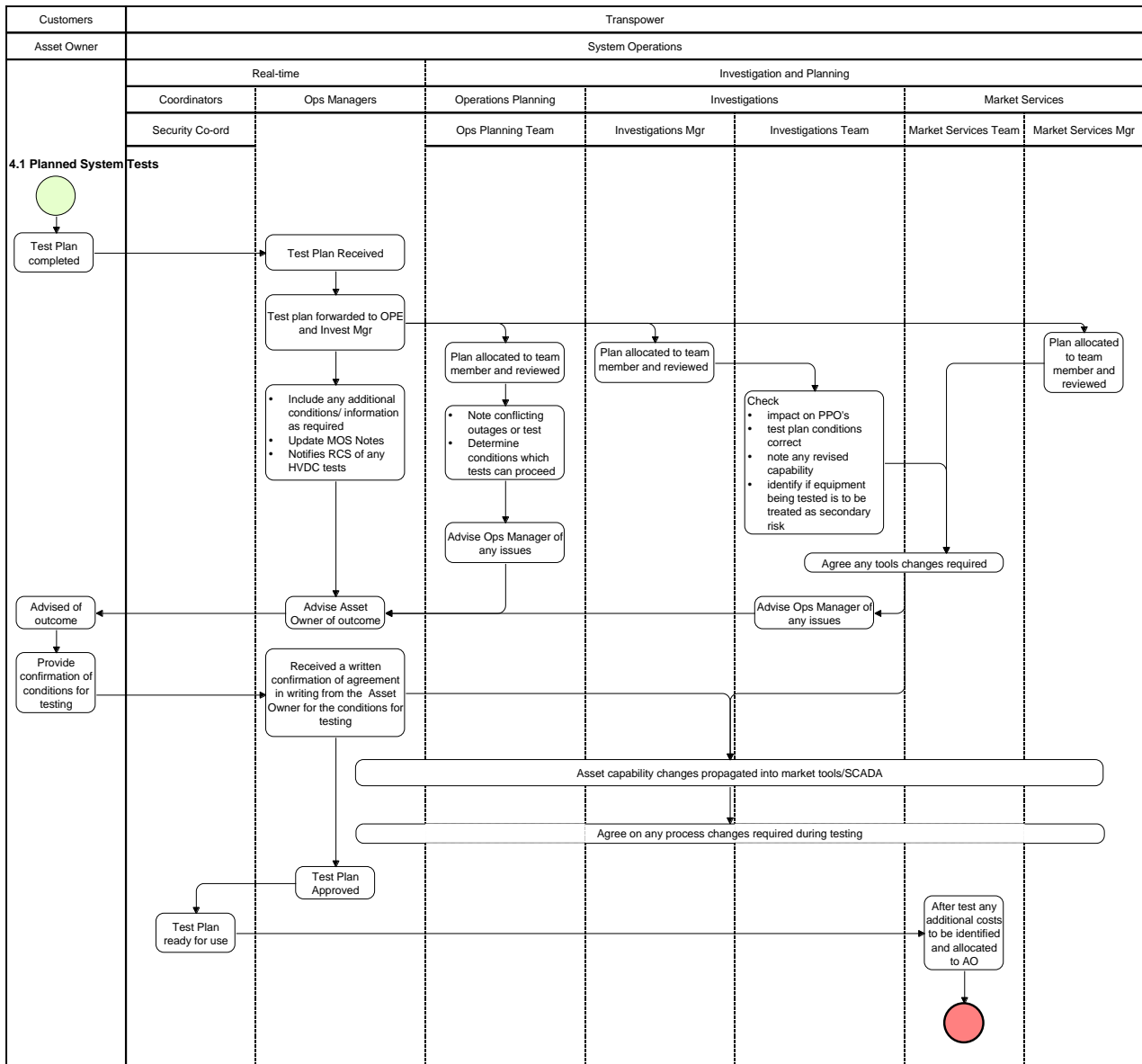
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Revision History

Revision	Date	Change	Section
V01	6/8/07	New Document supersedes TI-DP-019 in part.	
V02	20/11/07	Appendix 5.2: Distributors with demand thresholds now named.	
V03	17/8/11	General update and firming of process	

1 Procedure Summary Diagram



NOTE – The diagram above shows how the process in the Planned Asset Testing while Connected to the Power System; document number PR-EA-010, supports the Engineering Assessment (EA) Macro Process of the DMS.

2 Purpose

Purpose and Objectives This procedure provides a process for managing Asset Owner requests to carry out generator, HVDC and reactive equipment testing while the asset is connected to the power system.

This procedure will also cover the management of agreeing test plans for tests which are identified under the commissioning process which may have a potential impact on system security that an individual test plan is required.

Policy

Asset Owners who wish to perform system tests

- in respect of assets that have already been commissioned onto and remain connected to the power system and which might impact the System Operator's ability for it to meet the PPOs
- must provide to and reach agreement with the System Operator on a test plan for undertaking such tests. The requirement for undertaking a test may arise in planning (non-urgent) or real (urgent) time.

Test Plan Form (Planning time)

The System Operator will agree test plans with Asset Owners who wish to perform system tests to confirm asset capability. Such test plans will be developed by the Asset Owner and submitted in a Test Plan Form for consideration to the System Operator.

The System Operator may approve a test plan, subject to conditions, or decline to approve a test plan.

The Test Plan Form will include a reference to all rules with which the Asset Owner believes it is or may be unable to comply. The System Operator will include any operational process that needs to be established and followed in order for it to be able to meet the PPOs.

Urgent Tests in Real Time

Where an asset owner wishes to urgently perform system tests in real time this is to be managed by the Security Coordinator in liaison with the Asset Owner. The Security Coordinator will only agree to urgent system tests if:

- a) the asset being tested is required to maintain security; and
- b) the Asset Owner will not offer the asset without the test being performed; and
- c) the Asset Owner has submitted a written test plan and the Security Coordinator has had sufficient time to assess such plan and obtain Asset Owner agreement to any conditions required for the test to proceed.

The Security Coordinator must consult with the Duty Operations Manager prior to agreeing that the test can proceed.

As with all system tests the System Operator has the right to not approve the tests if deemed prudent to do so. All communication and conditions related to urgent tests are to be logged in the MOL.

External Policy/ Rules & Regulations

List relevant Code references governing the procedure

- Part 8 Schedule 8.3 Technical Code A Clauses 2(6) and 2(7), 2(8), 2(9)
The Code require Asset Owners to agree Test Plans with the System Operator where they need to perform a test while connected to the power system.

Related Internal Policies, Processes and Procedures

Transpower or DMS Procedures that people must be aware of when they follow this procedure.

[FM-EA-010 Test Plan](#)

[PR-DP-087 Managing Notification of Unplanned Asset Capability Changes \(including ROT\).doc](#)

[PR-EA-026 Dispensations and Equivalence Procedure \(draft\)](#)

[PR-RR-003 Event Reporting and Investigation Procedure](#)

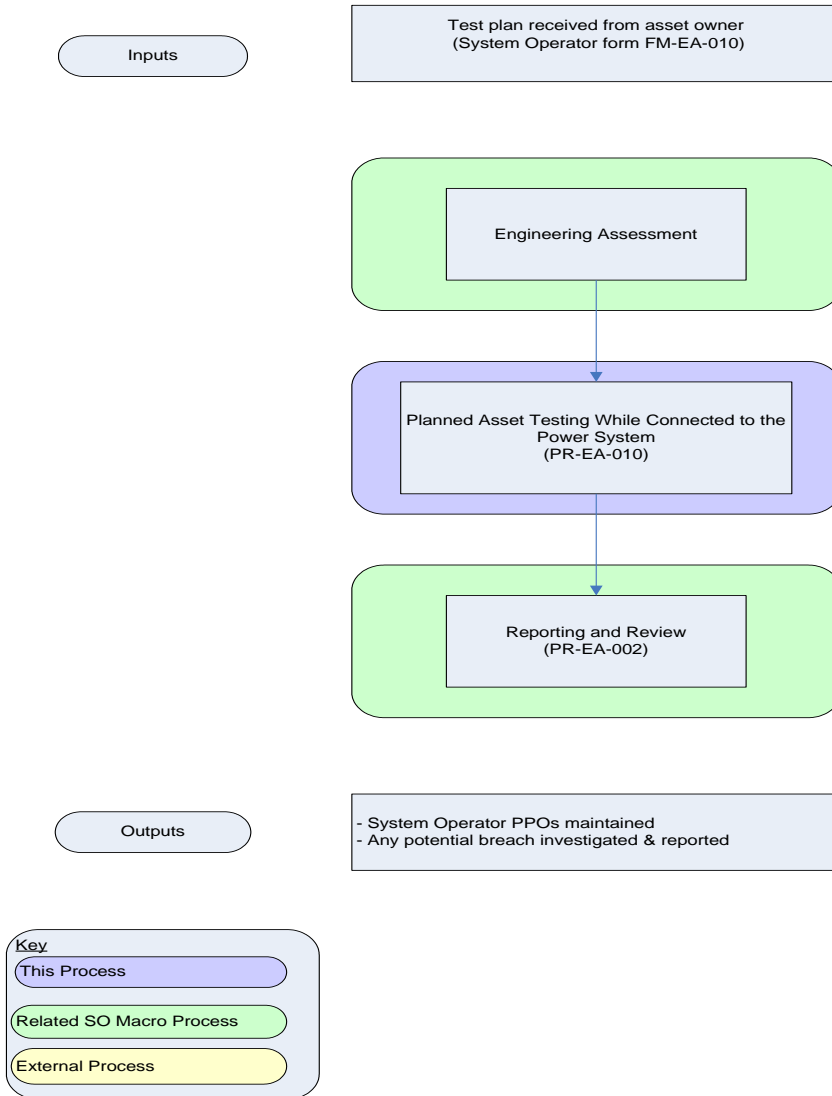
Definitions

Descriptions of acronyms and non-standard or uncommon words specific to this document.

Definition	Description
Code	Electricity Industry Participation Code
PPOs	Principal Performance Obligations

3 Related Procedure/Processes

Process Flow Diagram



4 Procedures

4.1 Planned System Tests

Introduction

Asset Owners who wish to perform planned system tests

- in respect of assets that have already been commissioned onto and remain connected to the power system and which might impact the System Operator's ability for it to meet the PPOs.
- *must* submit a test plan to the System Operator for approval. A Test Plan Form is used for this submission.

Where the Asset Owner is unsure whether a proposed test may impact system security, they are required to contact the System Operator for advice.

A test plan may include advice of a temporary change in asset capability which will only last for the duration of the tests.

If the revised capability during testing or the system tests themselves result in a non-compliance with the Asset Owner Performance Obligations or technical codes, there will be no breach by the Asset Owner provided:

- the relevant rules are detailed in Section 2 of the Test Plan Form
- any operational restrictions, conditions, and processes are detailed in Section 3 of the Test Plan Form
- the Asset Owner follows the test plan
- the test plan (included in the Test Plan Form) has been approved by the System Operator.

Any asset non-compliance with the Code only applies to the relevant Asset Owner Performance Obligations and Technical Codes in Part 8 of the Code. All other obligations of Part 8 and Part 13 continue to apply to the Asset Owner, including the requirement to comply with dispatch instructions.

The Test Plan Form is located in the "Forms" section under documentation, on the System Operator web site <http://www.systemoperator.co.nz/forms> or in the DMS under Engineering Assessment. Document id FM-EA-010.

Tests Planned in Advance of Real Time

The majority of test plans concern tests which the Asset Owner has planned in advance (e.g. as part of routine maintenance or to be able to offer reserves or System Operator requested tests). The System Operator assesses and agrees these test plans outside of the real-time processes. Operational Managers, Operations Planning, the Investigations Group **and, where relevant, Market Services are involved.**

- **Some tests are requested in real time by Asset Owner on the basis that they are urgent. These need to be dealt with initially by the Co-ordinators. This is covered in the next section.**

When the Test Plan Form should be used	<p>The Test Plan Form must be used:</p> <ul style="list-style-type: none">▪ for <u>Generators</u> – generator or synchronous condenser functional or operational control tests, governor or AVR response tests, drop load tests (including that resulting from an on-load headgate trip test)▪ for the <u>Grid Owner</u> – AC or HVDC functional or operational control tests, synchronous condenser AVR response tests, SVC, capacitor and reactor functional or operational control tests▪ for <u>Distributors</u> – load control functional or operational tests where the load change involved may, or will exceed that agreed with each distributor. <p>Refer the table of limits is set out in appendix 5.2 of this document</p> <p>Different formats of support information may be used for tests in addition to the test plan form.</p>
Special provisions relating to distributor drop load testing	<p>The Test Plan Form should also be used in respect of drop load tests. Distributors, being Asset Owners, are required to meet the requirements of clause 2 (6) (c) of Technical Code A of Part 8 when carrying out drop load tests. Distributors are testing the ability to manage loading on their assets at the point of connection.</p> <p>The agreed levels are detailed in Appendix 5.2 of this document.</p>
Exceptions	<p>Testing when not connected to the power system does not require notification to the System Operator.</p>
Asset Owner Requirements	<p>Asset Owner processes for completing the form, including notification timeframes, are set out in the Test Plan Form.</p> <p>Refer Appendix 5.1 of this document for sample Test Plan Form.</p> <p>Prior to the commencement of any proposed test the Asset Owner must notify acceptance of any conditions applied by the System Operator to a proposed test plan. Such notification must be in writing or by e-mail to both the System Operator's NMDData and Operations Manager accounts.</p>
Security Co-ordinator	<p>Responsible for:</p> <ul style="list-style-type: none">▪ Approving urgent system tests, following consultation with the Duty Operation Manager;▪ Managing planned and unplanned tests in real time (includes liaising with Asset Owners, ensuring conditions are agreed to by Asset Owners and are being met during the testing period);▪ Managing the test plan process outside business hours when the need arises▪ Managing the nmdata mailbox
Security Support	<p>Responsible for:</p> <ul style="list-style-type: none">▪ Each morning discussing current days testing with Asset Owners ensuring test plan details still correct.▪ Reviewing tests planned for next day ensuring there are no security issues

Investigations Manager

Responsible for:

- Reviewing the test plan and recording any necessary changes to the asset capability information already received
- Liaising with the Asset Owner as appropriate
- Determining if the equipment being tested is to be treated as a secondary risk and notifies Market Services when the test starts (at least a week before is preferred), when and what level SRT is passed and when the test is completed.
- Determining impact of any equipment/control system changes
- Checking whether Special Provisions notified by the Asset Owner are appropriate
- Determining conditions required for tests to proceed

Operations Planning

- Reviewing the test plan and recording any necessary changes to the asset capability information already received
- Determining potential impact on system
- Determining conditions for tests to proceed.

Market Services

Responsible for:

- Determining what market model changes, if any, are required and effected at the correct time.
- Contributing to resolving any potential market issues associated with tests

Operations Manager

Responsible for:

- Initial assessment of test plans to determine any potential system impacts;
- Determination as to whether to accept a test plan within the two week notice period;
- Forwarding the test plan to the Operations Planning, Investigations and, where relevant, Market Services Manager
- Completing test plan; incorporating feedback from Operations Planning and Investigations Manager; and amending accordingly
- Liaising with the Asset Owner as appropriate
- Finalising conditions for tests to proceed including actions required by SO and the Asset Owners to facilitate meeting conditions
- Ensuring any compliance issues associated with Code Part 13 obligations are resolved prior to testing
- Entering test details and test plan in MOS Notes
- Approving the test plan

Exceptions

Planned changes to asset capability (including those relating to planned commissioning and decommissioning) should be dealt with by notifying the system operator at operations.manager@transpower.co.nz and nmdata@transpower.co.nz

For tests [other than those related to urgent changes, generator load, distributor load, or AVR – see next section], notification to the System Operator must be made at least 14 days in advance to operations.manager@transpower.co.nz and nmdata@transpower.co.nz

Overview of System Operator requirements and Notice requirements

Test Plan Forms are required to be submitted to the System Operator at least 14 days in advance. For test plans submitted in under 14 days, the Operations Manager has the right to decline approval if it is deemed there is insufficient notice to appropriately consult with internal stakeholders. Test Plans are to be sent to nmdata@transpower.co.nz and operations.manager@transpower.co.nz

Evaluation of a Test Plan Form will be based upon system security and power quality impacts on System Operator PPO's.

The final version of a Test Plan Form will be agreed by the Asset Owner and the System Operator taking into account any changes required by the System Operator and agreed to by the Asset Owner.

Inputs

Test Plan Form submitted by Asset Owner.

Note that these are normally sent directly to the Operations Manager and nmdata e-mail accounts

Outputs

- Test Plan Form completed including terms and conditions
- E-mail or letter from Asset owner confirming agreement to final version of Test Plan Form (verbal notification is acceptable if no written confirmation has been received prior to testing)
- Asset owner charged for additional costs where non-compliance has been identified
- System Operator PPOs maintained and Asset Owner able to complete the testing

Note: the System Operator will endeavour to process Test plans within 10 business days of receipt of test plans from Asset Owners.

Checks

On completion of this procedure the following checks are to be carried out to confirm the task has been completed with the expected result.

- Test Plan Form has been correctly completed and agreed in the final version
- Asset Owner invoiced for any additional costs where a non-compliance has been identified

Instructions

Step	Action
1	Asset Owner emails Test Plan Form to the System Operator (operations managers and nmdata mailboxes)
2	Operations Manager forwards Test Plan Form to: <ul style="list-style-type: none"> ▪ Operation Planning Engineer, ▪ Investigations Manager (compliance mailbox). ▪ Market Services Manager if there is a potential Tools, Market, Customer, Compliance or Ancillary Services impact

Step	Action
3	Investigations Engineer reviews the test plan and: <ul style="list-style-type: none"> ▪ Assesses potential impacts on PPOs. ▪ Ensures wording of Test Plan Form conditions is correct and appropriate given any non-compliance ▪ Notes any revised capability and the duration ▪ Identifies if equipment being tested is to be treated as a secondary risk and notifies Market Services when the test starts (at least a week before is preferred), when and what level SRT is passed and when the test is completed. ▪ Agrees with Market Services any tool changes required ▪ Advises Operations Manager of any issues.
4	Operations Planning Engineer reviews the Test Plan Form and: <ul style="list-style-type: none"> ▪ Notes conflicting outages or tests ▪ Determines conditions under which tests may proceed ▪ Advises Operations Manager of any issues.
5	Operations Manager reviews Test Plan Form and: <ul style="list-style-type: none"> ▪ Includes any additional operational conditions/information as required. ▪ Updates MOS Notes as required. ▪ Notifies RCS of any HVDC tests (includes ROC viewing of applicable MOS notes)
6	Operations Manager advises Asset Owner of the outcome of System Operator's review of Test Plan Form via email or, if email not suitable, by telephone. Note: before the Test Plan Form can be approved the Asset Owner is required to agree in writing to the conditions. Confirmation of agreement is to be emailed to the Operations Managers mailbox and the nmdata mailbox.
7	Changes in asset capability are then propagated into market tools/SCADA using the current System Operator processes for managing offer changes. Operations Manager, Investigations Manager and Market Services Manager ensure information is updated in SCADA/EMS, market tools etc
8	Operations Manager/ Investigation Manager/ Market Services Manager agree any process changes required as a result of tool changes made for the duration of the testing.
9	At the conclusion of the testing Market Services arranges for any additional costs to be identified and allocated to the Asset Owner.

4.2 Urgent System Tests

Introduction

For short notice requests by Asset Owners for urgent system tests and/or notification of Risk of Trip, refer document [PR-DP-087 Managing Notification of Unplanned Asset Capability Changes \(including ROT\).doc](#).

The Security Coordinator will only agree to urgent system tests if:

- a) the asset being tested is required to maintain security; and
- b) the Asset Owner will not offer the asset without the test being performed; and
- c) the Asset Owner has submitted a written test plan and the Security Coordinator has had sufficient time to assess such plan and obtain Asset Owner agreement to any conditions required for the test to proceed.

The Security Coordinator must consult with the Duty Operations Manager prior to agreeing that the test can proceed. Such tests will be managed in real time by the Security Coordinator.

4.3 Commissioning

Introduction



Refer commissioning procedure TPOG 41.04

During commissioning of assets there will be requirements for test plans to be submitted and processed in conjunction to or post approval of a commissioning plan.

Such requirements will generally relate to specific tests to be carried out during the commissioning period where in the view of the System Operator the proposed tests could impact on the system and require real time management by Coordinators. In addition there could be conditions required for the tests to proceed that are not specified in the approved commissioning plan.

5 Appendix

5.1 Test Plan Form

 TRANSPOWER		SYSTEM OPERATOR	
 TRANSPOWER TEST PLAN FORM			
About This Form:	For use when generators, distributors, direct connects and grid asset owners' wish to test plant performance with the plant connected to the power system (perform a system test) or perform a test that may affect the System Operator's ability to manage power system security. Where an asset owner is unsure about whether the testing may impact system security, it should contact the System Operator directly (contact details below) All Test Plan Forms are to be emailed to: mailto:OperationsManager@transpower.co.nz?subject=Test Plan Exceptions Commissioning procedures will need to be followed if commissioning or decommissioning plant.		
Special provisions applying	Special provisions apply in respect of asset owner compliance with its performance obligations and the technical codes in part 8 of the 'Code' during testing (Part 8 clause 8.28 (3) of the 'Code') provided the agreed test plan is strictly adhered to. Note: Asset capability information provided on this form will replace that notified on the latest Asset Capability Statement only for the duration notified on this form, at which point, the ACS will be deemed as correct unless otherwise informed		
Asset Owner Requirements	<ul style="list-style-type: none"> ▪ All Test Plan Forms are required to be submitted at least 14 days in advance. The approval of plans submitted less than 14 days in advance will be at the discretion of the system operator. ▪ Asset capability information provided on this form must be the asset owners best estimate of actual capability ▪ The Test Plan must be agreed before testing can proceed: <ul style="list-style-type: none"> ▪ test plan to be lodged with the Operations Managers (by email) for evaluation and consultation ▪ evaluation of the test plan will be based upon system security and power quality impacts ▪ final evaluation of the plan to be undertaken by both parties and changes made as required ▪ changes/revision in and near to real time to be provided to the duty Security Co-ordinator. ▪ both parties to confirm any conditions applying to testing. Confirmation must be in writing if time permits however can be agreed verbally in and near real time. Written confirmation should be sent to the operationsmanager@transpower.co.nz and nmdata@transpower.co.nz accounts 		
SO Contact Details	Operations Manager Normal hours Monday to Friday, 08:00 to 16:30 Email operationsmanager@transpower.co.nz Phone (07) 843 0618 or TPSN 6303 After hours – call Security Co-ordinator	Security Co-ordinator Email: nmdata@transpower.co.nz Phone: 0800 488 500 or TPSN 6300	Energy Co-ordinator Phone 0800 535 123 or TPSN 6301
Section 1 Asset Owner Contact Information <small>(Asset Owner to Complete)</small>			
Asset Owner Name:		Phone:	
Contact Person:		Fax:	
Date:		Email:	
Completed By:		Signed:	
Designation:			
Section 2 Test Details <small>(Asset Owner to Complete)</small>			
Asset Owner Type	Select from list	Plant Type:	Select from list
Plant Name		Date of Test:	Time of Test:
Description of Temporary Change to Asset Capability during the Test:			Duration of proposed Test:
Details of Test:			
Other relevant operational information			
Consultation with: (Name and Date)		Maximum Total Plant Generation in MW:	
Impact on Asset Owner performance requirements (Part 8 clause 8.28 (3a) of the 'Code')	Enter Description and Rule reference		
Section 3 Evaluation Conditions <small>(System Operator to Complete)</small>			
Daily System Requirements:	At all Times:		
	2 hours Prior:		
	15 minute Prior:		
	Immediately Prior:		
Conditions Applying to Dispatch of Asset During this Test Plan/ Reduced Asset Capability:			
Additional Comments:			

5.2 Agreed distributor demand thresholds

Distributor	Demand Threshold	Other conditions
Vector, Powerco and Orion Distributors	20 MW per 1 minute	<ul style="list-style-type: none"> ▪ For planned controlled changes only ▪ Applies to controlled reduction and restoration ▪ Contact by telephone and advice is load changes and times within which they will occur ▪ Contact to be made 24 hrs prior with follow-up confirmation just prior to load reduction ▪ Operational actions by either party to be agreed. System Operator can request load reduction be halted for system security reasons ▪ Test Plan Form to be completed at the discretion of the parties

6 Document Information

6.1 Metadata

Document ID Information

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<i>Document Status:</i>	Approved
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<i>Frequency of use</i>	Monthly
<i>Level of Risk:</i>	Low

DMS Structure

<i>DMS Level:</i>	Level 3 Document User Domain Procedures
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<i>Process:</i>	Asset Cap
<i>Sub directory(s):</i>	Not Used
<i>Document Complexity Rating</i>	Select from drop down box

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