Retail Market Procedure
MP NI 507
Market Testing Procedure

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Author   : MEPCT

1.   **INTRODUCTION**

1.1   **Purpose**

MP NI 501 Market Entry Process and MP NI 502 Recertification refer to Market Tests to be executed by a Supplier.

This procedure describes the test framework for Market Testing and provides guidance for a Supplier to prepare for and execute Market Testing. The purpose of this procedure is to:

□   Define the overall approach to be adopted for Market Testing;

□   Define the entry and exit criteria for Market Testing;

□   Define the scope and objectives of Market Testing;

□   Identify Supplier responsibilities;

□   Describe how testing will be managed and controlled by the Test Co-ordination Centre (**"TCC"**);

□   Outline the management controls and procedures required for testing.

Testing will be concentrated on the Supplier systems and processes which support day to day operations as obligated within the Market Baseline.

1.2   **Document Structure**

The remainder of the document is structured as follows:

□   **Section 2 – "Scope, Principles and Organisation of Market Testing",** Sets out the scope and principles of Market Testing.

□   **Section 3 – "Entry and Exit Criteria",** describes the criteria that Suppliers must satisfy to enter and complete Market Testing;

□   **Section 4 – "Test Groups and Scripts"**, describes the way test scripts are organised into test groups based on the Retail Market Procedures;

□   **Section 5 – "Test Data and Test Environment Requirements"**, gives an overview of the test data that Suppliers will have to generate and the extent of the test environment and resources which must be made available;

□   **Section 6 – "Testing Process Definition"**, describes the preparation and readiness declaration, test scripts and data, by a Supplier, test scheduling, reporting and witnessing, the handling of any defects, and the way the Exit Report will be produced and signed off;

□   **Section 7 – "Definition of Testing Deliverables"**, describes the content of the test scripts, generic test data, test results and test report;

□   **Section 8 – "Test Management and Control"**, describes the key management activities, controls and procedures that will be used to support Market Testing;

□   **Section 9 -** "**NIAUR"**, describes NIAUR's role during Market Testing

2. SCOPE, PRINCIPLES AND ORGANISATION OF MARKET TESTING

2.1 Introduction

Market Testing is a key part of the overall entry process and is designed to measure the capability of a Supplier to operate in conformance with MRC requirements.

2.2 Scope of Market Testing

The scope of Market Testing includes the following:

□   NI Retail Market Procedures, NI Market Message Implementation Guides, Harmonised Baseline (HBL) Core Components;

□   Supplier installation of the TIBCO messaging application referred to as the Electricity Market Messsaging Application ("EMMA");

□   Supplier use of email and attached message proformas for Unmetered Supply transactions;

□   Suppliers" own operational staff;

□   Simulation of inbound messages by the Supplier; and

□   Use of Market web-site. The

scope of Market Testing will exclude:

□   Error conditions artificially created for exceptions testing.

2.3   **Principles**

Market Testing will be guided by the following high-level principles:

☐   Clearly defined roles and responsibilities will be specified for all roles;

☐   A structured approach to test preparation and execution will be employed;

☐   Effective co-ordination and management of testing, particularly between the TCC and the Supplier, will be required to ensure effective coverage of both business and technical areas of testing;

☐   The Supplier's test environment used for Market Testing will be configured in a manner that replicates that intended for 'live' operations;

☐   A discrete set of acceptance criteria (entry and exit criteria) must be met before Market Testing can be started and completed;

☐   Staff involved in testing will, where possible, be those individuals who are expected to perform the same day to day tasks during live operations;

☐   Progress and issues that are specific to a Supplier will not be discussed with or communicated to any other Supplier.

Market Testing Organisation
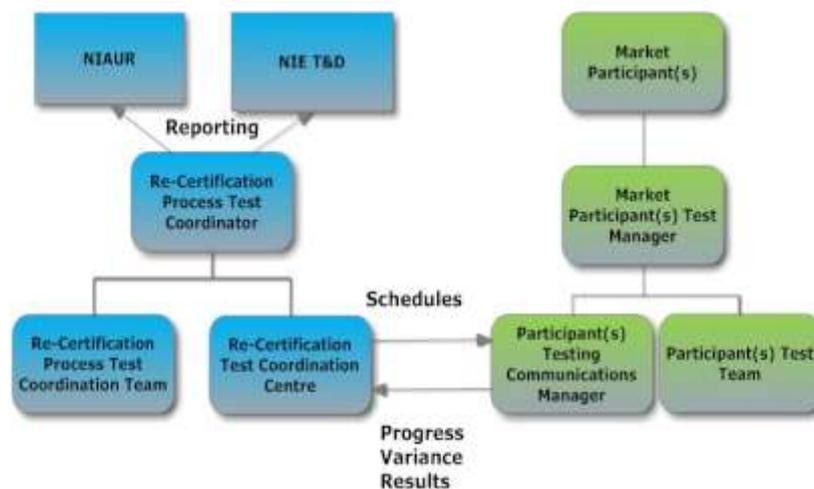
2.4   **Market Testing and the Test Co-ordination Centre (TCC)**

Market Testing support is provided by the TCC on behalf of the Market Entry Process Co-ordination Team ("MEPCT"). The TCC will work closely with the Supplier throughout test execution and be responsible for the following activities:

       ☐   Providing the Supplier with a set of sample inbound messages;

       ☐   Acting as a help desk (in relation to testing) and a single point of contact during testing for the Supplier;

       ☐   Receiving test results and reports from the Supplier and test witnesses;

       ☐   Agreeing defect action plans with the Supplier;

       ☐   Provides advice and guidance to Suppliers on all aspects of governance and baseline understanding;

       ☐   Ensuring that the Supplier is kept informed of any defects; and

       ☐   Monitoring progress.
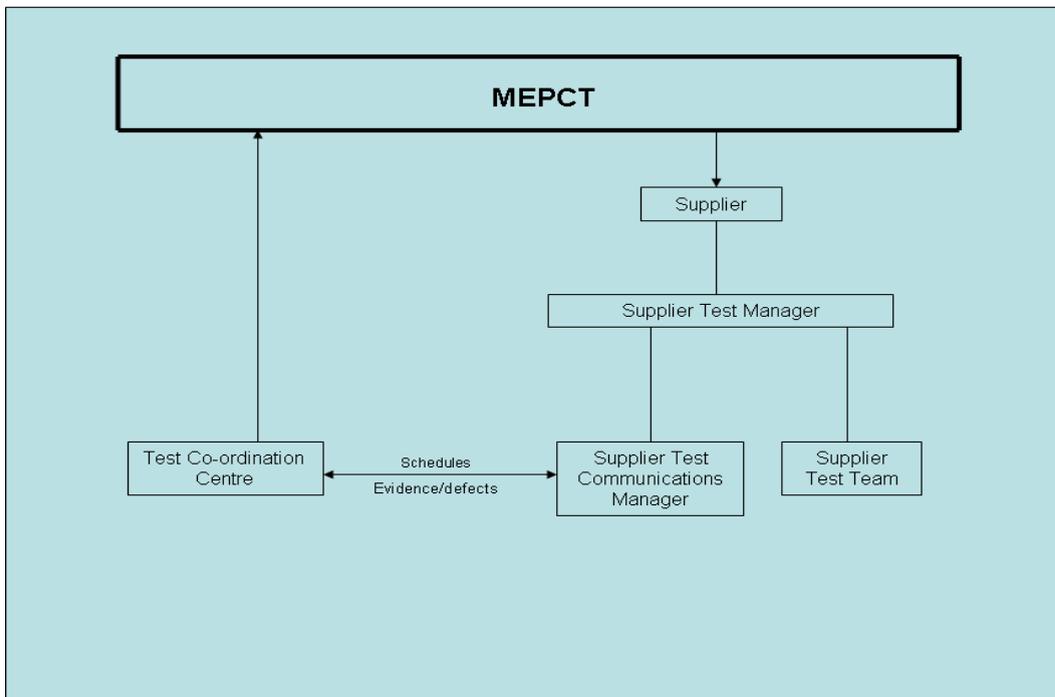
3. ENTRY AND EXIT CRITERIA

3.1 Entry Criteria

Market Testing will be based upon a published version of the baseline which can be supported by NIE and confirmed by TCC.

A Supplier must confirm to the TCC that the following criteria have been met before entering Market Testing:

       ☐   Successful verification of any required data set-up;

       ☐   Completion of Ability Testing and exit report;

       ☐   An ability to send and receive email with pro forma attachments to support Unmetered Supply transactions (where appropriate);

       ☐   Preparation of all necessary physical scripts and test data;

       ☐   Availability of suitable test environment including the set-up of pre-requisite test data;

       ☐   Availability of suitable resources, including representative operational staff to enable successful execution of all testing, reporting and response to variances;

       ☐   Establishment of a test manager/co-ordinator and a single point of contact for the duration of Market Testing, including telephone number(s), fax number and e-mail address; and

       ☐   Availability of local working instructions to support operational business processes.

TCC must satisfy the following criteria before starting Market Testing:

       ☐   Selected Market Test scripts to be available from the Market Entry product set;

       ☐   Test schedule for Market Testing to have been completed and agreed with TCC;

       ☐   Availability of suitable resources, to enable monitoring of all testing, reporting and response to variances; and

       ☐   Establishment of a single point of contact for the duration of Market Testing, including telephone number(s), fax number and e-mail address.

3.2 Exit Criteria

For successful completion of Market Testing it will be sufficient for each script in the schedule to have been executed successfully at least once by the Supplier.

3.3 Market Testing Exit Criteria

To successfully complete Market Testing, the agreed Market Test scenarios/scripts must be completed with not more than the level of defects attributable to the central market systems listed below:

Class	Max no of defects allowed
1	0
2	0
3	10
4	50

4. TEST GROUPS AND SCRIPTS

4.1 Test Groups

Test Groups for Market Testing which are derived from the Baseline and provide a logical grouping for test scripts. A test script describes a complete E2E sequence of actions which may concatenate processes from a number of different market procedures (e.g. registration application with objection raised to opening and closing readings notification).

The list of test scripts to be executed by a Supplier will be communicated by the TCC in advance of the commencement of Market Testing. Subsequent changes to this list may be included as a consequence of the agreed industry change control procedure.

4.2 Test Scripts

All Market Tests to be executed are listed in Market Procedure MP NI 509.

It is expected that the number of logical tests executed by a Supplier will be determined by the market sectors for which the Supplier has applied to trade. Each logical script should be generated as a physical script for execution purposes by the Supplier. For the majority of scenarios one test execution only per role will be required, based upon the most frequent or the most significant business scenarios encountered on a day-to-day basis during market operation.

4.3 Test Execution and Results

A test manager will be responsible for the overall Co-ordination, decision making and management of all testing activities on behalf of the Supplier and should liaise with the TCC representative.

A Supplier is expected to have a test team consisting of appropriately qualified staff. For the testing to work effectively, it is necessary that this team is fully resourced for the duration of Market Testing with operational staff to support the testing. Ideally, those involved in execution of testing should be expected to perform their associated tasks during live operations. A Supplier will be responsible for execution of tests in accordance with the schedule developed by the Supplier. Test Results will be documented by the Suppliers and reported to the TCC. Any defects must also be reported to the TCC, who will seek an agreement with the Supplier on the resolution and possible re-testing. Should a test fail due to a design error or ambiguity then the TCC will undertake an impact assessment to support any recommendation to NIE to resolve the matter.

4.4 Test Reporting

The TCC will collate all test results and evidence returned by a Supplier and will also monitor defects from expected results and monitor their resolution.

On completion of Market Testing, the TCC will produce a report of the completed tests and any defects encountered as part of an Exit Report.

5.   TEST ENVIRONMENT AND TEST DATA REQUIREMENTS

5.1   Test Environment

A test environment will be required to support the scope of Market Testing as documented in section 2 ("Scope, Principles and Organisation of Market Testing").

The test environment provided by the Supplier will use the software and Applications intended for use in their production. Suppliers will be responsible for the following:

- ☐   Provision of an appropriate hardware and software environment;

- ☐   Provision and support of software applications;

- ☐   Populating the above environment with the data required for Market Testing; and

- ☐   Provision of support for the above environment throughout Market Testing.

5.2   Test Data

The Supplier will define the minimum requirements for test data for each test script during Physical Test Script development. These minimum data requirements will be specified to the level necessary to determine the steps to be executed in each test (e.g. MIC, connection voltage, metering class, Energisation status).

The Supplier will be responsible for selecting the Meter Points that meet the test data requirement.

Suppliers will be responsible for the set-up of test data meeting the requirements of the Test Scripts and the Test Data Definition within their systems.

6.   TESTING PROCESS DEFINITION

6.1   Test Schedule Management

Where a Supplier is delayed during execution, or defects are reported which necessitate some regression tests and/or re-execution of failed tests, the TCC will liaise with the Supplier to ensure a timely re-scheduling of all appropriate scripts.   Re-scheduling will be agreed on or before the Business Day prior to that on which testing is due to take place.

6.2   Execution of Tests

The Supplier will be expected to follow the scheduled execution of scripts, ensuring that all successful and unsuccessful actions and irregularities are reported.

6.3   Reporting

As well as reporting any stoppages due to unforeseen circumstances, a Supplier will report on all daily progress to the TCC, as well as providing any necessary supporting evidence at the end of each test.

Whenever a defect is encountered this will be documented and assigned a severity classification by the TCC which will be communicated immediately to the Supplier.

6.4   Daily Wash Up Conference Call

If considered necessary by the TCC at the completion of testing for a scheduled test day the TCC may conduct a Daily Wash Up Conference Call with the Supplier to:

- Review test progress for the day;

- Review Defects that have occurred;
- Confirm Defect Action Plans;

- Review progress against Defect Action Plans;

- Agree re-testing schedules and changes to testing schedules;

- Preview Testing for the following Business Day.

6.5   Witnessing

The TCC will reserve the right to witness any test or parts of a test at the Supplier's site during Market Testing. These visits will be by prior arrangement with the Suppliers with a minimum of one day's notice. The witness facilities required are access to the testers while testing is being performed and a desk within the same building as the testing area, telephone and internet access.

The witness will not seek visibility of any of the Suppliers" internal systems but will ascertain that the actions required by the logical test scripts are being followed in a correct and timely fashion and that the Actual Results are entered correctly and any supporting evidence is attached.

The role of a witness is to help and facilitate the smooth running of testing and should not be considered as an intrusion or hindrance to the Suppliers' normal mode of operation.   During testing, a witness may request copies of test evidence pertaining to those steps witnessed.

6.6   Defect Management

The classification of severity should be as described in section 8.3 ("Defect Logging and Classification").

Responsibility for resolving a defect is dependent on its category, as described below:

- Market Process/documentation errors - the defect will be implemented by the party responsible for the relevant process/document(s).

- Supplier system errors - the defect will be forwarded to the relevant development team or delivery team for correction to the systems or user guide as appropriate on the assumption that the specification is correct.

       ☐   Test Script/Data errors - the defect will be resolved by the TCC by agreement with the Supplier.

       ☐   Execution errors - the Supplier will resolve the error.

All defects logged will be reviewed by the TCC and a Defect Action Plan will be agreed with the Supplier and recorded. Once all defects have been reviewed and agreed they will be assigned for resolution as agreed in the Defect Action Plan.   The Supplier's testing manager should review all Defect Action Plans in severity classes 1, 2 and 3 on a daily basis.

The TCC may change the defect severity or category if necessary.

All defects must be resolved within the agreed timescales and re-tested as scheduled by the Supplier. Once a defect is fixed and the test case tested satisfactorily, the test will be signed-off.

7.   DEFINITION OF TESTING DELIVERABLES

7.1   Logical Test Script

The Logical Test Scripts developed by the TCC will provide step-by-step requirements for each Test Scenario within E2E Market Tests.   Some Test Scenarios may require the execution of multiple Logical Test Scripts.

The Logical Test Script will form the basis for:

       ☐   Test Scheduling;

       ☐   Development of Physical Test Scripts by Suppliers;

       ☐   Progress Reporting;

       ☐   Identification of evidence requirements.

Logical Test Scripts will provide step-by-step process requirements, data requirements and expected results for each Test Scenario. Process Requirements will be generic and based on the Retail Market Procedures. Data requirements will also be generic and specified in accordance with the Baseline.

A Logical Test Script will contain:

       ☐   Identification materials including:

          ☐   Logical Test Script number (unique Test ID);

          ☐   Test Script title;

          ☐   Test Stage (i.e. 'Market Test') and Test Group;

          ☐   Author;

☐   Document name and location;

☐   Document Control: Distribution List and History;

☐   Document references (e.g. to applicable Baseline Procedures and Market Message Implementation Guides);

☐   Test Description : Purpose and Scope;

☐   Responsibilities: TCC and Suppliers;

☐   Pre-requisites;

☐   Status Codes.

☐   Test Data Requirements specifying the minimum data requirements needed to ensure that all steps in the test are executed.

☐   Step-by-step Requirements including:

☐   Test reference / Step number;

☐   Market Supplier responsible for executing step and sending message;

☐   Market Supplier responsible for receiving and verifying message if appropriate;

☐   Message no. and/or type (manual/electronic/email);

☐   Logical Business Day for execution of step, expressed as an offset from the day on which the execution of the Logical Test Script starts;

☐   Instruction as to action to be taken by Market Supplier;

☐   Description of the Expected Results.

☐   A separate Completion Report, to be completed during test execution by the Supplier, including:

☐   Date of completion and status of each step/test;

☐   Identification of tester and of any TCC witness;

☐   Signature of test manager;

☐   Evidence of test results for each test step;

☐   Reference to appropriate Variance Reports;

☐   Additional information.

7.2   **Test Schedule**

The Test Schedule is produced by the Supplier and forwarded to the TCC in advance of Market Testing. It should match the Business Days for the execution of each Logical Test Script, to calendar days taking into account weekends and Bank Holidays.

7.3   **Detailed Test Progress Report**

This is a report produced by the Supplier on a daily basis and provided to the TCC.

The report will identify:

- Each Logical Test Script step completed on a daily basis;

- Each Logical Test Script step scheduled but not completed on a daily basis;

- Each defect encountered;

- Any other comments and observations that the Supplier may wish to make.

7.4   **Defect Report**

This is a report produced by a Supplier and provided to the TCC for any defect encountered during testing, it will identify:

- The Logical Test Script and step where the variance was encountered;

- A description of the defect;

- Impact assessment;

- Any action that the Supplier proposes to take to correct the defect; and

- Any other actions that the Supplier suggests are required to correct the defect.

The Defect Report will be closed when the corrective action documented in the associated Defect Action Plan has been completed and all re-testing, if required, has been completed.

7.5   **Defect Action Plan**

This is a plan agreed between a Supplier and the TCC of actions to correct a defect encountered during testing, it will identify:

- The defect for which the Action Plan has been raised;

- The steps to be taken to correct the defect and the responsibility and target date for the completion of each step. Steps may include:

- Changes to Retail Market documentation;

- Changes to logical or physical test scripts;

☐ Changes to Supplier's business processes;

☐ Changes to systems or software, which must include any regression testing activities.

☐ Any workarounds to be undertaken in the absence of a solution being implemented;

☐ Whether the Test Scenario is able to continue; or whether a partial or complete re-run is required.

7.6 Test Results

A Supplier is required to retain evidence of test results and to provide a copy to the TCC at the completed execution of each Market Test Script.

Evidence of test results may be a report, a copy of a message or file produced, copy of an email or letter or a copy of a screenshot.

7.7 Exit Report

This is a report produced by the TCC at the end of Market Testing for a Supplier. It will summarise:

☐ The Test Scenarios that have been completed;

☐ The Test Scenarios that have not been completed with reasons;

☐ Defects raised, closed and outstanding according to responsibility for clearance, category, severity classification;

☐ Defect actions due to be completed but outstanding according to responsibility for clearance, category, severity classification.

8. TEST MANAGEMENT AND CONTROL

8.1 Introduction

This section describes the key management activities, controls and procedures that will be used to support Market Testing. It also outlines the roles of the groups and committees with a role in decision-making.

This section includes the following:

☐ Release Management;

☐ Defect Logging and Classification;

☐ Regression testing;

☐ Reporting and communication; and

☐   Support and Queries.

8.2   Release Management

All Suppliers are expected to have appropriate Release Management processes in place and exercised as required.

8.3   Defect logging and classification

Defects are defined as being observed discrepancies between expected and actual test results and may be functional (system-related), non-functional or operational (process-related). Each time a deviation from test scenarios is identified a detailed defect report will be logged and resolved in accordance with the agreed defect action plan.

Defects will be assigned a severity level that reflects the impact that it has on the systems/processes. Severity levels will be used to determine how quickly a defect needs to be analysed and resolved.

8.3.1   Severity Classification

The classification of severity will be as follows:

☐   **Class 1** - Defects that render the entire market procedure unusable. All testing activities shall be immediately stopped and evaluation and correction of the defect will be completed before testing is resumed;

☐   **Class 2** - Defects which render unavailable a critical function of the processes. They include drastic program or system errors such as application failures, inability to perform data transfers, failure to access databases, and inability to display information to the users. These types of errors do not permit the continuation of testing. Continuation would result in incorrect monthly billing and aggregation or errors in the process of readings or registrations. Testing of the relevant test case shall be immediately stopped and the software vendor shall evaluate and correct the defect before testing is resumed;

☐   **Class 3** - Defects that produce erroneous results from any material function of the process. These are defects that prevent a test script from completing successfully.

☐   Although the expected results do not match those expected:

☐   it will not adversely impact monthly billing, data aggregation, readings processing or registration processing; or

☐   there is a workaround which enables the expected results to be essentially realised and this is being progressed towards a permanent solution;

Testing will continue and the defect will be evaluated and corrected by the software vendor by the end of Market Testing;

□   **Class 4** - This class of defect includes items that do not significantly affect the usability of the processes, such as an error in text or view displayed, spelling errors or documentation errors. A correction plan will be established, testing will continue and the defect will be evaluated and corrected at a time agreed with the Supplier.

8.3.2 Categorisation

Defects will be categorised as being:

□   **"Market Process/documentation error"** - the market or system requirement and result is correctly reflected in the test script but cannot be executed or produce the results as scripted;

□   **"Supplier or NIE business process or system error"** - the system does not produce the expected results;

□   **"Test script / data error" -** the Market Procedures are not reflected in the test documentation;

□   **"An execution error"** — there was a problem with the set up or running of the test.

In exceptional circumstances, it may be possible to defer the fixing of a defect by implementing a workaround as a temporary arrangement with a view to resolving the problem in the long-term.

8.3.3 Proposed approach to handling defects

On discovery, defects will be assigned a severity classification by the TCC and reported to the relevant parties.

The TCC will agree an action plan with the Supplier.

8.4 Regression testing

8.4.1 Introduction

Where a defect has occurred it is expected that Suppliers will perform an appropriate level of regression testing in accordance with their test strategies and procedures.

8.4.2 Approach

Prior to the commencement of testing the Supplier will confirm to the TCC that the entry criteria for which they are responsible have been satisfied.

Throughout testing, Suppliers are expected to produce and communicate to the TCC as follows:

☐ Detailed Test Progress reports at the completion of each day of testing;

☐ Defect Reports as soon as a defect is detected;

☐ Completed Logical Test Script and Test Results at the completion of a Test Scenario;

☐ Progress against Defect Action Plans.

8.5 Support and Queries

8.5.1 Introduction

The TCC will support Suppliers by:

☐ Responding to queries as described below; and

☐ Accommodating any reasonable request to meet with a Supplier to provide guidance or explanation of the Market Testing process or deliverables.

8.5.2 Query Categorisation

Queries will be categorised as being High, Medium or Low priority. High priority queries will be permitted during test execution only.

9. NIAUR

NIAUR's role during Market Testing will require making decisions in respect of disputes not resolved by TCC.