



CHANGE DELIVERY

GUIDELINES FOR TESTING CHANGES TO BSC SYSTEMS

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Purpose of Document

This is a detailed guideline.

The purpose of this document is to specify guidelines for testing changes to software and procedures which support the running of the Trading Arrangements. This will provide the basis for the development of BSC Systems Release, BSC Agent and other Service Provider Test Strategies and relevant decision criteria.

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¹ ELEXON Ltd currently fulfils the role of the Balancing and Settlement Code Company ('BSCCo'), pursuant to Annex X-1 of the Balancing and Settlement Code (the 'Code').

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1 INTRODUCTION

1.1 Objective

The objective of this document is to provide the basis for the development of BSC Systems, BSC Agent and other Service Provider Test Strategies and decision criteria to ensure that:

- the integrity of BSC Systems is maintained whenever changes and new functionality are introduced as a result of approved Modifications, approved Change Proposals, defect clearance and emergency fixes, and infrastructure upgrades that relate to BSC Systems;
- the implemented changes meet the requirements of, and comply with the Code and Code Subsidiary Documents;
- the testing identified satisfies the Acceptance Criteria (Reference 1);

Note that 'system' refers to computer software and associated processes.

1.2 Scope

The guidelines are applicable to any change to BSC Systems as a result of:

- Approved Modifications under Section F of the Code;
- Approved Change Proposals under BSCP40;
- Infrastructure upgrades that relate to BSC Systems (see section 4).

The guidelines apply to the following BSC Systems, ELEXON systems and their interfaces:

- CVA Systems (BMRA, CDCA, CRA, ECVA, SAA, TAA, MV90, FAA, MIDP Service);
- SVA Core Systems, also known as the SVA Systems (i.e. NHHDA, EAC/AA, SVA System²);
- SVA Operator Systems (i.e. the MDD system, Data Marshalling, Pool Application, Logging and Performance Monitoring);
- Other BSC Systems, Profile Administrator systems, Teleswitch Agent systems);
- ELEXON bespoke systems that support ELEXON's obligations in the Code (BSC Website, TOMAS, PARMS, Market Data Marshalling (MDM), Funding Share System);
- Changes to manual processes and interfaces defined in Code and Code Subsidiary Documents;
- Changes to infrastructure products which support the BSC Systems, namely UNIX, Oracle, TIBCO, NETA Network (High and Low Grade Service), PCSec, PowerSec.

The guidelines do not apply to the following:

- BSC Party systems;
- System Operator systems (e.g. Balancing Mechanism systems, TUoS);
- Testing carried out using the de-restricted PTS (Reference 7).

² The SVA System may be referred to in other documents as 'ISRA' (its previous name pre-NETA).

1.3 Main Users

Release Team – Change Delivery

1.4 Link to Change Delivery Business Process Model

This procedure supports the processes [Decide High Level Test Strategy](#) and [Produce Test Strategy](#) which are described on the diagram [3 Develop Initiation Products](#).

The following products are used or produced by this procedure and can be found via the link to the CD BPM above (click on Products):

- Test Strategy ([..\..\PD and RSPD73 RS64 Release Test Strategy.doc](#))

2 TEST PHASES

2.1 Types of Testing

This section summarises the purpose of each type of testing, cross-references the Release Acceptance Criteria (AC) satisfied by each (as defined in Reference 5), and states who is responsible for each test. Test types may be grouped into test phases in the Test Strategy product.

Product Review will be carried out in accordance with the Quality Plan (Reference 6) and is not included as a test type here.

2.1.1 Formal Testing of Documentation Changes

Test Type	Purpose	Maps to Acceptance Criteria	Responsibility
Page-Turning	<p>To check that the new/changed documents which affect manual business processes and flows are workable and compliant.</p> <p>To determine if walkthroughs or other test phases are required, further to those identified as requiring a walkthrough from the business risk and scope of the change, for inclusion in the test strategy.</p>	<p>AC3: All new/revised BSC Agent, Service Provider and ELEXON systems shall be able to inter-operate successfully with each other and other participant systems & processes.</p> <p>AC9: ELEXON can adequately meet all its new/revised obligations</p>	Defined and managed by the Release Team.

Test Type	Purpose	Maps to Acceptance Criteria	Responsibility
Walkthrough	To demonstrate that the new/changed threads of manual business processes and flows are workable and compliant	AC3: All new/revise BSC Agent, Service Provider and ELEXON systems shall be able to inter-operate successfully with each other and other participant systems & processes. AC9: ELEXON can adequately meet all its new/revise obligations	Defined and managed by the Release Team.

2.1.2 Formal Testing of Software Changes

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Unit, Module and System Testing	Unit, Module and System Testing For SVA System, NHHDA and EAC/AA applications, the System Testing component is a separate test phase under the SVACSS contract (see section 2.2.2)	Unit, Module and System Testing	To ensure that the software is consistent with the logical and physical designs, and program specifications.	AC2: All new/revised functionality implemented by BSC Agent, Service Providers and ELEXON systems conform completely and accurately with the authorised changes defined by the Business Requirement Solution documents.	Defined, managed and executed by software developers ³ . For SVA, the Release Team may review evidence and sample records.

³ In the context of BSC Systems contracted by ELEXON to develop/maintain software– can be different from the BSC Agent

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Change Specific Testing	Change Specific Testing See also section 2.2.2 for contractual considerations.	Change Specific Testing Also called Witness Testing for SVAOSS. See also section 2.2.2 for contractual considerations.	To specifically test the changes being implemented. To ensure that the changes are consistent with the URS and relevant interface specification(s). For revisions to the algorithms specified in the Code, this may include Verification Testing ⁴ .	AC2: All new/revised functionality implemented by BSC Agent, Service Providers and ELEXON systems conform completely and accurately with the authorised changes defined by the Business Requirement Solution documents.	Defined, managed and executed by software developers or operational staff. The Release Team agrees the tests, and may observe the tests. For SVA, the Release Team may witness the tests, review evidence and sample records. Verification testing to be performed will be reviewed on a Release by Release basis, and will be detailed in the relevant BSC Systems Test Strategy.

⁴ Verification testing ensures that the algorithms in the software are consistent with the algorithms specified in the Code. This may be done using a Model (e.g. ELEXON's Indebtedness Calculation Model), or by manual means.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Regression Testing	Regression Testing See also section 2.2.2 for contractual considerations.	Regression Testing See also section 2.2.2 for contractual considerations.	To ensure that unchanged functionality is not adversely affected by the change.	AC4: Unchanged functionality in BSC Agent, Service Provider and ELEXON systems is not adversely affected by the Release.	Defined, managed and executed by software developers or operational staff. The Release Team agrees the tests, and may observe the tests. For SVA, the Release Team may review evidence and sample records.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Performance Testing	<p>The term 'Performance Testing' is also used, however the objectives for SVA are different as described in the "Purpose" column.</p> <p>See also section 2.2.2 for contractual considerations.</p>	<p>The term 'Performance Testing' is also used, however the objectives for SVA are different as described in the "Purpose" column.</p> <p>See also section 2.2.2 for contractual considerations.</p>	<p>To demonstrate that specific areas of the updated software function correctly under stress conditions, and to identify the limits of the system. This testing will use test data in a test environment, and depending on the change volumes used may be greater than those used in live systems. (Applies particularly to the CVA real-time services). Performance test timings are compared to those defined in the relevant technical documentation.</p> <p>For SVA, these are a set of tests which analyse the performance of the complete new upgraded software to provide assurance it is still operationally viable using data sizes and volumes consistent with that used for the live systems (or greater depending on the change). Typically the tests are carried out on the live version of software, the tests are repeated on the new upgraded software and performance test timings are compared.</p>	<p>AC8: The new/revised services shall be capable of operation without degradation to its service levels, and any change in the performance should be commensurate with the revision.</p>	<p>For CVA defined, managed and executed by the software developers. Agreed by the Release Team.</p> <p>For SVA defined, managed and executed by the Release Team or software developer, or operational staff or a participant, and agreed by the Release Team.</p>

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Volume Testing	Volume Testing Also called Full Width Testing See also section 2.2.2 for contractual considerations.	Volume Testing Also called Full Width Testing See also section 2.2.2 for contractual considerations.	To demonstrate that the updated system functions and operates as expected using current production volumes without unjustifiable performance degradation. This testing will use realistic production-sized data.	AC8: The new/revised services shall be capable of operation without degradation to its service levels, and any change in the performance should be commensurate with the revision.	For CVA defined, managed and executed by the software developers. Agreed by the Release Team. For SVA defined, managed and executed by the Release Team or software developer, or operational staff or a participant, and agreed by the Release Team.
End to End Testing (E2E)	E2E	E2E	To demonstrate that the new/changed threads of automated business processes and flows are workable and compliant	AC2: All new/revised functionality implemented by BSC Agent, Service Providers and ELEXON systems conform completely and accurately with the authorised changes defined by the Business Requirement Solution documents. AC3: All new/revised BSC Agent, Service Provider and ELEXON systems shall be able to inter-operate successfully with each other and other participant systems & processes.	Defined and managed by the Release Team.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Parallel Run Testing (PRT)	PRT	PRT	To provide additional assurance over regression testing that the revised BSC Systems software has not adversely impacted unchanged functionality by producing correct results for selected functionality in an as-live environment, using live data.	AC4: Unchanged functionality in BSC Agent, Service Provider and ELEXON systems is not adversely affected by the Release.	For CVA defined and managed by the Release Team. For SVA defined, managed and executed by the operational staff or a participant, and agreed by the Release Team.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Not Applicable	ELEXON Acceptance Testing for changes to SVA System, NHHDA and EAC/AA only	Not Applicable	Using the SVA Test Pack to ensure that the changes correctly implements the business requirements and events, to ensure that unchanged functionality are not adversely affected by the changes, and to ensure that the interfaces between the three systems have been correctly implemented. This may include Verification Testing	<p>AC2: All new/revised functionality implemented by BSC Agent, Service Providers and ELEXON systems conform completely and accurately with the authorised changes defined by the Business Requirement Solution documents.</p> <p>AC3: All new/revised BSC Agent, Service Provider and ELEXON systems shall be able to inter-operate successfully with each other and other participant systems & processes.</p> <p>AC4: Unchanged functionality in BSC Agent, Service Provider and ELEXON systems is not adversely affected by the Release.</p>	Defined, managed and executed by the Release Team.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Participant Testing	Participant Testing Also called Systems Integration Testing (SIT)	Participant Testing Also called SIT	To demonstrate electronic interfaces to and from the systems listed in section 2 are correct and consistent with the relevant interface specifications.	AC2: All new/revised functionality implemented by BSC Agent, Service Providers and ELEXON systems conform completely and accurately with the authorised changes defined by the Business Requirement Solution documents. AC3: All new/revised BSC Agent, Service Provider and ELEXON systems shall be able to inter-operate successfully with each other and other participant systems & processes.	Defined and managed by the Release Team.
Operational Acceptance Testing (OAT)	OAT See also section 2.2.2 for contractual considerations.	OAT See also section 2.2.2 for contractual considerations.	To ensure software is operational and changes do not impact operational requirements. This may include supporting a Parallel Run Test ⁵ . In the case of the SVA Agent, this phase may also cover Deployment testing, Regression testing, Performance testing, Volume testing and defect fix testing.	AC4: Unchanged functionality in BSC Agent, Service Provider and ELEXON systems is not adversely affected by the Release. AC8: The new/revised services shall be capable of operation without degradation to its service levels, and any change in the performance should be commensurate with the revision.	OAT is defined and managed by the operational staff, agreed by the Release Team. In the case of CVA, PRT is defined and managed by the Release Team (see below).

⁵ Parallel Run: the Release build is deployed in a test production-sized environment. For CVA systems, the testing shadows the Live schedule in real time, and sometimes, output flows selected by the Release Team from the test and live systems are compared. For SVA systems, the test results produced from the test and live systems are compared and any differences are explained. See PRT.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Not Applicable	Software Acceptance Testing (SAT) See also section 2.2.2 for contractual considerations.	Not Applicable	To ensure the ISRA Software is operational and changes do not impact operational requirements. This phase may also cover Deployment testing, Regression testing, and defect fix testing.	AC4: Unchanged functionality in BSC Agent, Service Provider and ELEXON systems is not adversely affected by the Release. AC8: The new/revised services shall be capable of operation without degradation to its service levels, and any change in the performance should be commensurate with the revision.	SAT is defined and managed by the SVA Agent operational staff, agreed by the Release Team.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Deployment Testing	Deployment Testing (carried out as part of OAT, SAT or PPT ⁶)	Deployment Testing (carried out as part of OAT)	To ensure that the updated software can be deployed to a test system and, if necessary, backed out. Note that this testing applies at Release level, not at change level.	AC5: The deployment plans for the Release are viable and adequately take into account the impact on BSC Parties and their Agents.	<p>For CVA defined, managed and executed by the software developers. Agreed by the Release Team.</p> <p>For SVA defined, managed and executed by the Release Team or software developer or operational staff or a participant, and agreed by the Release Team.</p>

⁶ May be carried out as part of PPT only if testing during OAT is not possible.

CVA Test Type	SVA Core Systems Equivalent	SVA Operator Systems Equivalent	Purpose	Maps to Acceptance Criteria	Responsibility
Not Applicable	Pre-Production Testing (PPT)	Not Applicable	To provide additional regression-type assurance that the key production SVA Settlement processes runs successfully in an as-live environment using live data, and to demonstrate the revised system can be upgraded successfully from the current live version using the appropriate software release documentation. PPT typically includes elements of E2E, SIT and Volume Testing.	<p>AC2: All new/revised functionality implemented by BSC Agent, Service Providers and ELEXON systems conform completely and accurately with the authorised changes defined by the Business Requirement Solution documents.</p> <p>AC4: Unchanged functionality in BSC Agent, Service Provider and ELEXON systems is not adversely affected by the Release.</p>	<p>Defined and managed by the Release Team.</p> <p>May be executed by the Release Team if no volunteer participant is available.</p>

2.2 Contractual Considerations

There are different types of contracts which may define the contractual testing requirements. These are additional requirements that need to be considered over and above those generic requirements specified in section 2.1.

2.2.1 CVA Systems

1. NETA Central Services Agent: Schedule 11 of the contract with the NETA Central Services Agent defines the testing to be carried out by the NETA Central Services Agent on the NETA Central Systems, namely BMRA, CDCA (including MV90), CRA, ECVAA, SAA, TAA, and interfaces to and from these systems. Defect clearance is also covered by the terms of the same contract.

Under this contract, the following test stages of testing are identified:

- Testing to demonstrate that the System as built meets the requirements set out in the Specification. Interfaces to systems built to support services provided by Other Service Providers, the System Operator or BSC Service Users will be simulated during System Testing.
 - Acceptance Testing to be carried out against the version of the System that successfully completed System Testing and in the same environment.
 - Integration Testing, including the manual processes and systems of the FAA Service Provider. Systems external to the BSC Services (other than systems of the FAA Service Provider) will be simulated. Additional, market wide integration testing may be performed to demonstrate that all the BSC Service Systems and Aggregate Systems can be integrated so as to be able to provide the Services.
 - End to End Testing to demonstrate the operation of the Trading Arrangements.
2. ELEXON may review documentation for changes to FAA and MIDP Service. Testing to the systems themselves is managed externally and is outside the scope of this document.

2.2.2 SVA Systems

1. SVA Operator System Services (SVAOSS) provider: The SVAOSS contract defines the development and maintenance of the systems by SVAOSS provider, namely MDD, Data Marshalling, Logging and Performance Monitoring and Pool Application.

Under this contract, the following testing is carried out by the SVAOSS provider on MDD, Data Marshalling, Logging and Performance Monitoring and Pool Application (see section 2.1 for a description of the test types):

- Unit, Module and System Testing – The testing is carried out in 2 phases (Unit and Module Testing and System Testing) and is the responsibility of the SVAOSS development team. Unit and Module testing is designed to ensure that the changes to an individual application module are consistent with the changes made to the DFS. When unit testing is complete, the application is rebuilt to incorporate the revised software modules into a formal release. System testing is then carried out at the application level to ensure that the new functional requirements specified in the DFS have been met. System testing is carried out by somebody who has not been involved in either code development or unit testing.
- Change Specific Witness Testing – Following successful completion of Unit and System testing, change specific testing is carried out by the SVAOSS team in the presence of an ELEXON witness.

2. SVA Agent: Service Line 330 forms part of the contractual arrangements with the SVA Agent. Under this contract, OAT is carried out by the SVA Agent on MDD, Data Marshalling, Logging and Performance Monitoring, Pool Application and in some cases the SVA System (see section 2.1 for a description of the test types). This phase of testing is the responsibility of the SVA Agent operations team. Regression and Change Specific testing is carried out during this phase. Regression testing is carried out using the SVA Agent's standard regression test packs. Change specific testing is carried using new test scripts devised by the operations team without reference to either the system test or witness test scripts. This phase will also test the deployment of the upgraded applications.

3. .

Under SVA Service Line 330, the SVA Agent will also carry out SAT on the SVA System. This phase of testing uses cut-down test environments, and is the responsibility of the operations team. New and existing functionality, including any fixes for defects or other software issues, are tested. Existing functionality is tested by running a standard set of regression tests using the SVA Agent's regression test pack. This phase will also test the deployment of the upgraded application using the software release notes provided by the Supplier Volume Allocation Core Software Services (SVACSS) provider.

4. SVACSS: A separate contract with the SVACSS provider defines the development and maintenance of the SVA systems provided by the SVACSS provider, namely, NHHDA, EAC/AA and SVA System.

Under this contract, the SVACSS will carry out Factory Acceptance Testing (FAT). FAT will include confirmation that Unit and Module testing have been successfully completed as part of development, and will consist of Change Specific, System, and Regression⁷ testing. Depending on the change, FAT may also include Volume and / or Performance Testing. SVACSS will also carry out IVT on new releases of software.

2.3 Approach to Determining Testing Requirements

Business risk, scope and testing requirements for each Modification and Change Proposal will be determined jointly by Change Delivery and Systems Assurance.

When the Release is scoped by Change Planning, the Release Team will review the business risk and scope for each change. The Release Team will use the business risk and scope ratings and the table in section 4.1 to provide an initial indication of the level of the testing phases recommended for each change. From this starting point, the scope of testing for the Release as a whole will be determined, taking a number of factors into account:

- if different changes affect the same systems, is there scope for combining the testing and/or walkthrough?
- identify scope for combining test phases (e.g. E2E and Participant testing);
- is a page-turning or a walkthrough required? (may have both);

⁷ Regression testing may include Installation Verification Testing (IVT), Automated Regression Testing and Manual Regression Testing, as necessary. IVT is carried out to ensure that revised software can be installed correctly and that front-end and back-end functionality operates as expected.

- is the Release a patch release⁸ or full release⁹? (Full Release will require more extensive deployment testing, OAT and PRT);
- are there additional testing requirements over and above that identified by the business risk and scope as a result of the combined effect of the changes in the Release?

This will result in combining test phases to achieve maximum assurance in the most efficient and cost-effective way. The actual testing scope will be finalised by a meeting, where details of what will be page-turned and what will be walked through are confirmed.

The scope of testing for the Release will be documented in the BSC Systems Test Strategy (including justification for any test phases identified as mandatory in section 4.1 that the Release Team has decided are not required for the Release).

2.3.1 Scope of Change

The scope of a change is defined in terms of the nature of the change. The scope will fall into one of the following classifications:

High – New threads of systems/processes and associated interfaces are introduced

Medium – Only existing threads of systems/processes and their interfaces are affected

Low – Only a single system/process and no interfaces are affected

2.3.2 Business Risk of Change

Adopting the principle of risk-based assurance each Modification and Change Proposal is classified as high business risk if it satisfies the following criteria; *'has the agreed solution a material effect on trading or Settlement calculations (automatic or manual) or potentially impact the integrity of Settlement'*.

⁸ A patch release involves deployment of replaced (fully compiled) software executables for one or more of the BSC systems, to incorporate functional changes as a result of CPs or Modifications.

⁹ This involves a full recompilation and deployment of the software together with reissue of full versions of any documentation, which has changed since the last full release.

3 HOW TO APPLY THE GUIDELINES TO FUNCTIONAL CHANGES

Based on the contractual considerations identified in section 2.2, it is proposed that the Release Team undertakes the testing specified below. The general principle that has been applied in drawing up this table is that more extensive testing will be carried out if a change is considered to be of high scope and risk. This is to minimise inconvenience and costs to one or many organisations within the industry should an error from a change be left undetected until after a change has been implemented.

3.1 Implementation Models

There are now a number of recognised implementation models, specifically:

- Where the change content affects the SVA and/or CVA systems;
- Where the change content affects SVA and/or CVA systems and ownership is outside of them (e.g. BETTA, P99).

It may be appropriate to apply the risk and scope assessments separately to each component and it is possible that the outcomes will be different.

3.2 Functional Changes that affect software

CHANGE	SCOPE		
	High	Medium	Low
High Business Risk	<ul style="list-style-type: none"> • Unit and Module • System • Change-Specific including Verification • Regression • PRT • OAT • SAT • Deployment • Acceptance (SVA only) On a case by case basis: <ul style="list-style-type: none"> • Participant • Performance • Volume • E2E • PPT (SVA only) 	<ul style="list-style-type: none"> • Unit and Module • System • Change-Specific including Verification • Regression • PRT • OAT • SAT • Deployment • Acceptance (SVA only) On a case by case basis: <ul style="list-style-type: none"> • Participant • Performance • Volume • PPT (SVA only) 	<ul style="list-style-type: none"> • Unit and Module • System • Change-Specific including Verification • Regression • PRT • OAT • SAT • Acceptance (SVA only) On a case by case basis: <ul style="list-style-type: none"> • Performance

CHANGE	SCOPE		
	High	Medium	Low
Low Business Risk	<ul style="list-style-type: none"> • Unit and Module • System • Change-Specific • Regression • OAT • SAT • Deployment • Acceptance (SVA only) On a case by case basis: <ul style="list-style-type: none"> • Participant • Volume • E2E • PPT (SVA only) 	<ul style="list-style-type: none"> • Unit and Module • System • Change-Specific • Regression • OAT • SAT • Deployment • Acceptance (SVA only) On a case by case basis: <ul style="list-style-type: none"> • Participant • Volume 	<ul style="list-style-type: none"> • Unit and Module • System • Change-Specific • Regression • OAT • SAT • Acceptance (SVA only)

Notes:

1. Participant Testing (PT) may be carried out if anything to do with a participant interface changes, even if the interface structure is unchanged. For example, new usage of System Warning messages on BMRS, or the process that generates or receives the interface is affected. PT involves the transmission and receipt of flows between participant organisations together with tests to verify that the flows can be processed by the recipient systems.
2. E2E Testing, by its nature, will incorporate the elements of PT, but will additionally provide a check of the whole range of business procedures which may encompass one or several NETA CSA systems and other participants. It is therefore possible that the testing for a certain release may include E2E testing for some changes or modifications but only PT for others. E2E and PT are mutually exclusive for any particular change or modification.
3. ELEXON Acceptance Testing is relevant to ELEXON maintained SVA System, NHHDA and EAC/AA systems only. For these systems the SVA Test Pack is always run but the decision to run it in full or in part will be made the by the Release Team following an assessment of the change. Other systems may be subject to OAT by ELEXON, however this is a separate test phase from ELEXON Acceptance Testing.
4. Parallel Run Testing (PRT) is carried out for all full releases of NETA CSA systems. PRT provides additional regression-type assurance – i.e. that existing functionality runs exactly as it did before. It can also be used, but is not necessary to prove new functionality as this should have been covered in E2E/participant testing. It should be run where there is a significant change on a **Settlement Day** basis – for example a pricing or other major rule change, PRT may also be carried out for patch releases, especially if the NETA CSA has not carried out full regression testing.
5. ELEXON Bespoke Systems will be subject to OAT by the relevant operational team.

3.3 Functional Changes that affect Manual Processes and Interfaces

Page-turnings are usually incorporated into the peer or formal review of Configurable Items and are regardless of the level of scope and risk. They can be in addition to Walkthroughs, in which case they will serve the dual purpose of validating document changes and confirming the scope of the walkthrough. However a page-turning may be planned or simply turn out to be done instead of a walkthrough.

CHANGE	SCOPE (of manual process changes)		
	High	Medium	Low
High Business Risk	Walkthrough = Yes	Walkthrough = Yes	Walkthrough = No
Low Business Risk	Walkthrough = Yes	Walkthrough = No	Walkthrough = No

4 TESTING INFRASTRUCTURE UPGRADES TO BSC SYSTEMS

The following test phases will be carried out for the various types of Infrastructure upgrade:

Upgrade type	Test Phases
Operating system (e.g.Unix, ELEXON operating systems. Excludes operating systems supporting NHHDA systems ports)	Change Specific Regression ELEXON Acceptance (SVA only) Participant OAT SAT Performance Volume Deployment
Database (e.g. Oracle server/forms)	Change Specific Regression ELEXON Acceptance (SVA only) OAT SAT PRT Performance Volume Deployment
TIBCo (Note: this covers upgrade of version of TIBCo, not updating TIBCo messages)	Regression Participant Performance Volume Deployment
PCSec	Regression Participant Performance Volume Deployment
Internet Explorer (version upgrades for CVA	Regression

access, patches excluded)	Participant
High Grade Service	Participant
Low Grade Service	Participant

5 DOCUMENT CONTROL

a Authorities

Version	Date	Author	Reviewer	Reason for review
1.0	23/07/01	Lougene Lillywhite & Sharona Lucas		For use
2.0	09/06/03	Bridget Lesbirel		Reflects experience gained in testing CVA releases and the Release Strategy
4.0	29/10/03	Clive Cushen & Lougene Lillywhite		Incorporates the extension to SVA, revisions to 'scope' and walkthrough criteria
5.0	29/06/04	Alan Bennington		Incorporates Parallel Run Testing and Page Turning
6.0	10/01/05	Evan Reed & Lougene Lillywhite		Reflects the new SVASS arrangements and experience gained in testing SVA releases and for peer review.
6.0	07/03/05	D McNair		OMS 3 format change only
7.1	16/02/06	S Chesters		Updated to reflect contractual and organisational changes
7.1			Alex Grieve	CIT Manager
			Yvonne Walsh	Release Manager
			Clive Cushen	Corporate Assurance Consultant
			Evan Reed	Test Analyst
7.2	06/03/06	S Chesters		Comments incorporated
			Alex Grieve	CIT Manager
			Yvonne Walsh	Release Manager
			Clive Cushen	Corporate Assurance Consultant
			Evan Reed	Test Analyst
			Colin Berry	CIT Consultant
			Jude D'Silva	CIT Consultant
			Richard Bennet	Project Analyst
7.3	15/03/06	S Chesters	SVA Agent	For Review

Version	Date	Author	Approver	Signature
8.0	12/04/06	S Chesters	Alex Grieve	

Version	Date	Author	Authoriser	Signature
8.0	12/04/06	S Chesters	Chris Rowell	

b Distribution

Recipient	Version	Date	Reason

c References

Reference	Document
Reference 1	IS Development Policies for the Trading Arrangements and ELEXON Systems (003BAC)
Reference 2	Change Delivery Procedure – Preparing and Managing Walkthroughs

Reference 3	Balancing and Settlement Code
Reference 4	ELEXON Trading Release Strategy (019AMB)
Reference 5	Change Delivery – Release Acceptance Criteria (002RMR)
Reference 6	Change Delivery – Quality Manual
Reference 7	NETA Participant Test Service User Guide (001ATG)
Reference 8	Change Delivery Procedure – Planning the Deployment of a Release

APPENDIX A – TERMS USED IN THIS DOCUMENT

Other acronyms and defined terms take the meanings defined in the Balancing and Settlement Code (the Code), Section X.

Acronym/Term	Definition
BMRA	Balancing Mechanism Reporting Agent
BMRS	Balancing Mechanism Reporting Service
BRS	Business Requirement Solution
BSC Systems	As defined in the Code Appendix X Annex X-1 (Reference 3)
BSCP	Balancing and Settlement Code Procedure
CIT	Change Implementation Team
CDCA	Central Data Collection Agent
CRA	Central Registration Agent
CVA	Central Volume Allocation
DFS	Detailed Functional Specification
DLIA	Detailed Level Impact Assessment
EAC/AA	Estimated Annual Consumption/Annualised Advance
ECVAA	Energy Contract Volume Aggregation Agent
FAA	Funds Administration Agent
FAT	Factory Acceptance Testing
High Grade Service	Availability of BMRS for which a Party is required to pay in accordance with the Code Section 2.3 (Reference 3)
IVT	Installation Verification Testing
Low Grade Service	BMRS available to any person, without charge
MDD	Market Domain Data
MDM	Market Data Marshalling (ELEXON system for gathering market data for publishing on the BSC website)
MIDP	Market Index Data Provider
MV90	Multi Vendor 90 (a system used to collect meter readings), and is a sub-system of the CDCA service
NGC	National Grid Company
NHHDA	Non Half-Hourly Data Aggregation
PARMS	Performance Assurance Reporting Monitoring System
PCSec	PC Security
PPT	Pre-Production Testing

Acronym/Term	Definition
PRT	Parallel Run Testing
PTS	Participant Test Service
SAA	Settlements Administration Agent
SAT	Software Acceptance Testing
SIT	Systems Integration Testing
SO	System Operator (NGC)
SVA	Supplier Volume Allocation
SVAA	Supplier Volume Allocation Agent
SVACSS	Supplier Volume Allocation Core Software Services
SVAOSS	Supplier Volume Allocation Operator Software Services
SVA System	Supplier Volume Allocation software
TAA	Technical Assurance Agent
TIBCo	Publishing package by TIBCo, publishing on High Grade Service
TOMAS	Trading Operations Market Analysis System
UAT	User Acceptance Testing
URS	User Requirement Specification

APPENDIX B – VERIFICATION TESTING MODELS

This section lists the models and calculators which are available to assist in the production of expected results for verification testing

Model/Calculator	Description
Price Calculators	<p>This includes TOMAS and the Excel spreadsheets used to calculate P78 System Imbalance Prices and some period level totals which are internal values from the calculation.</p> <p>In addition to this there is a volume calculation add-in to TOMAS which is not normally run during the TOMAS price calculations as it takes too long. It can calculate acceptance volumes for one period at a time based on spot FPN and Acceptance points.</p> <p>TOMAS can also easily model variations from live of BRL, BSAD, ILT and CADL, as well as variations in Acceptances on a period-by-period basis, but not MID or DMAT (without creating a separate test system).</p>
SAA - I014 and SAA - I022 file processors	These calculate Party Indebtedness from the I014 and I022 flows and TOMAS data
CDCA model	This is a spreadsheet which can be used to model CDCA. Its inputs are Aggregation Rules, BM Unit Definitions, Meter Readings and Line Loss Factors.
Checksum, Convert and Change	These utilities calculate checksums, record counts and convert files to UNIX format.
File Load	This utility can be used to load files which conform to NETA format or Pool format into an Access database.
P82 - TLF Calculator	This model calculates the Annual and Adjusted Zonal TLFs, and the BMU TLFs. It does not however calculate the Zonal TLFs as this is done by the LFM Reviewer. It can also be used to convert metered volumes received from CDCA into a format that can be directly loaded into the system used by the LFM Reviewer to verify the TLFA software.
SSR_CALC and PCT_CALC	These are access databases which are used to calculate expected results of the Profile Production run and the Supplier Settlement and Reconciliation runs performed by SVAA
<u>EAC/AA Calculator</u>	This is an access database which is used to calculate expected results for the Estimation of Annual Consumptions (EACs), Annualised Advances (AAs) and Deemed Meter Advances (DMAs) for EAC/AA system. The LOAD_DPC.XLS spreadsheet is used for loading the DPC values from a flat file and importing it into the EACAA access database.

Model/Calculator	Description
<u>NHHDA Calculator</u>	This is access database which is used to calculate expected results of the Supplier Purchase Matrix (SPM) data files performed by the NHHDA Aggregation Run.

Note TOMAS is the only model/calculator that can hold different rules for different Settlement date ranges.