Data Communications Company

D-4.2.6 CSS Data Migration Plan

Ofgem Switching Programme

Delivery Workstream

Version:	**V2.0**
Date:	**22 June 2018**
Author:	**DCC Authored**
Classification:	**DCC Public**

Document Control

Revision History

Revision Date	Summary of Changes	Changes Marked	Version Number
n/a	For internal programme development only. Not published	n/a	V1.0
22/06/2018	Publication for DB4	No	V2.0

Reviewers

Name	Title / Responsibility

Approvals

Name	Signature	Title / Responsibility	Release Date	Version Number
		TDA Chair	22/06/2018	V2.0

References

This document is associated with the following other documents:

Ref	Title	Source	Release Date	Version Number
[1]	D-4.3.6 E2E Data Migration Plan	Ofgem	12/02/2018	Final
[2]	D-4.3.4 E2E Transition Plan: Implementation Approach	Ofgem	12/02/2018	Final
[3]	D-4.3.2 E2E Integration Plan	DCC	12/02/2018	V2.0
[4]	D-4.3.3 E2E Testing Plan	DCC	12/02/2018	V2.0
[5]	D-4.3.5 E2E Post-Implementation Plan	DCC	12/02/2018	V2.0
[6]	D-4.2.1 CSS User Requirements Specification	DCC	22/06/2018	V2.0
[7]	D-4.1.2 Detailed Design Model (ABACUS)	DCC	-	V2.0

Ref	Title	Source	Release Date	Version Number
[8]	D-4.3.4 E2E Transition – In Flight Switches Approach	Ofgem	12/02/2018	Final
[9]	D-4.2.1 CSS User Requirements Specification	DCC	22/06/2018	V2.0
[10]	D-4.1.10.2 E2E Security Requirements	Ofgem		
[11]	D-4.2.4 CSS Delivery Plan	DCC	22/06/2018	V2.0
[12]	D-4.3.9 SI Requirements Specification	DCC	tba	tba

Table of Contents

1 Executive Summary

As part of the delivery of the implementation of the new End to End (E2E) Switching Arrangements, this Central Switching Service (CSS) data migration plan product sits beneath and in accordance with the overarching E2E Data Migration Plan[1], providing greater depth in terms of the CSS Data Migration approach and strategy.

The primary purpose of this document is to provide a CSS migration approach and strategy framework – offering migration scope, tooling, cleansing, transformation, loading, validation, testing and cutover planning detail to assist the procurement process, and subsequent management and assurance of the CSS, Core Systems Integrator (SI) and CSS Provider(s) involved in CSS data migration activities.

A secondary purpose of this plan is to provide the SI and CSS Provider(s) with the CSS migration approach and strategy framework components as a source and reference for future development of CSS migration strategy and documents such as functional and technical specifications, that the SI will be expected to produce on commencement of data migration delivery. The SI will be required to inform parties such as central data system and service providers, Suppliers and agents of data migration activities that they will be participating in and should use the plan for this purpose.

As the E2E and CSS Designs at this stage are logical and deliberately not defined in terms of a physical solution, certain aspects of the CSS migration strategy and approach can only be presented in terms of required outcomes in this document at this time. The full and final CSS data migration strategy, approach and detailed plan is expected to be developed by the SI once the physical CSS and E2E solution architecture and technology is defined, which will not be until later in the Enactment phase.

This CSS data migration strategy and approach aligns with the staged transition approach as defined in the E2E Transition Plan[2].

2 Introduction

The Central Switching Service (CSS) will become the core registration service that will be adopted as part of the new E2E Switching Arrangements in line with the scope of Reform Package 2a (RP2a). This is an Ofgem led initiative to enable a revised set of switching business processes, harmonising the arrangements across Gas and Electricity where possible and delivering a much faster, more efficient and reliable switching process to consumers.

This version of the CSS data migration plan[1] provides the data migration approach, strategy and high-level plan for the CSS, set within the broader context of the E2E data migration requirements for the new switching solution.

The approach to the CSS data migration follows the Transition stages as presented in the E2E Transition Plan[2] and E2E Data Migration Plan[1], where CSS migration activity commences at stage one. The E2E Data Migration Plan[1] provides an overarching view of the data migration requirements for the new Switching Arrangements. This CSS Data Migration Plan provides further focus, strategy and detail to the CSS data migration aspects.

The approach and strategy outlined in this version of the document provides sufficient detail at this stage in the programme to inform the development of CSS data migration requirements which can support the procurement of a Core Systems Integrator (SI) to plan, manage and execute CSS data migration activity as well as any supporting requirements falling to the CSS Provider(s) through procurement and existing system and service providers via transitional regulation.

2.1 Purpose

The purpose of this document is to provide the strategy, approach and high-level plan for CSS data migration at an appropriate level of detail that will:

- highlight the scope of the CSS data migration requirements;
- Identify parties responsible for migration activities;
- suggest tooling for data migration;
- provide data cleansing objectives;
- provide data transformation requirements; and
- discuss data loading, validation, testing and cutover planning

At this stage in the programme, prior to procurement of the CSS Provider(s) and a provider of SI services, it is not possible to finalise the CSS Data Migration strategy, approach and plan because a physical design does not exist for CSS and its external interfaces. This physical design once produced and baselined in early in the DBT phase will provide the final detail on the physical data model and physical interface designs to enable the SI to develop the final, detailed CSS data migration strategy, approach and plan. The purpose of

[1] “plan” being used in the context of a management plan to indicate strategy, approach and planning information

this document at this stage of the programme is therefore to enable clear requirements to be developed to inform procurement of the SI[12][12][12], CSS Provider(s)[11] and to inform transitional regulation to be placed on existing system and service providers.

This document will also provide appropriate supporting detail of the CSS Data Migration transformation aspects (data cleansing, data mapping, data transformation) to the SI, CSS Provider(s) and existing system and service providers that will be required to enable them to undertake data migration activities required by the Programme.

2.2 Evolution of the CSS Data Migration Plan

As mentioned above, the CSS and E2E Designs are logical and deliberately not defined in terms of a physical solution and technology at this stage. Certain aspects of the CSS data migration strategy and approach, such as data loading and reconciliation, can only be presented at a level to indicate requirements and outcomes. In line with the E2E Integration Plan[3], the SI will be required to develop the full and final CSS data migration strategy, approach and plan once the final physical solution and architecture are defined. This will form part of an overall Core Systems and Services Integration Approach and Plan to be developed by the SI

The CSS data migration strategy, approach and plan is therefore defined in this document in the form of clear requirements, deliverables and outcomes that can initially be included in the tender packs for procurement of the CSS and SI Service Providers, as well as in transitional regulation for existing central data system and service providers. The SI working with CSS Provider(s), existing core system and service providers, DCC and the Programme Co-ordinator will be expected to detail their intended strategy, approach and detailed plan aligned to the final physical solution designs and demonstrate how this meets the requirements laid down in this product.

Once the final CSS data migration strategy, approach and plan has been finalised and agreed by the SI, this CSS Data Migration Plan product, plus potentially the E2E Data Migration Plan and the E2E Transition Plan, will also need to be updated to reflect the final detail This process is reflected in the figure below.

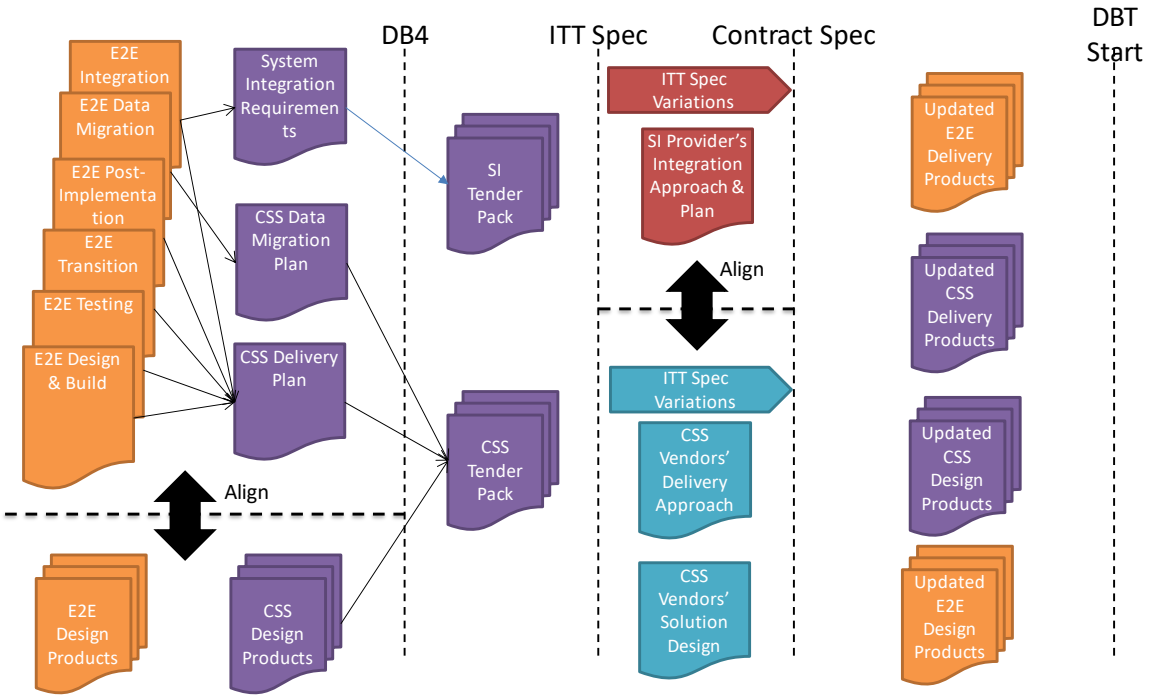

Figure 1 – Evolution of the CSS Data Migration Plan in the Context of the Enactment Phase

2.3 Objectives

The objectives of this version of the CSS Data Migration Plan are:

- To provide a strategy and approach for CSS data migration in line with the End to End data migration requirements and Transition approach to inform SI and CSS Provider procurement specifications and tendering.
- To define the scope of the CSS data migration.
- To offer a guide to CSS data migration tooling, cleansing, data transformation, data loading, data validation and reconciliation, testing and cutover planning.
- Once updated to reflect the final CSS data migration strategy, approach and plan to be developed by the SI during Design, Build and Test, this document will be used as a reference document to oversee and assure the CSS data migration activities undertaken by the SI and CSS Provider(s).

2.4 Scope

This document will provide the migration strategy, approach and high-level plan for all data migration activity to the CSS, at a level of detail that provides guidance to all prospective parties and Service Providers participating in the procurement and tender process, and subsequent contract management for the SI and CSS Provider(s).

The E2E Data Migration Plan[1] provides an overarching view of the E2E data migration requirements for the new Switching Arrangements, including data that will be migrated outside the CSS. This CSS Data Migration Plan is aligned to the E2E Data Migration Plan

and will be further developed through the Enactment phase of the Switching Programme, and implemented in the Design, Build and Test (DBT) phase.

The proposed E2E Transition approach, as defined in the E2E Transition Plan[2] product, highlights a series of five Transition Stages (including a pre-CSS migration activity Transition Stage 0, and a post-implementation 'hypercare' stage 4 which occurs after 'go-live'). The CSS will be assembled throughout these Transition Stages, becoming the live central registration and switching service at 'go-live' at the end of stage 3.

Activities occurring in Transition Stage 0 and post-implementation 'hypercare' stage are out of scope of this document as they do not involve any CSS Data Migration activities – these stages are covered in the D-4.3.6 E2E Data Migration Plan[1] and D-4.3.5 Post Implementation Plan[5] respectively.

This CSS Data Migration plan does not cover data exchanges between the Registration Service component of CSS and the Address Service component of CSS during Transition stages 1 to 3, as no CSS specific data migration activity is required for this. Details of the Address Service and the distinction and relationship between the CSS and Address Service can be found within the D-4.2.1 CSS User Requirements Specification[9].

This CSS Data Migration plan only relates to production interfaces in the context of CSS data migration requirements – detail on those interfaces can be found within the D-4.2.1 CSS User Requirements Specification[9].

2.5 Roles & Responsibilities

Party	Role
Ofgem	To Sponsor the delivery of the Switching Programme.
DCC	To deliver the procurement and delivery management of the CSS component providers and SI in accordance with the programme plan. This includes monitoring and assuring that the SI plans, manages and executes CSS Data Migration in accordance with agreed plans and contractual requirements.
Address Service provider	To procure high quality UK address source(s) and interact with the other CSS component(s) to create and maintain the Address Service that allows the CSS to generate Retail Energy Location (REL) data.
CSS Service Provider(s)	To deliver relevant CSS components in accordance with the CSS E2E design and to ensure that those components integrate with the rest of the CSS system.
System Integrator (SI)	To manage the integration of the CSS components with the existing Central Data Systems and Services. In respect of Data Migration: to plan, co-ordinate, manage and execute all aspects

Party	Role
	of the CSS Data Migration to meet the requirements and outcomes defined.
Programme Co-ordinator	To co-ordinate the interactions across the programme stakeholders to assist in timely delivery of the switching programme. In respect of Data Migration, to ensure that the 'Stage 0' data migration activities are completed as required prior to planned commencement of Stage 1.
Core Systems Assurance Provider	To provide independent assurance over DCC and Systems Integrator, CSS Component Providers and existing Data System and Service Providers to programme governance.
Xoserve	To deliver changes to UK Link and the Data Enquiry Service (DES) including Stage 0 data cleanse/transformation and to support Stage 1 to 3 data migration to the CSS as required.
Gemserv	To deliver changes to ECOES including Stage 0 data cleanse/transformation and to support Stage 1 to 3 data migration to the CSS as required.
Distribution Network Operators (DNOs) - electricity	To deliver changes to MPAS Registration Systems including Stage 0 data cleanse/transformation and to support Stage 1 to 3 data migration to the CSS as required. N.b. Currently all DNOs employ St Clements to support and deliver changes to MPAS.
St Clements	To deliver changes to MPAS (under the DNOs responsibility) including Stage 0 data cleanse/ transformation required and to support Stage 1 to 3 data migration to the CSS as required.
Industry Governance	To administer the newly created Retail Energy Code.
Existing Regulatory Code Administrators	To administer modifications to the existing Codes.
Meter Asset Providers	Contractual roles as defined with relevant contracting parties
Metering Equipment Managers	Contractual roles as defined with relevant contracting parties

2.6 Quality Assurance

The CSS Data Migration workstream will require close coordination and orchestration by the SI, Programme Co-ordinator, DCC, CSS Provider(s) together with existing core data system and service providers, DNOs and other key impacted industry parties and service providers.

Additionally, the SI is expected to provide the programme with quality assurance over all the CSS data migration workstream activities as part of the systems integration and testing activities in DBT. The SI will describe in detail the programme and quality assurance and governance around this, to be provided to support the CSS data migration workstream.

Further independent assurance of these activities may be provided to Ofgem by the Core Systems Assurance Provider role.

2.6.1 Quality Assurance Responsibilities

The SI is expected to work with the CSS Provider(s), existing data system and service and others such as the Programme Co-ordinator and DCC, to orchestrate and manage a consolidated data migration approach to facilitate an accurate, complete, on schedule migration of data from the existing central data systems to the new CSS systems. This must be aligned to the E2E Data Migration Plan[1], this CSS Data Migration Plan and follow the E2E Transition Plans[2], [8].

The SI will be expected to develop and execute the full and final CSS Data Migration Plan (i.e. strategy, approach and plan), under the management and assurance of the DCC acting as SI Delivery Manager that covers the following areas:

- Data Migration (i.e. extract, cleanse, transform, load, etc.) of existing registration and address data plus Switching Domain Data[2] to bring the CSS solution in line with these systems.

- Data Migration to ensure In-flight Switch Requests extracted from existing registration systems are fed into the new CSS solution at cut-over.

This Data Migration workstream shall require close coordination and orchestration by the SI and the CSS Delivery Manager with all the key industry parties and providers, as per the E2E Data Migration Plan and this CSS Data Migration Plan.

The SI, and CSS Provider will be required to be closely aligned during the DBT phase to ensure that the CSS build is in line with CSS migration test planning activities.

The SI and CSS Provider(s) shall work closely with existing central data system and service providers during the DBT phase to ensure that all parties are aligned with regards to DBT requirements and migration planning.

The SI will be required to liaise with the Industry Governance for the REC will master and manage the new REC data catalogues and CSS Parameter information (this is not currently defined) and ensure that this party is engaged in the provision of the *SwitchingDomainData* interface data.

[2] Service to be defined by the Industry Governance for REC

The SI will be required to liaise with the DCC Smart Metering data service to ensure that the *CommsHubDataLink* interface data can be provided and that this interface can be triggered when required per CSS Data migration plans.

The SI will also oversee and manage CSS data migration activity – holding the responsibility for the migrated data's accuracy, consistency and completeness.

The CSS Provider(s) shall be responsible for CSS data governance, with responsibility for and management of data's availability, usability, integrity and security.

A data governance framework should be implemented by the SI, defining data custodians, how data will be stored with a set of standards and procedures as to how data should be used by authorised personnel. A set of controls and audit procedures should then be put in place to ensure compliance with internal data policies and external regulations.

The SI will be required to ensure that all migration activities comply with data security requirements as set out in the E2E security document[10] to ensure alignment with switching Security products and requirements. Production interfaces employed for CSS data migration should by design and implementation implicitly comply with security requirements. Temporary CSS Data Migration interfaces (for example the interface to migrate Active status registrations and in-flight switching registrations) will additionally be required to be designed and implemented to ensure compliance with switching Security requirements.

2.7 CSS Solution Overview

The Central Switching Service (CSS), is an integral component of the broader new E2E Switching Arrangements design, and is a 'service hub' that will provide the following functionality:

- The **CSS Registration Service** – will manage the gas and electricity registrations and addresses associated with them.
- The **Address Service** – will manage a complete list of GB standardised addresses and perform address matching.
- The **Switching Network** – will connect the CSS Registration Service to the other Switching Arrangement participants.

The current operational switching process employs UK Link to master meter point registrations for gas including initial registrations, termination and change of supplier ('switching') - with supplier switching being initiated by suppliers but the registrations sent by shippers.

For electricity, under the licence obligation of distribution businesses to provide a Metering Point Administration Service (MPAS), each Distribution Network Operator (DNO) or Independent Distributor Network Operator (IDNO) employs Metering Point Registration System (MPRS) software to master initial and switching registrations. This document will refer to a singular MPAS (with the understanding that this implies multiple instances of MPRS systems under MPAS licence agreements).

In the new Switching Arrangements, CSS will replace MPAS and UK Link as master of initial registrations and change of supplier registration data for electricity and gas

respectively. Energy Suppliers will initiate and communicate Registration requests to the CSS for both energy types.

A Registration can be viewed as a transaction, providing the association between a supplier and a gas or electricity Registrable Measurement Point (RMP). Together with the identifiers for the supplier and RMP, the registration record contains key information associated to the specific registration including (but not limited to) the fuel type, domestic status and (for gas registrations) the shipper ID.

Apart from RMPs, Registration data is supported by reference data termed Switching Domain Data, for example supplier or shipper identifiers.

MPAS and UK Link will continue to hold RMP, Settlement, Metering and Agent data in the new Switching Arrangements and will continue to support the data enquiry services (ECOES and DES respectively), but will obtain registration data from the CSS rather than from suppliers and shippers (electricity and gas respectively) once the new switching processes are live.

One of the key aims of the new switching solution is to improve the quality of address data used to locate and correctly identify gas and electricity meter points (RMPs). An Address Service will be part of the new E2E Switching Arrangements to provide the CSS with high quality addresses for RMPs - termed Retail Energy location (REL) addresses.

The CSS Address Service in conjunction with the CSS Registration Service will generate a new Retail Energy Location address (REL) for each RMP migrated.

The CSS solution will enable and support the following major functions within the new E2E Switching Arrangements as part of its primary function as a ‘service hub’ to enable switching:

- Central management of an Address Service which aims to improve the accuracy of address data that will be synchronised to ECOES and DES.
- Master of switching Registration data.
- Management of the switching (previously change of supplier) process in place of the current capabilities provided by the existing registration systems – UK Link and MPAS.
- An automated harmonised switching process for both gas and electricity.

2.8 Risks, Assumptions and Dependencies

ID	CSS Data Migration Risk, Assumption or Dependency	Type	Mitigation and Actions
2_1	Removed		

ID	CSS Data Migration Risk, Assumption or Dependency	Type	Mitigation and Actions
2_2	The CSS will consist of more than one logical component. The number of physical components will depend on the final solution procured and since this is not yet known, the assumption has been made that there will be separate logical components for each of: 1. A Registration Service which manages the gas and electricity registrations and addresses associated with them, 2. An Address Service which manages a complete list of GB standardised addresses and performs address matching, 3. A Switching Network which connects the CSS Registration Service to the other Switching Arrangements participants, 4. A service management component which provides steady state service management and operations functions.	A	A separate CSS Provider could be procured for each component service, or one CSS Provider could be procured for the complete scope of services. Integration of the CSS components and the CSS with the other existing central data systems and services will be undertaken by the SI
2_3	The CSS solution is expected to be developed and based on technologies that are both proprietary commercial off the shelf (COTS) and open source products - for solution components composed of software, hardware and infrastructure (i.e. dedicated hardware and IT Cloud Service equivalents), storage, security controls, networking and connectivity. The solution should employ integration capabilities to facilitate and support message-based interfaces that are robust and secure.	A	

ID	CSS Data Migration Risk, Assumption or Dependency	Type	Mitigation and Actions
2_4	CSS Data Migration testing activity can only commence once the CSS Registration Service and Switching Network have been delivered.	D	The SI shall work with service providers to co-ordinate delivery dates of these CSS components.
2_5	CSS Data Migration testing activity can commence without the Address Service in place, although this would be required during DBT.	R	The SI shall work with the Address Service provider to co-ordinate delivery dates of this component.
2_6	A Pre-production instance (or instances) of the delivered CSS integrated to the switching network will be provided for Data Migration testing.	R	Data migration testing is typically not executed in a live environment, although due to the Transition approach it would be possible to do so in a single environment that will eventually become the production environment (and initialise this environment prior to 'production' data migration activity).
2_7	The Address Service, with input from a Gazetteer service of GB address data, does not have any data migration requirement.	A	
2_8	As REL addresses will be generated by the Address Service interfacing with the Registration Service during the data migration of RMP and Registration data to the CSS, the data migration of these objects could be impacted by Address Service operation in terms of throughput of migrated data.	A	The SI shall monitor data migration throughput and plan for alignment with the initial operation of the Address Service and Registration Service during the transition stages 1 to 3
2_9	The Programme will have a Core Systems Integration (SI) function, expected to be procured and managed by the DCC. This document refers to "the SI" for CSS data migration activity. There are two roles associated with this function: integration of the constituent components of CSS and integration	A	In the second role, the SI will be responsible for planning and co-ordinating Data Migration in Transition Stages 1-3

ID	CSS Data Migration Risk, Assumption or Dependency	Type	Mitigation and Actions
	of the CSS with the other central data systems and services.		
2_10	The 5-stage E2E Transition approach to the full implementation of the new E2E Switching Arrangements (RP2a), as detailed in the E2E Transition plan, Implementation plan and E2E Data Migration Plan is the agreed and accepted approach to be adopted for transition to a fully functional CSS.	R	Any changes to the 5-stage transition approach may result in changes being required to the CSS data migration strategy, approach and plan as described in this document.
2_11	'Stage 0' of the 5-stage Transition plan and E2E Data Migration Plan covers changes required to MPAS and UK Link, to REC specification, in preparation and readiness for extracts required for CSS migration in 'Stages 1-3'. These 'Stage 0' activities are not part of the scope of this CSS Data Migration Plan and it is a requirement that these activities have been completed on commencement of CSS Data Migration activities commencing in Stage 1.	D	CSS data migration activities described in this document are dependent on successful execution of preliminary 'Stage 0' activities.
2_12	For Data Cleansing, in line with the E2E Data Migration document, the expectation is that where possible, data cleansing will take place at source - i.e. within the source system from which data will be migrated to the CSS.	R	Cleansing part of stage 0 activities of the Transition Plan.
2_13	Where possible, data should be transformed to the required defined standards within source services – potentially within data extract mechanisms to be developed for data migration to the CSS.	R	Required transformation within data extract mechanisms offers no risk to prevailing data which would continue to be required in the current switching solution until the new solution is adopted.

3 Approach and Strategy

The SI is expected to work and coordinate with the CSS Provider(s) and key industry parties to define, manage and execute a consolidated CSS data migration approach, plan, solution and set of capabilities to facilitate a smooth migration of data into the CSS. (aligned to the E2E Data Migration Plan and this CSS Data Migration Plan).

On appointment, the SI will be responsible for the production of a detailed approach and plan for data migration activity, aligned to and building on this CSS Data Migration Plan document. This will form part of the overall Core Systems and Service Integration Approach and Plan that the SI is required to develop and maintain

As discussed in the document scope in section 2, the E2E Transition Plan proposes a 5-stage transition approach to the adoption of the CSS as a live production service and for the new E2E switching landscape to interact with the CSS for switching. A table of the transition stages with activities within each is provided in section 3.2.

Transition stages will be progressed in sequence, and progression to a successive stage should not occur until all material activity (integration and data migration) within a stage has been completed and the related Exit Criteria for that stage have been met.

The preliminary Transition Stage 0 does not relate directly to the migration of data into the CSS but focuses on implementing new requirements within the current industry data services (e.g. MPAS, and UK Link, Suppliers, Supplier Agents, etc.). It is imperative that material stage 0 activities are completed prior to CSS data migration commencement at stage 1. The SI will be required to engage and co-ordinate with the above industry parties and existing data system and service providers to ensure that activities are completed to an adequate standard and within timelines to allow stage 1 activities to commence as planned.

Data migration to the CSS will take place during stage 1 to stage 3 of the transition approach and the scope of this document covers the CSS data migration approach and strategy for these stages. This document also provides a high-level plan showing how this strategy and approach will be taken through the Enactment phase into the DBT phase – allowing the SI to progress and develop this further.

The recommended approach will be to progress stage 1 to 3 activities within as short a period as possible whilst meeting the defined stage gate criteria for each transition stage – this will reduce the number of (delta) loads required. Timescales for activities should be refined during early data migration test cycles once production interfaces and temporary interfaces have been defined physically, and interface data throughput has been established.

The fifth and final Transition Stage ‘post-implementation’ relates to a period of post go-live ‘hypercare’ where all parties and providers responsible for components of the new E2E Switching solution provide enhanced early life support and ensure that the required performance, reliability and stability are achieved as early as possible after go-live. These activities are not part of the scope of this document.

At ‘go-live’ (the conclusion of Transition Stage 3), the CSS will hold all Active status gas and electricity registrations as reflected in the existing switching solution, all in-flight registrations, all RMPs relating to these registrations together with the new Retail Energy

Location data, and will be ready to commence as a service hub and master of new switching registrations.

For data objects where the CSS is not the master of the object to be migrated, production interfaces have been defined to synchronise this data to the CSS in normal operations. There is a potential to utilise these interfaces for initial migration – this will be explored further in the CSS Migration tooling framework section.

Data Migration activities, particularly for address data, will need to comply with the General Data Protection Regulation (GDPR) which becomes enforceable on 25 May 2018. The SI and CSS Provider should ensure familiarity with the GDPR, and the security requirements as provided in D-4.1.10.2 E2E Security Requirements[10] and ensure compliance of security requirements with regards to all CSS data migration activity.

3.1 Approach to the Migration of Registration Data

3.1.1 Historical Registration Data

MPAS and UK Link hold a history of switching registrations as well as the active registration for each RMP.

A fundamental question on the approach and strategy to the migration of registrations to the CSS, relates to whether history of switching registrations is required to be migrated, together with RMPs and other master data to support this history, or whether only active registrations and supporting master data should be migrated.

As MPAS and UK Link hold historical registrations and will be available going forward for reporting and enquiry, it is assumed that historical migration of registrations to the CSS will not be required, and that migration will be limited to active registrations only, together with master data supporting this dataset.

Should there be a future decision to include a specified range of historical registrations as part of the migration, the scope and strategy of registration and supporting master data to the CSS would need to be expanded for these objects.

3.1.2 Selection Criteria for Registration Data

In the CSS, registrations, and registration requests that precede these, will have defined statuses – as represented in the D-4.1.2 Detailed Design Model (ABACUS)[7].

For registration data (and corresponding RMP data – see section **Error! Reference source not found.** for details) to be migrated from MPAS and UK Link into the CSS, the SI will be required to undertake analysis during DBT to determine and specify criteria for the extraction of current data, in consultation with MPAS and UK Link representatives.

This analysis should include a mapping of CSS statuses with equivalent MPAS and UK Link statuses, as identified above.

To reduce complexity and reduce multiple migrations of registrations changing state, the initial MPAS and UK Link registration migration should be limited to registrations with a status that maps to an ‘Active’ status.

Subsequent registration migrations (‘delta’ migrations) should include details of any new registrations, together with updates for those registrations which have changed status since

the initial migration (including to an 'Inactive' status). Therefore, for these delta migrations, any extracts that occur outside the 'In-Flight' window should be limited to those registrations with an 'Active' or 'Inactive' status.

MPAS and UK Link registration extracts that occur inside the 'In-Flight' window should be limited to in-flight registrations with a status that maps 'Pending' status in the CSS (with a 'Confirmed' or 'Secured' registration request) and for initial registrations that are permitted inside this window should be limited to those with an Active status.

Outcome of this analysis would feed into extract criteria for MPAS and UK Link RMPs and registrations.

3.2 Transition Stages

(stages with CSS Migration activity shaded).

Transition Stage	Key Migration Related Activities	CSS Migration Notes
Stage 0	1) Migration of MAP ID and Meter Asset data from ECOES to MPAS. 2) Migration of MAP ID from Shippers to UKLink. 3) Related MPANs cleansed within Supplier services, associations created and notified to MPAS. 4) Data Governance and Data catalogues (including Switching Domain Data) established.	Migration activity will take place by existing parties and providers at this stage, not CSS, but completion of Stage1-3 CSS Migration Activity will depend on Stage 0 Activities being completed.
Stage 1	1) Ensure CSS Integration (Interfaces) are disabled – specific production interfaces potentially required for migration will be highlighted. 2) Set up of Switching Domain Data and the CSS Parameters - enable and execute inbound interface SwitchingDomainData. 3) RMP migration from MPAS and UK Link - Employing inbound interfaces MeteringPointSync and SupplyMeterPointSync which need to be enabled prior to commencement of this stage. 4) Initial migration of ('Active') registrations from MPAS and UK Link (uses temporary migration interface).	CSS Migration activity commences at this stage of the transition approach. Migration here will comprise of parameter set up required for the CSS, Switching Domain Data that will be provided from Industry Governance, Supplier arranged appointments (Data Aggregator, Data Collector, MEM). RMP data to support all current Active gas and electricity registrations held in MPAS and UK Link. Additional RMP data may be provided for meter points that are not currently linked to registration (but may be in the future). Outbound interfaces should all be disabled prior to stage 1 for data migration and should be enabled as required.

Transition Stage	Key Migration Related Activities	CSS Migration Notes
	5) Enable and execute inbound interface DADCAppointment to populate supplier arranged appointments (Data Aggregator, Data Collector) and inbound interface MEMAppointment to populate supplier arranged MEM appointments.	
Stage 2	1) Outbound interface to RetailEnergyLocation must be enabled to sync REL Addresses to ECOES and DES. 2) Execution of SwitchingDomainData interface. 3) Establish persistent CommsHubDataLink interface to DCC (Smart Meter Hub data). 4) Delta migrations of RMPs (created, operational, dormant or terminated since stage 1 migration) from MPAS & UK Link. 5) Delta migrations of registrations (Active or Inactive since stage 1 migration) from MPAS and UK Link. 6) Execution of DADCAppointment and MEMAppointment interfaces.	Initial execution of interface CommsHubDataLink to the CSS. Outbound Interfaces from CSS to ECOES and DES enabled. Refresh of Switching Domain Data.
Stage 3	1) Execution of SwitchingDomainData, interface. 2) Delta migrations of RMPs for in-flight switches (and initial registrations) from MPAS and UK Link. 3) Delta migrations of in-flight switches registration requests (confirmed or secured status) and final initial registrations – (Active status) from MPAS and UK Link. 4) Execution of DADCAppointment and MEMAppointment interfaces. 5) Input to decision for readiness to Go Live	Refresh of Switching Domain Data In flight switch registrations follow the same data migration mechanisms and processing as for Active registrations. “In-flight” switch registration migration will take place during a window period starting 12 working days prior to cutover, when switch registration under the current arrangements ceases. “In-flight” switch registrations are registration requests that are not in an Active state after 12 calendar days prior to cutover, but which become Active or have a confirmed registration request status after 5 calendar days subsequent to this (after objection window has closed). CSS set to fully live status at end of stage 3 – CSS Integration layer will be ENABLED at this point to allow fully

Transition Stage	Key Migration Related Activities	CSS Migration Notes
		functioning inbound and outbound interfaces from/to external systems.
Stage 4	Hypercare phase where all parties provide for a high level of support and resolution of errors during the early life of the new Switching Arrangements.	No specific CSS Migration activity here, but the SI will be required to participate in hypercare and offer any remediation to prior migration activity.

The SI performing data migration will be required to co-ordinate CSS Migration activities, during testing cycles and live execution of stage 1 to 3 of the transition plan with the CSS Registration Service provider and CSS Address Service provider to ensure that the delivery of these components is aligned to the commencement of the specific test migration or live migration to the CSS.

3.3 Stage 1 Prerequisites

Activities which must take place prior to the commencement of stage 1 are defined in table 6 (section 3.28) of the D-4.3.6 E2E Data Migration Plan – which can be found within the Ofgem website at: https://www.ofgem.gov.uk/publications-and-updates/e2e-delivery-products.

Activities prerequisite to stage 1 as described within table 6 includes work to support RMP attributes and Life Cycle Status, RMP Association, changes to Energy Supplier Services, MPAS and the interfaces between these services, MAP ownership, Switching Domain Data definition and Meter Point Location addresses.

3.4 Object Scope

This section provides the scope of all data objects that are to be migrated to the CSS during the transition phases until the CSS go-live and is central to this CSS Data Migration Plan. It should be noted that this object scope excludes ‘intra-CSS component’ data transfers, such as the provision of current meter point address data (part of the RMP) from the CSS Registration Service component of CSS (once it has been migrated into this from UK Link and MPAS) to the Address Service component of CSS and the corresponding transfer of data back from the Address Service component to the Registration Service component to enable the creation of the REL.

The object scope defines the data migration activities to the CSS in terms of what is to be migrated, thus being central to the strategy and approach for this data migration.

This object scope will provide the SI, CSS Provider(s) and existing central data system and service providers with an overview of required data migration to the CSS, thus being an input to SI procurement, CSS data migration planning and oversight.

The object scope will be delivered in tabular form. For each data object provided within the table, the following detail will be provided: object categorisation, when data migration of the object will be required, the recommended means of migrating the data object, parties responsible for the migration of the object and dependencies on other data migration objects.

The SI shall maintain and develop this CSS Data Migration Object Scope catalogue during DBT, in line with the evolution and development of the CSS Data Migration Plan.

Table 1 below details the scope of CSS Data Migration objects:

Data Object	From Trans. Stage	Data Type	Details	Data Owners
Switching Domain Data	1	Master data	Data from the REC, existing industry codes, governance parameters for the CSS and CSS Operation parameters. Production Interface *SwitchingDomainData* Defined and to be employed for data migration.	Industry Governance
Supplier Arranged Appointments	1	Master data	Supplier Arranged Appointments: from MPAS - Data Aggregator, Data Collector, and MEM. from UK Link - MEM. Production Interfaces *DADCAppointment* and *MEMAppointment* defined and to be employed for data migration.	MPAS, UK Link
RMP data	1	Master data	A RMP is created when a physical or logical (electricity only) Meter Point is set up by the Network in their respective system. Each RMP has a unique number; otherwise known as the MPxN, and includes the meter point address as recorded in UK Link or MPAS. Only RMP data with statuses 'Created' (electricity only), 'Operational' and 'Dormant' (gas only) should be migrated. – RMPs with 'Terminated' status should also be included where linked to a registration with an 'Active' status. For subsequent delta migrations 'Terminated' RMPs should also be migrated where the 'Terminated' state is a result of a status change to a previously migrated RMP Production Interfaces SupplyMeterPointSync and MeteringPointSync defined and to be employed for migration.	MPAS, UK Link
Active Registration data	1	Transactional data	Registration between Supplier and RMP that has reached an 'Active' status – initial load and 'Active' or 'Inactive' – where there has	MPAS, UK Link

Data Object	From Trans. Stage	Data Type	Details	Data Owners
			been a disconnection for subsequent delta loads to cutover. Temporary Migration Interface Required.	
'In-flight' Registration data	3	Transactional data	Suppliers/Shippers will be prevented from submitting new switch requests to MPAS/UK Link 12 calendar days prior to the CSS 'go-live'. This date until go-live will be deemed the 'in-flight' registration period. Registrations that reach a 'Confirmed' or 'Secured' state in MPAS/UK Link before cutover commences (4 days before go-live) will be classified as in-flight registrations migrated to the CSS as per the 'delta' processing for Registration data. Registrations that reach an 'Active' state in MPAS/UK Link before cutover commences (4 days before go-live) during this window will be initial registrations migrated to the CSS as per the 'delta' processing for Registration data. Note that Switch Registrations which have been 'held' back from submission to MPAS/UK Link by Suppliers/Shippers due to being initiated within 12 calendar days prior to cutover, will be submitted by Suppliers to the CSS (via interface RegMgmtRequestSubmission) after 'go-live'.	MPAS, UK Link

Table 1 - CSS Data Migration scope

3.4.1 Switching Domain Data

The CSS will hold governance data in the form of Switching Domain Data, for example Shipper/Supplier Alliances and Market Participant Identifiers, that will be synchronised from a Switching Domain Data repository.

Many CSS operational parameter settings will also be defined and set up as part of Switching Domain Data.

Switching Domain Data will be required to be populated in the CSS prior to any migration activity via the SwitchingDomainData interface. Details of the defined data elements within this interface, as per Abacus, can be found in Appendix E – .

The source of this data has not yet been defined – and must be during the DBT phase by the Industry Governance data provider (this should be defined in conjunction with the new REC code). The SI and CSS Provider(s) shall work with the Industry Governance that is put in place to support the REC to develop the detailed data migration strategy and approach once this data is fully defined.

3.4.2 Supplier Arranged Appointments

Supplier Arranged Data Aggregator and Data Collector Appointments master data, relevant to electricity alone, will be held in MPAS. The *DADCAppointment* interface has will synchronise this data to the CSS. Metering Equipment Manager (MEM) Appointments master data will be held in MPAS and UK Link. The *MEMAppointment* interface will synchronise this data to the CSS.

3.4.3 Registrable Measuring Point (RMP)

RMP data is required to be migrated prior to the initial migration of registration data and as part of delta migrations prior to delta registration migrations. Registration data references RMPs and is therefore dependent on associated RMP data being in place in the CSS during registration data migration.

For the initial RMP data migration from MPAS and UK Link during stage 1 of the transition plan, RMPs with a status of 'Created', 'Operational' and 'Dormant' should be migrated. Should RMPs with a status of 'Terminated' exist where these are linked to registrations with an 'Active' status, these RMPS will be required to be migrated too.

Delta migrations should include details of any new RMPs, together with updates for those which have changed status for since the initial migration. For delta RMP data migrations, therefore, RMPs that have a status of 'Created', 'Operational', 'Dormant' or 'Terminated'[3] should be included for migration to the CSS.

Production interfaces of RMP data from UK Link (interface SupplyMeterPointSync) and MPAS (interface MeteringPointSync) have been defined for synchronising RMPs to the CSS. These interfaces should be employed by the SI unless the SI determines that there is significant reason for not doing so.

Should the production interfaces be employed for RMP data migration, they should have the capability of being operational during defined data windows rather than as perpetual interfaces – this will be discussed further in section 3.6.

3.4.4 Primary and Delta Registration Migrations

Following CSS go-live, the CSS will be the master source for registration data in gas and electricity. The relationship between RMP and supplier changes when customers switch suppliers through the change of supplier process resulting in a switch registration.

Together with the identifiers for the supplier and RMP, the registration record contains key information associated to the specific registration including (but not limited to) the fuel type, domestic status and (for gas registrations) the shipper ID. Further detail of registration data to be migrated is included in Appendix F.

[3] Terminated RMPs may be migrated in delta migrations either where there is an active registration or the status has been updated since the last migration

The initial migration of registration data with an Active status that will take place during stage 1 of the transition plan represents a ‘snapshot’ of ALL gas and electricity registrations with an ‘Active’ status as held by UK Link and MPAS at that time.

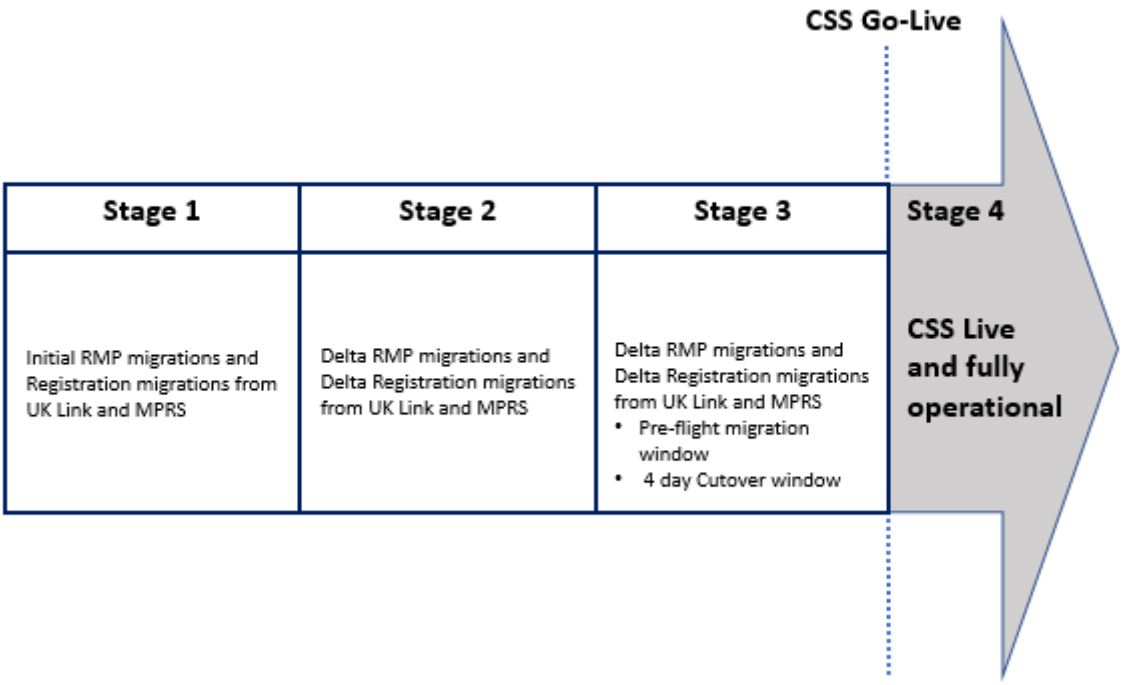

Figure 2 - Illustration of Initial and Delta RMP and Registration migrations from stage 1 through to go-live.

Switch registrations and initial registrations that have become ‘Active’ or registrations that have become ‘Inactive’ (where there has been a disconnection) after this initial migration will be migrated as a series of ‘delta registration migrations’ prior to CSS go-live.

A ‘delta registration migration’ is defined as a migration of registration data that has changed status and is outside the in-flight window) since the previous extract of registrations migrated.

Delta registration migrations will continue (at a frequency to be determined by the SI) after the initial migration until the CSS is fully operational (end of stage 3 of the transition plan) to ensure that the CSS reflects all Active and Inactive registrations for the new Switching Arrangements.

Migration of In-Flight registrations are discussed in the next section.

Under the selected approach for transition to the CSS becoming master of registrations and switch registrations, the last permissible date for switch registration under the current arrangements will be 12 calendar days prior to the CSS becoming fully operational (CSS ‘go live’) – referred to as the T1 date. The last permissible date for switch withdrawal or the registration of new connections under current arrangements will be 4 calendar days prior to go-live – referred to as the T2 date. These timelines should be noted when providing guidelines for data extracts to MPAS and UK Link.

There can only be a single RMP-Supplier registration effective at a specific date.

3.4.5 In-flight Registration Switches

The period from the end of the 12th calendar day prior to CSS go-live to the go-live date will be known as the In-flight Registration Window.

Suppliers and Shippers will be permitted to submit new connection registrations to MPAS/UK Link until the end of the 5th calendar day prior to CSS go-live (referred to as the T2 date) -. The period of 4 days prior to CSS go-live is the CSS cutover window, where MPAS/UK Link will receive no further new connection registrations.

Suppliers will be required to hold/queue switch requests received during the In-Flight Registration Window and new connection requests received during the CSS cutover window for direct submission to the CSS after go-live (via the defined interface from suppliers to the CSS for registrations). The figure below provides an illustrative view of the In-Flight Registration Window and the cutover window.

Further details on the in-flight switches approach is available within the D-4.3.4 Transition Plan: In-Flight Switches Approach[8] product which can be found on the Ofgem website: https://www.ofgem.gov.uk/publications-and-updates/e2e-delivery-products

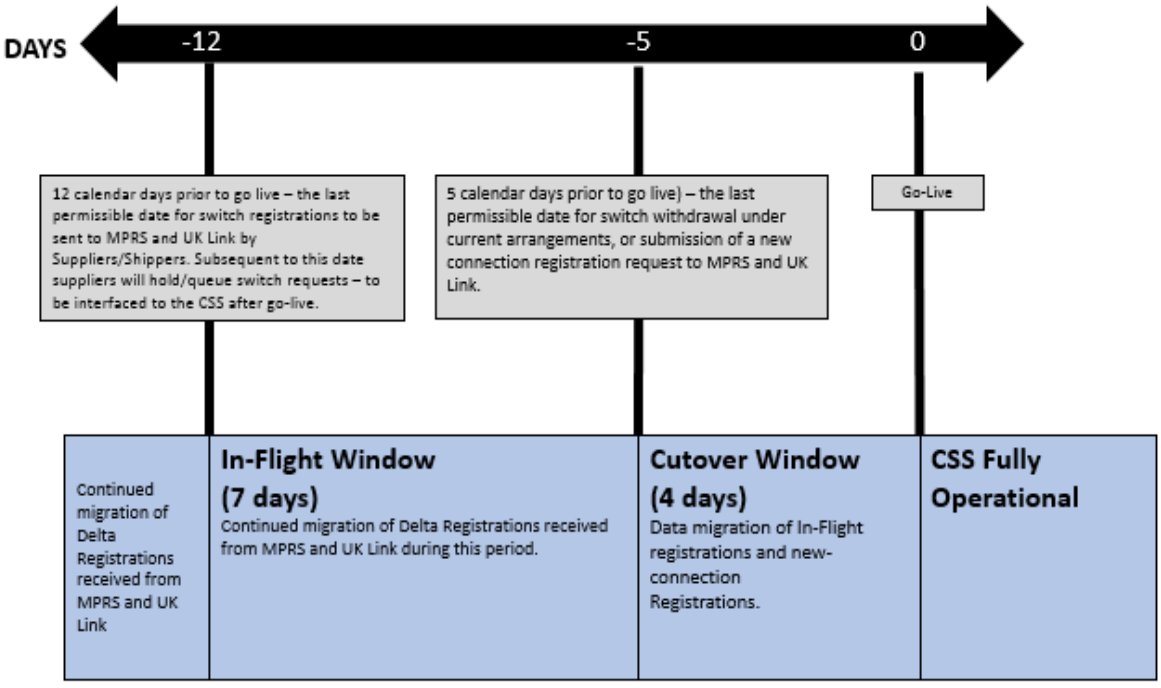

Figure 3 - In-flight and cutover window

3.5 Migration Tooling Framework

3.5.1 Temporary Interfaces

The RMP and Registration related data will be sourced from UK Link and the multiple MPAS services, where they are currently mastered. Whilst the CSS will become master of registrations in the new switching solution, the creation and termination of RMPs will continue to be mastered in MPAS and UK Link, as updated by DNOs and GTs, which in

turn will provide the CSS with synchronised feeds of new or updated electricity/gas RMP data in business-as usual through the production interfaces *MeteringPointSync* and *SupplyMeterPointSync*.

Production interfaces have also been defined for other master data related objects to periodically populate/update the CSS with relevant master data, for example the *SwitchingDomainData* interface for Switching Domain Data.

Where production interfaces will not exist in business as usual operations from source systems to the CSS, such as for registrations from MPAS and UK Link[4] the SI will be required to oversee the construction of temporary interfaces to be employed exclusively for CSS data migration activity.

Temporary interfaces could be defined as point to point interfaces, as for production interfaces, or employ an Extract, Transform, Load (ETL) or middleware tool as discussed in the next section.

Temporary point to point interfaces should be simpler to implement than temporary interfaces via middleware and could be advantageous should reconciliation not be required for the relevant migration object – for registrations, reconciliation of migrated data should be regarded as key.

3.5.2 ETL Tool and Staging Environment

An ETL tool, a staging database (that is a repository for this ETL tool) and associated processes are typically employed for high volume data migrations, and should be strongly considered as a method for procurement by the SI to be employed for temporary interfaces for CSS data migration[5].

The SI should assess potential tooling (as definitely required for temporary interfaces) against the benefits/disadvantages of utilisation of an ETL tool.

The Extract component of ETL addresses extraction of data from source systems (which may be undertaken by the source system owner) and the importing of this data extracted from source systems into the data staging environment. Common data-source formats include relational databases, XML, JSON and flat files.

The Transform component of ETL applies a series of rules or functions to the extracted data in preparation for load to the target environment. Some data does not require transformation and is known as “pass through” data. Transformation can include mapping, derivation, exclusion, aggregation and sorting. The transformation stage is key to formatting, mapping and applying business rules to source data to conform to CSS requirements.

The Load component of ETL loads transformed data into the end target, i.e. CSS. Loads may be performed via direct APIs or remote function calls executed within the ETL, but are typically performed by production of an output interface, for example an XML, JSON or delimited file, which is then loaded into the target via a defined import mechanism for the object migrated.

[4] As the equivalent production interfaces for registrations will be from Suppliers to the CSS
[5] Further information about ETL tools can be found at https://www.tutorialspoint.com/etl_testing/etl_testing_introduction.htm

The staging database, the repository of all data that the ETL tool imports and transforms, is typically a relational database. This database will be scaled to support the high-volume data sets that the CSS Data Migration will require.

An ETL tool should also have the capability of importing loaded data from the target CSS environment to the staging database.

This data will largely be migrated data and availability of this data in the CSS would then allow validation and consistency processes to be established within the ETL tool. For temporary migration interfaces that have employed the ETL tool, this would allow reconciliation reports to be generated within the staging database (tying transformed data against loaded data).

The figure below provides an illustrative view of the ETL process.

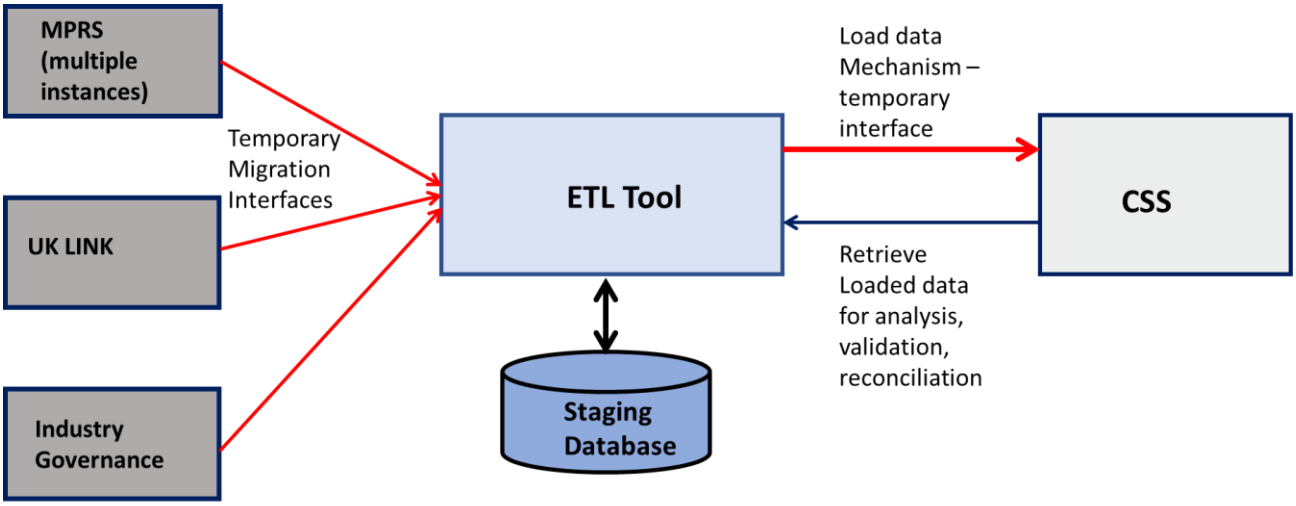

Figure 4- Illustration of ETL tool connectivity

3.5.3 Utilisation of Production Interfaces

The RMP and Registration related data will be sourced from UK Link and the multiple MPAS services, where they are currently mastered. The CSS will become master of registrations in the new switching solution post go-live, whereas creation and termination of RMPs will continue to be mastered in MPAS and UK Link, with production interfaces *MeteringPointSync* and *SupplyMeterPointSync* defined to provide the CSS with synchronised feeds of new or updated electricity/gas RMP data in normal operations.

Production interfaces have also been defined for other master data related objects to periodically populate/update the CSS with relevant master data – for example the *SwitchingDomainData* interface for Switching Domain Data.

A key principle of the Transition approach as defined in the E2E Transition Plan is to de-risk as far as possible the final market-wide ‘go-live’ of CSS and the new Switching Arrangements. Data migration into the CSS should therefore take place using defined production interfaces during transition, to further test the efficacy of these interfaces in near production conditions. For the migration of RMPs and other master data requiring migration to the CSS, the SI should consider using the defined production interfaces - as detailed in

section 3.4 Object Scope, and in section 0 Appendix C lists a catalogue of data objects and data elements within these objects where validation is required or potentially required. This catalogue is not exhaustive, and is required to be maintained and expanded on by the SI

Object.

Production interfaces will be point to point, i.e. from source to the CSS, and will not have the possibility of being integrated to an ETL tool/staging environment as temporary interfaces could be.

Although Production interfaces may be provided as continuous and real time, they should be able to operate in a batch window mode – where the extract mechanism for the interface is executed, and data is sourced through the interface until transmission is complete, after which the batch window ceases for the interface. This allows for defined data migration windows – where checks and reconciliations can be made at defined points.

Strengths employing defined production interfaces for data migration:

- Production interfaces facilitate automated migration to the CSS following production standards and security requirements.
- Interfaces can be defined to allow continuous throughput of migration data within defined windows.
- No migration specific tools/build are required as extract, transform and load functionality is implicit in the interface functionality.
- Interfaces employed early as part of data migration (within the broader Transition plan) will provide confidence to post cutover use (and resolution of any interface issues discovered early during early migration testing).

Potential challenges employing production interfaces for migration are as follows:

- Potential lack of control over migration throughput – albeit the design of migration specific interface capability should allow source services to control sent volumes and the CSS to limit and control load throughput.
- Data validation/reconciliation of data loaded is not as direct as with migration data provided via an ETL based interim interface – with an interim interface transformed ‘pre-load’ data resides within the staging database and can be reconciled to loaded data returned (imported) to this environment, whereas for a production interface ‘pre-load’ data resides in the source system.
- Load constraints/validations would be dictated by the production interface load mechanism - where migration may require deviation from these constraints/validations – to remedy this, alternative temporary load mechanisms may be required for some objects to employing production interfaces for migration purpose.
- Data volumes of migrated data (for example for RMPs, DAs, DCs and MEMs) will be much higher than for ‘business as usual’ production operation and the

employed production interfaces would need to contend with atypically large volumes for migration activity.

3.6 Data Cleanse, Extract, Transform, Load and Validation Approach

3.6.1 Data Cleansing Approach

The E2E Data Migration Plan[1] stipulates that responsibility for cleansing of data before migration will sit with the existing data masters (largely the existing data system and service providers, under the current, pre-CSS Switching Arrangements), even if data mastery is changing under the new Switching Arrangements.

These cleansing obligations will be covered within Transitional Regulation measures.

Due to the CSS design currently being a logical design rather than a physical design, not all CSS data element attributes have been defined at this point to provide complete cleansing requirements.

Below is a table providing data cleansing requirements that the SI should address:

No.	Data Cleansing requirements
1	The SI will work with the CSS Provider(s) to determine cleansing requirements once the CSS has a physical design, and where these requirements are for source data providers to implement, to ensure that validations have been defined to allow data quality discrepancies and cleansing failures to be reported and captured.
2	Some potential data cleansing activities will not have any rules or means of cleansing determination to parties outside the relevant source systems or associated parties – for example terminated RMPs would need to be cleansed with information provided to MPAS or UK Link by suppliers.
3	For cleansing activity that can be monitored and checked, the SI will develop processes and tools to examine source data extracts, potentially employing the staging database as highlighted in section **Error! Reference source not found.** Migration Tooling Framework, to ensure that required cleansing had been performed on source data.
4	Where a production interface is employed for the migration of a data object, the SI will have limited input to cleansing. The only opportunity for cleansing would be within a modified load mechanism for the interface late in the migration process and potentially involving data exclusion as part of the load process, hence the requirement for cleansing at source.
5	Validation checks should be set up as part of the interface load mechanism, which would be the primary means for data quality identification by the SI, where production interfaces are employed.
6	Where a temporary interface is employed for the migration of a data object, and should this interface be set up via the proposed ETL tool, validation checks relating to cleansing should be delivered within relevant ETL processes. These validation checks would allow the highlighting of data quality discrepancies, which could be addressed within ETL processes or fed

	back to the provider of the relevant data object, primarily during migration test phases.

Table 2 - Data Cleansing Requirements

Where cleansing is required or potentially required a catalogue of cleansing activities – listing data objects and elements within these objects - can be found in Appendix C – .

This catalogue is not exhaustive, and is required to be maintained and expanded on by the SI.

Cleansing will exclude terminated RMPs by UK Link and MPAS and will not form part of initial migration (stage 0). However, RMPs that are terminated during Stages1-3 of the transition plan should be migrated to the CSS.

3.6.2 Data Extract Approach

This section describes the approach for extracting migration data from source systems, and is relevant irrespective of whether a temporary migration interface or a production interface is to be employed for the migration of a data object.

The tables below are used to capture the data extract approach. Table 3 below is a table of data extract characteristics and notes, followed by Table 4 which details data extract requirements.

No.	Data Extract Characteristics/Notes
1	Extract functionality should be defined and executed within source systems – primarily UK Link and each of the MPAS instances, but also within the Governance service holding Switching Domain Data and the DCC Smart Metering hub.
2	For production interfaces employed for data migration activities, the data extract characteristics should be implicit in the source system logic provided for the interface feed. Evaluation of these characteristics against required characteristics of data migration extracts as defined below in this section, could form part of the SI's decision as to the suitability of a production interface being utilised for a migration object. The method of data transfer for a production interface (e.g. flat file, API, message service) will also be implicitly defined – further details of functionality of production interfaces can be found in the D-4.2.1 CSS User Requirements Specification[9].
3	For both production interfaces and temporary migration interfaces used for data migration, specific extract mechanisms/programs should be defined and built in the source system(s) relevant to each migration object.
4	When production interfaces are employed for high volume data migration objects, such as RMP data, the interfaces should have the capability of operating within defined 'windows', in other words providing data to the CSS for defined data sets in a batch fashion with defined start and end points of

No.	Data Extract Characteristics/Notes
	data transmission, rather than in a perpetual fashion as envisaged for interface operation after go-live.
5	The characteristics of interface operation should largely be defined via the extract mechanisms for the interface in question – allowing a required data set to be instructed and transmitted to the CSS for migration, and then ceasing data transmission until further instruction.
6	Extract mechanisms should provide data in the sequence that it was created in the source systems (for example MPAS and UK Link) – which is a key principle for RMP and Registration extracts. However, where the creation order is not accessible the SI should investigate and recommend a preferred approach.
7	Extract mechanisms should provide initial extracts (on first execution) and delta extracts – i.e. data created, changed or amended since last execution for subsequent extracts.
8	Extracted data should include a means of source identification (e.g. the specific MPAS instance from which data is extracted) and a unique incremental index for each record provided (beneficial for migration processes to ensure duplicate load prevention).
9	The method of data transfer should be defined for each temporary interface –
10	A delimited flat file transfer method is often used for temporary interfaces (due to ease in handling large data volumes, being tangible, traceable, readable, accessible). Temporary interfaces could also be defined using an equivalent approach as per production interfaces
11	When the “execution of an interface” is referred to in the document – this implies the execution of the extract mechanism to extract data and initiate the transfer of this data via the interface.

Table 3 - Data Extract Characteristics

No.	Data Extract Requirements.
1	Data extraction functionality is required to be developed on source systems by their owner (this is implicit when production interfaces are employed, but is required as a discrete activity where temporary migration interfaces are used).
2	Both production interfaces and temporary migration interfaces will require data extract functionality/mechanisms to provide initial (complete) extracts

No.	Data Extract Requirements.
	and ‘delta’ extracts as part of the extract criteria – that is, the extract of all data (meeting other criteria) created after the last data extract provision.
3	Production Interfaces should have the capability of operating within defined ‘windows’, in other words providing data to the CSS for defined data sets in a batch fashion with defined start and end points of data transmission, rather than in a perpetual fashion as envisaged for interface operation after go-live. This should be defined in the characteristics of the data extract mechanism.
4	For both production and temporary interfaces, a formal specification of the extract layout shall be defined (by the CSS Provider and SI respectively) and formally shared with the source system data steward(s).
5	Extract mechanisms are required to provide data in the sequence that it was created in the source systems (for example MPAS and UK Link) – which is a key principle for RMP and Registration extracts. However, where the creation order is not accessible the SI should investigate and recommend a preferred approach.
6	Temporary Interfaces will include a means of source identification (e.g. the specific MPAS instance from which data is extracted), the data object name, and the date and time of the extract generation within the content of the extract data.
7	For both production and temporary interfaces, a unique incremental index for each data record provided (beneficial for migration processes to ensure duplicate load prevention) should be included on each data record.
8	The SI shall co-ordinate with the stewards of the source data services, in line with data governance direction, to ensure that data extracts are provided on time and to specification.
9	The SI shall work with existing data providers (largely MPAS and UK Link) to establish the format and provision of data extracts to the temporary interfaces in line with security requirements for switching.
10	The SI will assess and determine the most suitable data transfer method or methods for temporary migration interfaces – bearing data security considerations and the elected temporary interface tool capabilities in mind.

Table 4 - Data Extract Requirements

3.6.3 Data Transform Approach

This section covers the data transformation concepts and approach for data migration to the CSS.

As per the data cleansing approach, due to the CSS design currently being a logical design rather than a physical design, not all CSS data element attributes have been defined at this

point to provide complete transformation requirements. The SI shall work with the CSS Provider(s) to obtain CSS data load requirements once a physical design and physical load mechanisms are established, which will inform the data transformation requirements.

Data transformation characteristics and notes are provided in Table 5 below:

No.	Data Transform Characteristics/notes
1	Data Transformation can be defined as a set of technical and business rules applied to source data elements to produce data elements that conform to the target system (here the CSS) physical data model requirements.
2	Technical transformation rules should include modifying data types and field data element formats to comply with CSS requirements.
3	Business transformation rules largely relate to mapping or converting data element values as per defined business rules. The SI should work with the CSS Provider in determining transformation rules in line with data definitions (to be defined) and business process rules as defined in Abacus.
4	For production interfaces used in migration, data transformation should take place in the same way as defined for live operation (as documented in the relevant interface specification). Where an ETL tool or other mechanism is employed for temporary interfaces, transformations should largely take place at the CSS side of the interfaces (i.e. preceding - but part of - load functionality).

Table 5 – Data Transform Characteristics

A catalogue of transformation Items – listing data objects and elements within these objects where transformation is required or potentially required - can be found in Appendix B – .

This catalogue is not exhaustive, and should be updated, maintained and expanded on by the SI.

3.6.4 Data Load and Validation Approach

This section covers data load and validation aspects at a high level, due the CSS design currently being limited to a logical design rather than any physical definition at this point.

The CSS will need to provide the mechanisms and ability for migrating/loading data as per the objects provided in the CSS migration scope and then validating this load.

Inbound production interfaces shall have defined load and validation mechanisms/functionality that will be defined and provided by the CSS Provider.

Temporary migration interfaces should also define load and validation mechanisms and functionality. These mechanisms may be equivalent to or consistent with mechanisms provided for inbound production interfaces, or be provided by APIs, file-based import facilities or functional/transactional interfaces – to be defined and provided by the CSS Provider.

It is envisaged that the mechanisms provided for loading and validation of data to the CSS via production interfaces and temporary migration interfaces will have the characteristics provided in Table 6 below.

No.	Load Mechanism Characteristics
1	Observance of the business process rules as defined in ABACUS for the relevant data object and validation checks in accordance with these rules (with load failure and notification of error on validation check failure).
2	Where a Production interface is to be employed for data migration, provide a means of bypassing validations required for equivalent 'Business as Usual' load mechanisms – in other words data migration may require a subset of validations to be employed by the load mechanism for the production interface.
3	Provide a means of preventing duplicate data loads, where each extracted data record should have a unique incremental identifier to facilitate prevention of duplicate loads
4	Ensure that data is loaded in the record sequence provided by the production or temporary interface - where each extracted data record should have a unique incremental identifier (which could be referenced for this purpose).
5	Provide a means of reprocessing data records previously rejected (due to validation errors for example).
6	Treat each data record as an individual transaction irrespective of the means of data transmission (for example where records are batched). Allows for a high volume of data loads – for RMP and Registration data, volumes are estimated to be around 55 million.
7	Allows for a means of varying load throughput (from load suspension to maximum allowable throughput).
8	Allows for recovery and resumption of loading after any planned or unplanned load interruption.
9	Provides a mechanism for deletion of data – with qualification – specifically required during migration test phases (may be regarded as a general CSS characteristic).
10	Provides load status metrics (e.g. volume % load completion, records loaded, records in error).
11	Provides data validations as per CSS load requirements and rejection of data records not conforming to requirements – with provision of error details for rejected data.
12	CSS processing of migrated load data (for example with RMPs or Registrations) may result in significantly higher throughput of volumes of registration requests than per normal operation. The SI shall be required to work with the CSS Providers to ensure that the CSS and inbound interface processing/loading can be configured (possibly adjusting operational parameters such as the 'Threshold Anomaly Detection' parameter) to allow for the unusually high data throughput as dictated by the data migration.

Table 6 – Load Mechanism Characteristics

Appendix C lists a catalogue of data objects and data elements within these objects where validation is required or potentially required. This catalogue is not exhaustive, and is required to be maintained and expanded on by the SI

3.7 Object Walkthrough

Note that these walkthroughs are illustrative and provide a guide that might be useful when the SI co-ordinates and establishes actual data migration approaches and plans including a sequence of activities.

3.7.1 Initial Reference and Master Data Migration

Outcome following the reference and master data migration:

- The CSS has been populated with Switching Domain Data
- The CSS has been populated with current Supplier arranged appointments
- The CSS holds all RMP data from UK Link and MPAS in preparation for the migration of Registration data – discussed in the next section.
- The CSS holds REL addresses for each RMP.

Switching Domain Data including parameters for the CSS to operate in line with the REC has been included as part of data migration for completeness, as the CSS will require it prior to commencing subsequent data migration.

A REC governance function will maintain the register of organisations licensed to operate in the energy market, and the roles in which they are authorised to operate, including any applicable regulatory sanctions. It also sets the parameters which apply to the switching process. Initial settings for these parameters will be agreed and set on 'day zero' for go-live, and then can be changed as required under REC governance. These parameters currently include:

- Length of objection window for the following:
  - Domestic switches; and
  - Non-domestic switches.
- Time of Registration Securing;
- Length of Standstill[6];
  - DCC serviced meters
  - Non-DCC serviced meters
- Length of maximum switch period; and

[6] Note, for customers returning from an Erroneous Transfer, this parameter will be overridden by a business rule applied within CSS to effectively set this parameter to 0.

- This information should be synchronised to CSS from the Industry Governance data provider.

Table 7 below outlines the reference and master data migration walkthrough.

Step No.	Detail - Reference and Master data migration
1	Instruct execution of the inbound interface *SwitchingDomainData* to populate the CSS with governance data and parameters (such as Market Participants, Market Participant roles, Retail Energy Company, Registration Intervention Type). This should provide a complete refresh of this data in the CSS. (Note that the source service of the *SwitchingDomainData* interface is not yet defined.)
2	Instruct the execution of extracts of the RMPs from UK Link and MPAS – the initial migration will be the 'set' of all RMPs with status 'Created', 'Operational' or 'Dormant'.
3	The initial RMP migration will be the 'set' of all RMPs related to Active status registrations and additional RMPs that could be employed in future registrations.
4	Subsequent RMP migrations will be termed delta RMP migrations – these migrations will occur periodically up to the cutover start date (4 days prior to CSS 'go-live), prior to any current registration delta migration linked to these RMPs, and will consist of RMPs introduced after previous RMP migrations or where RMP data has changed after the previous extract of this RMP – RMPs that have obtained status 'Terminated' since the previous RMP extract must be included (apart from statuses highlighted for the initial RMP migration).
5	The SI is recommended to employ the inbound production interfaces *MeteringPointSync* and *SupplyMeterPointSync* for RMP data migration from MPAS and UKLink.
6	UK Link and MPAS will hold extract mechanisms relevant to RMP data extracts for the relevant interfaces and the SI shall interact with relevant parties to instruct execution of these mechanisms. Extract mechanisms will be required to have the ability to produce an initial extract of all RMPs and for delta RMP extracts.
7	The volume of RMP data migrated will be very high (specifically the initial migration data set of around 55 million RMPs) so the interfaces will need to be robust in handling such high volumes for loading into CSS.
8	Note that RMP data will include the Meter Location Address or addresses as currently held by UK Link and MPAS, which will later be utilised by the CSS Registration Service and the Address Service to produce a REL address.

Step No.	Detail - Reference and Master data migration
9	Note that the current ABACUS definitions of the *MeteringPointSync* and SupplyMeterPointSync interface is provided in Appendix E –

Table 7 – Reference and Data Migration Walkthrough

3.7.2 Migration of Active Registrations and Delta Registrations

Expected outcome following the active and delta registrations migration:

- All Active and Inactive status registrations (where disconnection has occurred) as held by MPAS and UK Link (as at end of 12th calendar day prior to 'go live' for switch registrations; as at end of 4th calendar day prior to 'go-live for new registrations) have been successfully migrated to the CSS.

- Remaining registrations to be migrated to the CSS from MPAS and UK Link should be switch registrations that are in progress and are pending (not in an Active state). These are deemed 'in-flight' switches and will be discussed in the next section.

Table 8 below outlines the activities involved for the Active and Delta Registration data migration walkthrough:

N.b. This walkthrough assumes the employment of an ETL tool (see section 3.5.2) as part of the required temporary interface provision for registration data migration.

Step No.	Detail - Active Registrations and Delta Registrations data migration
1	Instruct the execution of initial extracts for registration data with 'Active' status from MPAS and UK Link for the temporary interfaces. Subsequent executions will be requested for delta extracts of registrations that have status 'Active' or 'Inactive' subsequent to the previous execution.
2	UK Link and MPAS will hold extract mechanisms relevant to current registration data and the SI shall interact with relevant parties to instruct execution of these mechanisms. Extract mechanisms will be required to have the ability to produce an initial extract of all Active status registrations at the time of execution, and for subsequent delta extracts of Active status registrations (those registrations created since the last extract execution).
3	The target of each of the two temporary registration interface forms (from MPAS and UK Link) should be the staging environment linked to the procured ETL tool.
4	The volume of current registration data from MPAS and UK Link will be very high (specifically the initial current registration 'set') and in the order of 55

Step No.	Detail - Active Registrations and Delta Registrations data migration
	million registrations. The temporary interfaces to the staging environment will be required to be robust in handling such volume to the staging database (and the staging database itself scaled to accommodate such volume).
5	A temporary interface process for each of the two temporary interface forms (from MPAS and UK Link), employing an ETL tool with staging database capability should be defined by the SI to perform transformations on the registration data, and validations on this data, in preparation for load to the CSS. Cleansing that cannot be addressed at source (MPAS and UK Link) can be performed within these ETL processes. The temporary interface processes will have a common transformation target structure (and location in the staging database).
6	Once current registration data has been received in the staging environment, the temporary interface processes described in the previous step can be executed.
7	Ensure reference and master data (RMPs etc) for Active status registrations are updated (migrated) to support the registration data in the previous step.
8	Any validation issues encountered can be fed back to MPAS or UK Link by the SI, and an iteration from step 1 should occur after remediation by the relevant party.
9	The SI shall co-ordinate with the CSS Provider to produce a load mechanism for current registration data. This load mechanism will create the registration request for current registration data in the CSS.
10	The load mechanism will include appropriate validations but may have less restrictive validations than the load mechanism employed by the *RegMgmtRequestSubmission* interface for registrations (from suppliers) after CSS 'go-live'. It is anticipated that there will be much commonality between the data migration (interim) registration request/ load mechanism and the mechanism employed by the *RegMgmtRequestSubmission* interface.
11	The SI should define and specify a single interface for transformed registration data - from the single transformed registration data location (within the ETL/Staging environment) to the load mechanism described in the previous two steps.
12	Once the ETL processes have transformed the current registration data, the ETL load process should be initiated to invoke the interface defined (which in turn will invoke the load mechanism).
13	The load mechanism for registrations to the CSS may return validation errors – the SI will be required to co-ordinate parties to address these errors by

Step No.	Detail - Active Registrations and Delta Registrations data migration
	correction to ETL processes, or possibly by reverting the issue to MPAS and UK Link (where after resolution, potentially through the use of 3rd party support, the necessary processes will be re-executed).
14	Instruct Execution of inbound interfaces *DADCAppointment* and *MEMAppointment* to populate the CSS with Data Aggregator, Data Collector and MEM Supplier Arranged Appointments. This should provide a complete refresh of this data in the CSS.
15	The steps described above will be executed periodically (with delta extracts after the initial extract as described in step 1) until 12 calendar days prior to the 'go-live' date (inclusive) for Active status registrations relating to switches. After this date suppliers are not to provide MPAS and UK Link with switch registrations, but instead will accumulate these switch registrations for direct feed to the CSS after 'go-live'. The period from 12 calendar days prior to 'go live' is labelled the 'In-flight' window.
16	The steps described above will be executed periodically (with delta extracts after the initial extract as described in step 1) until 4 calendar days prior to the 'go-live' date (inclusive) for initial registrations. After this date suppliers are not to provide MPAS and UK Link with Initial registrations, but instead will accumulate these initial registrations for direct feed to the CSS after 'go-live'.

Table 8 - Active and Delta Registration migration

3.7.3 In-Flight Switches

Expected outcome following the migration of registrations during the In-flight window and cutover window:

All registrations (both switch registrations and initial registrations) provided to MPAS and UK Link during the 'In-flight' window have been migrated to the CSS.

All migration activity has been completed during the cutover window and the CSS is fully prepared and ready for go-live when it will become the master of registrations under the new Switching Arrangements.

All switch requests and initial registration requests that have been 'held back' by suppliers/shippers as per in-flight arrangements plus cutover window closures, will be transmitted by suppliers to the CSS via the production interface *RegMgmtRequestSubmission.* This should be preceded by MPAS and/or UK Link submitting supporting RMP data for these registrations to the CSS via interface *MeteringPointSync* or *SupplyMeterPointSync* as part of the new Switching Arrangements.

Table 9 below outlines the activities involved for the in-flight switches data migration walkthrough:

Step No.	Detail - Active In-Flight Switches data migration
1	The period from 12 calendar days prior to CSS go-live (the T1 date in the Transition Plan for in-flight switches) will be known as the In-flight Registration Window.
2	During this period MPAS and UK Link will continue to send delta registration data for initial registrations received from suppliers/shippers until 5 calendar days prior to the CSS go-live date (the T2 date in the Transition Plan for in-flight switches).
3	These new connection registrations should be migrated as 'delta' registrations following the steps detailed in section 3.7.2.
4	During the in-flight window, after a 5-day period to allow for objections, MPAS and UK Link will provide In-flight registrations that have successfully now reached a Confirmed or Secured status (i.e. where any potential objections have not been successful).
5	These in-flight registrations should also be migrated as 'delta' registrations following the steps detailed in section 3.7.2.
6	All data submissions to MPAS and UK Link should cease 5 days (T2 date) prior to go-live, when the cutover window is initiated.
7	The cutover window, planned to be executed for 4 days across a weekend, will allow the SI to complete migration activities in readiness for go-live.

Table 9 - Active in-flight switches migration

3.8 Requirements – Data Migration Approach and Strategy

ID	Data Migration Approach and Strategy – Requirements and Assumptions	Type	Outputs/Deliverables/Mitigations
3_1	The SI will work and coordinate with the CSS provider(s) and key industry parties to define, manage and execute a consolidated CSS data migration approach, plan, solution and set of capabilities to facilitate a smooth migration of data into the CSS.	R	The SI will produce a detailed strategy, approach and plan for CSS data migration activity as an integral part of the overall Core Systems and Services Integration Approach and Plan.
3_2	Transition stages will be progressed in sequence, and progression to a successive stage should not occur until all material activity (integration and data migration) required within a stage have been completed in accordance with defined stage gate criteria.	A	The SI and CSS providers will observe the transition approach as set out in the E2E Transition Plan document and associated stage entry and exit gate criteria. The SI and CSS Providers should participate in stage gate activities to inform closure of a transition stage.

ID	Data Migration Approach and Strategy – Requirements and Assumptions	Type	Outputs/Deliverables/Mitigations
3_3	The SI will be responsible for planning, developing, testing, management and execution of CSS Data Migration activities that will occur between stage 1 and stage 3 of the Transition Approach.	R	SI Responsibility for Data Migration activity for both testing and live migration.
3_4	The recommended approach for Data Migration will be to progress stage 1 through to stage 3 data migration activity within a short a period as possible.	A	This will reduce the number of delta migrations – stage 1 is anticipated to be the largest time window, noting the need to satisfy agree transition stage gate criteria.
3_5	The SI will plan and define timescales for data migration activity which should be refined during early migration test cycles once production interfaces and temporary interfaces have been defined physically.	R	Definition of timescales as input to CSS Data Migration plan refinement.
3_6	The adopted CSS Data Migration approach assumes that no historical registration data is required to be migrated to the CSS, and that data migration is limited to current data through the transition stages.	A	Historical data retained in MPAS and UK Link systems. To be validated by the SI with programme governance in finalising the CSS data migration strategy and approach
3_7	For registration data (and corresponding RMP data) to be migrated from MPAS and UK Link into the CSS, the SI will undertake analysis during DBT, in consultation with MPAS and UK Link representatives, to determine and specify criteria for the extraction of current data. This will include statuses for RMPs and Registration (mapped to the equivalent CSS statuses).	R	Defined extraction criteria for Data Migration objects (primarily RMPs and Registrations) including statuses for extraction.
3_8	The SI will confirm the data migration scope as set out in this document.	R	Confirmed data migration scope which defines the CSS data migration.
3_9	The SI will determine whether an ETL tool will be employed for temporary data migration interfaces (required primarily for registration data) and if	R	Definition of the approach for temporary interfaces and

ID	Data Migration Approach and Strategy – Requirements and Assumptions	Type	Outputs/Deliverables/Mitigations
	not, define and justify how reconciliation reports will be generated, and data validations achieved.		reconciliation/validation required for these, by the SI.
3_10	The SI should consider using defined production interfaces where available and suitable, for data migration activity (for example RMP data). Where production interfaces not considered suitable in meeting the CSS data migration requirements laid down in this document, this should be justified and alternative means for proving the production interfaces in 'near live' conditions within transition stages 1 to 3 should be proposed by the SI.	R	Transition approach alignment.
3_11	The SI will produce and maintain a final data cleansing approach, after physical definition of the CSS solution, expanding on the data cleansing catalogue provided in this product.	R	Production of a final data cleansing approach that is maintained during DBT.
3_12	Cleansing will exclude terminated RMPs by UK Link and MPAS and will not form part of initial migration (stage 0). .	A	Fundamental RMP cleansing approach alignment. The SI should ensure that MPAS and UK Link validate that no Active status registrations are held against terminated RMPs
3_13	The SI will produce and maintain a final data extract approach, after physical definition of the CSS and switching network solutions.	R	Production of a final data extract approach that is maintained during DBT.
3_14	Extract functionality will be defined and executed within source systems, largely UK Link and MPAS instances as data input to the inbound CSS production and temporary interfaces.	A	Data Extract functionality definition. Responsibilities for existing core systems will need to be defined in transitional regulations
3_15	Production and temporary interfaces should have the capability of operating in batch windows for data migration purpose.	A	Data Extract functionality definition. To be validated once physical interface definitions are finalised

ID	Data Migration Approach and Strategy – Requirements and Assumptions	Type	Outputs/Deliverables/Mitigations
3_16	The SI will specify extract mechanisms to provide data to interface in the sequence it was created in source system, to allow for initial and delta data extracts, to include a source system identifier on each interface record and to include a unique incremental index for each record provided.	R	SI extract mechanism specification deliverables.
3_17	The SI will establish the format and provision of data extracts for temporary interfaces (e.g. registration temporary interface) and provide this to source system providers.	R	SI extract mechanism specification deliverables.
3_18	The SI will produce and maintain a final data transformation approach, after physical definition of the CSS and switching network solutions.	R	Production of a final data transformation approach that is maintained during DBT.
3_19	The SI will produce and maintain a final data load approach, after physical definition of the CSS and switching network solutions.	R	Production of a final data load approach that is maintained during DBT.
3_20	The SI will work with the CSS Provider(s) to specify CSS load mechanisms to be employed for CSS Data Migration. Load mechanisms should prevent duplicate data loading, ensure the load sequence of data is maintained, provide a means of reprocessing failed load data, allow for high volumes, provide load status metrics, provide load validations.	R	SI and CSS Provider load mechanism specification deliverables.
3_21	After development of the final CSS data migration strategy, approach and plan by the SI, the SI will produce detailed ‘run books’ providing end to end execution steps for the migration of each data migration object and associated roles and responsibilities.	R	Run book production for each data migration object.

4 Planning and Execution

4.1 Planning

The SI, as part of the procurement process in the Enactment Phase, will be required to develop the full and final CSS data migration strategy, approach and detailed plan for planning, management, preparation testing and execution of all CSS Data Migration activities required in line with this CSS Data Migration Plan and the E2E Data Migration Plan[1] both during testing and for cutover.

The SI developed CSS data migration strategy approach and plan shall reflect the final physical CSS design and cover all aspects of this CSS Data Migration Plan, and should be finalised during DBT, once the CSS physical design is baselined, and prior to commencement of data migration testing.

This SI developed CSS data migration strategy, plan and approach should build off and align with this initial version of the CSS Data Migration Plan and be developed in consultation with industry parties that will participate in CSS data migration activities. The SI shall maintain and keep this document up-to-date to co-ordinate the activities of the CSS provider(s) and the existing central data system and service providers. It will also be used to update this CSS Data Migration Plan acting as the reference requirement document for oversight and assurance of the CSS data migration activities during data migration testing and execution as part of the staged Transition to go-live.

Careful consideration will need to be given to the elected cutover window and go-live date, avoiding peak periods (such as quarter end or first day in a month).

4.1.1 Planning - Within Transition Stages

Section 3.2 Transition Stages defines a path for the CSS to establish connectivity to external systems in stages, allowing data migration activities to complete, and potentially utilise a subset of interfaces that are enabled for this purpose from stage 1.

The planning of data migration activities within stages 1 to 3 therefore needs to be aligned with CSS integration planning for interface connectivity for the transition stages, both during testing and for live migration and integration within the Transition stages.

Detailed planning of data migration activities within stages 1 to 3 will also require analysis and understanding of Interface (Production or Temporary) data throughput and source system (largely MPAS and UK Link) data provision ability.

The SI will be required to work with the CSS Provider(s) and wider industry to produce a detailed plan for CSS data migration and system integration covering transition stages 1 to 3 – the next section provides a high-level migration execution sequence plan as a guide and which could be employed as the basis for the CSS data migration steps required within stages 1 to 3.

Table 10 below provides characteristics of data migration within transition stages that may inform detailed planning by the SI

Transition Stage	Notes
Stage 1	High volume RMP and registration data migrations take place within this stage – being complete migrations of this data at a point in time. From a data migration point of view, this stage should therefore occupy the most time within the transition stages.
Stage 2	Delta RMP and registration data migrated within this stage – ECOES and DES receive interfaced data from the CSS. From a data migration point of view, deltas are required to ensure that RMPs and registrations are in line with MPAS and UK Link after stage 1. It would be desirable to minimise this stage, reducing the number of delta migrations required during this period (possibly with only one or two delta data sets).
Stage 3	Stage 3 outcome is a fully integrated CSS – at go-live. From a data migration point of view, this stage focusses on in-flight processing, which commences at least 12 days prior to go-live. The final 4 days of this stage is designated the cutover window where final data migration of in-flight data will occur.

Table 10 – Transition Stage characteristics

4.1.2 Planning – Source System Data Segmentation.

As highlighted earlier in this document, for electricity, each of the DNOs currently employ an exclusive MPAS system, each utilising a version of the common design of the MPRS software component.

For CSS Data Migration planning and execution, the SI should consider the multiple MPAS instances and prepare granularity of data migration plans accordingly. The CSS data migration execution sequence plan in the next section refers to MPAS as if it is a single instance, whereas future data migration plans to be developed by the SI could segment

data migration activities per MPAS instance, noting each are utilising a common MPRS design.

For early data migration test cycles, the SI may elect to migrate electricity data from one or a few MPAS instances – to reduce data volumes for testing.

For gas, a single UK Link system instance exists, with data for all gas suppliers – here the SI may elect to migrate data per supplier, requesting UK Link to provide relevant data in batches by supplier and reflect this in future CSS data migration planning.

For early data migration test cycles, the SI may elect to migrate gas data for a subset of suppliers to reduce data volumes for testing.

4.2 Execution Sequence Plan

Table 11 below outlines the sequence of CSS migration activities and steps in line with the Transition Stages approach – see 3.2 - to E2E Switching Arrangements delivery.

This should be viewed as a guide to cutover planning and as input to a CSS data migration detailed plan that the SI will produce for data migration test cycles and cutover.

Stage	Sequence number	Migration Object/Task Description	Comments	Parties Involved
1	1	Switching Domain Data	Execute Interface *SwitchingDomainData*	Industry Governance SI CSS
1	2	Initial migration of RMPs from MPAS	Execute Interface MeteringPointSync – multiple MPAS instances	MPAS SI CSS
1	3	Initial migration of RMPs from UK Link	Execute Interface SupplyMeterPointSync	UK Link SI CSS
1	4	Initial migration of Active status registrations from MPAS	Execution of temporary migration interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	MPAS providers SI CSS
1	5	Initial migration of Active status registrations from UK Link	Execution of temporary migration interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	UK Link SI CSS
1	6	Data Aggregator,	Execute Interface *DADCAppointment*	MPAS SI

Stage	Sequence number	Migration Object/Task Description	Comments	Parties Involved
		Data Collector appointments		CSS
1	7	MEM appointments	Execute Interface *MEMAppointment*	MPAS UK Link SI CSS
2	8	Switching Domain Data	Execute Interface *SwitchingDomainData* – complete refresh in CSS.	Industry Governance SI CSS
2	9	Smart Meter Hub data	Ensure Interface CommsHubDataLink inbound interface is operational (assists with REL address determination related to RMPs).	DCC SI CSS
2	10	Delta migration of RMPs from MPAS performed periodically during stage 2	Execute Interface MeteringPointSync	MPAS SI CSS
2	11	Delta migration of RMPs from UK Link performed periodically during stage 2	Execute Interface SupplyMeterPointSync	UK Link SI CSS
2	12	Delta migration of Active/Inactive status registrations from MPAS performed periodically during stage 2	Execution of temporary Migration Interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	MPAS SI CSS
2	13	Delta migration of Active/Inactive status Registrations	Execution of temporary Migration Interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	UK Link SI CSS

Stage	Sequence number	Migration Object/Task Description	Comments	Parties Involved
		from UK Link performed periodically during stage 2		
2	14	Data Aggregator, Collector	Execute Interface *DADCAppointment* - complete refresh in CSS	MPAS SI CSS
2	15	MEM	Execute Interface *MEMAppointment* - complete refresh in CSS	MPAS UK Link SI CSS
2	16		Recycle back to step 7 to perform further deltas if required prior to Transition Stage 3	
3	17		This is the commencement of the in-flight window – for Production migration the plan would co-ordinate Supplier/Shipper ceasing providing MPAS/UK Link with switching registrations – and cater for 5-day objection window.	MPAS and UK Link SI
3	18	Switching Domain Data	Execute Interface *SwitchingDomainData* – complete refresh in CSS	Industry Governance SI CSS
3	19	Delta migration of RMPs from MPAS	Execute Interface MeteringPointSync	MPAS SI CSS
3	20	Delta migration of RMPs from UK Link	Execute Interface SupplyMeterPointSync	UK Link SI CSS
3	21	Delta migration of In-Flight Registrations (Pending status) from MPAS	Execution of temporary Migration Interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	MPAS SI CSS

Stage	Sequence number	Migration Object/Task Description	Comments	Parties Involved
3	22	Delta migration of In-Flight Registrations (Pending status) from UK Link	Execution of temporary Migration Interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	UK Link SI CSS
3	23		4 days prior to cutover – cutover window commences and Supplier/Shippers cease providing MPAS/UK Link with new connection registrations. PRS and UK Link to provide final Delta Registrations for these registrations.	MPAS UK Link SI
3	24	Final Delta migration of RMPs from MPAS	Execute Interface MeteringPointSync	MPAS SI CSS
3	25	Final Delta migration of RMPs from UK Link	Execute Interface SupplyMeterPointSync	UK Link SI CSS
3	26	Final Delta migration of initial registrations (Active status) from MPAS	Execution of temporary Migration Interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	MPAS SI CSS
3	27	Final Delta migration of initial registrations (Active status) from UK Link	Execution of temporary Migration Interface Transformation of data via ETL tool and load via interim mechanism/load mechanism	UK Link SI CSS
3	28	Data Aggregator, Collector	Execute Interface *DADCAppointment* - complete refresh in CSS	MPAS SI CSS
3	29	MEM	Execute Interface *MEMAppointment* - complete refresh in CSS	MPAS UK Link

Stage	Sequence number	Migration Object/Task Description	Comments	Parties Involved
				SI CSS
3	30		CSS GO-LIVE – All production inbound and outbound interfaces will be active at this point.	

Table 11 – Execution sequence plan

4.3 Resource Plan

The SI should provide a complete resource plan for CSS data migration activities covering planning, management, preparation, testing and execution activities. This plan should be produced and maintained during DBT and baselined prior to the commencement of data migration testing and should include a work/activity breakdown for all activities identified, including associated responsibilities and resource estimates.

The SI should make the resource plan available to DCC and Ofgem for communication with relevant parties and stakeholders as required.

Resourcing should cover, as a minimum, the following aspects of CSS data migration:

4.3.1 Resourcing - Management of Migration Activities

Management and Leading data migration tasks including:

- Approach and Strategy Planning for the migration
- Test Planning and Cutover planning for the migration
- Management of functional and technical specifications to support the CSS migration
- Management of the migration team during tests and cutover
- Managing reporting of metrics for data migration tests and cutover
- Managing data validation, reconciliation and audit activities
- Co-ordination between the SI and CSS Providers
- Co-ordination between the SI and external parties (e.g. CDS)
- Progress Status Reporting (Testing and Cutover)
- Defect and Issue management

4.3.2 Resourcing - Execution of Migration Activities

- Covering detailed Analytical activities to support the migration including:

- Participating in creation of functional and technical specifications
- Specification of Data Extract Formats
- Obtaining and managing data extracts
- Performing data cleansing and data validation activities
- Performing data transformation activities
- Performing data loading activities (for tests and cutover)
- Recording of defects and issues encountered during migration testing
- Performing data reconciliation and validation activities

4.4 Data Recovery

The 5-stage transition approach seeks to mitigate the risk to the preparation of the CSS for production use as CSS data migration occurs across several stages (stages 1 to 3) as capability and connectivity to the CSS is introduced in a staged approach before 'go-live'.

However, the SI and CSS Provider(s) should plan for data recovery in the event that the CSS encounters a major technical or environmental issue or if fundamental/serious issues are discovered with migrated data that cannot be easily corrected - during migration testing or live migration as part of Transition.

In the Data Extract and Data Load Approach sections, required characteristics of extract and load aspects were stated to prevent duplicate loads.

To facilitate data recovery, the SI should work with the CSS Provider(s) to allow a data deletion facility to be provided (with qualifications). This functionality would be restricted to authorised personnel and would allow the deletion of data migrated to the CSS.

Interfaces or migration temporary interfaces could then resend data previously migrated (after resolution of fundamental issues leading to the recovery requirement are resolved) to facilitate data recovery.

Data recovery planning by the SI should also be addressed by ensuring that the CSS Provider schedules regular backup planning (e.g. nightly) of CSS data. On discover of a major data issue, the SI could then request a restore to an appropriate backup, thus reverting to a CSS state prior to the problematic data having been migrated.

A fundamental CSS failure would point to disaster recovery planning rather than data recovery and is outside the scope of this topic.

4.5 Requirements – Data Migration Planning and Execution

ID	Data Migration Planning and Execution – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
4_1	The SI developed CSS data migration strategy, approach and plan will reflect the final physical CSS design and cover all aspects of this CSS Data Migration Plan. It shall be developed during DBT after the CSS physical design has been decided and baselined.	R	Further detailed development of the CSS data migration strategy, approach and plan once the physical CSS solution is defined.
4_2	The SI developed CSS data migration strategy, approach and plan shall be developed in consultation with CSS Provider(s) and other industry parties participating in CSS data migration activities.	R	Further detailed development of the CSS data migration strategy, approach and plan once the physical CSS solution is defined.
4_3	The SI developed CSS data migration plan will propose a cutover window period and go-live date, avoiding peak periods.	R	Further detailed development of the CSS data migration strategy, approach and plan once the physical CSS solution is defined.
4_4	Detailed planning of CSS data migration activities within Transition stages 1 to 3 of the transition plan will require the SI to analyse and understand Interface (Production or Temporary) data throughput and source system (largely MPAS and UK Link) data provision ability.	R	CSS detailed data migration planning requirements.
4_5	For CSS data migration planning and execution for migration testing and cutover, the SI will define the approach to data segmentation – e.g. for electricity the migration may be segmented per MPAS instance, for gas the migration may be segmented by supplier.	R	CSS detailed data migration planning requirements.
4_6	The SI will provide a complete resource plan for CSS data migration aligned to detailed plan activities covering planning, management, preparation, testing and execution activities. This plan should be produced and maintained during DBT, baselined prior to the commencement of data migration testing, and should include a work/activity breakdown for all activities identified, including associated responsibilities and resource estimates.	R	CSS data migration Resource Planning requirements.

ID	Data Migration Planning and Execution – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
4_7	The CSS data migration work-stream will require close coordination and orchestration by the SI, involving the Programme Co-ordinator, DCC, CSS Provider(s), existing central data system and service providers, and other key impacted industry parties and service providers.	R	SI Co-ordination of other parties and providers involved in CSS data migration.
4_8	The SI will provide quality assurance over all the CSS data migration workstream activities as part of its broader roles and responsibilities within DBT. The SI will describe in detail the quality assurance approach and governance around this.	R	SI to define Quality Assurance and governance for CSS Data Migration.
4_9	The SI will develop and execute the full and final CSS data migration plan (i.e. strategy, approach and plan), while the CSS Procurer and Manager will oversee and assure the SI in line with the CSS Data Migration Plan	R	SI and CSS Procurer CSS DM Plan responsibilities.
4_10	The CSS data migration workstream will require close coordination and orchestration by the SI and the CSS Procurer and Manager with all the key industry parties and service providers.	R	SI and CSS Procurer and Manager co-ordination.
4_11	The SI, and CSS Provider(s) shall to ensure that the CSS build is in line with CSS data migration test planning activities.	R	Alignment of SI and CSS Providers during DBT.
4_12	The SI and CSS Provider(s) shall work closely with existing central data system and service providers during the DBT phase to ensure that all parties and providers are aligned with regards to DBT CSS data migration requirements and migration planning	R	Alignment of SI and CSS Providers with existing central data system and service providers during DBT.
4_13	The SI will liaise with the REC governance that will master the new Retail Energy Code (REC) data catalogues and CSS Parameter information (source location is not currently defined) and ensure that this organisation is engaged in the provision of the *SwitchingDomainData* interface data at the required time.	R	SI alignment with REC governance.
4_14	The SI will liaise with the DCC Smart Metering Data Service to ensure that the *CommsHubDataLink* interface data can be provided and that this interface	R	SI alignment with DCC Smart Metering Comms Hub administrator.

ID	Data Migration Planning and Execution – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
	can be triggered when required per the detailed CSS data migration plans		
4_15	The SI will also oversee and co-ordinate CSS data migration activity – holding the responsibility for the migrated data's accuracy, consistency, completeness.	R	SI data migration governance responsibility.
4_16	A data governance framework will be implemented by the SI, defining data custodians, how data will be stored with a set of standards and procedures as to how data should be used by authorised personnel. A set of controls and audit procedures should then be put in place to ensure compliance with internal data policies and external regulations.	R	SI data governance framework provision.
4_17	The CSS Provider(s) shall be responsible for CSS data governance, with responsibility for and management of data's availability, usability, integrity and security	R	CSS provider data governance responsibility.
4_18	The SI and CSS Provider(s) will ensure that all CSS data migration activities comply with data security requirements as set out in the E2E security requirements document D-4.1.10.2 to ensure alignment and compliance with Switching security requirements. Production and Temporary Interfaces employed for CSS Data Migration switching should by design and implementation implicitly comply with security requirements.	R	SI and CSS Provider compliance with switching security requirements.
4_19	The SI and CSS Provider(s) will plan for data recovery if the CSS encounters a major technical or environmental issue or if fundamental/serious issues are discovered with migrated data that cannot be easily corrected - during migration testing or live migration transition.	R	SI and CSS Provider data recovery planning
4_20	Data recovery planning by the SI shall also be addressed by ensuring that the CSS Provider(s) schedule regular backup planning (e.g. nightly) of CSS data.	R	SI and CSS Provider data backup plan.

ID	Data Migration Planning and Execution – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
4_21	To facilitate data recovery, the SI will work with the CSS Provider(s) to allow a data deletion facility to be provided (with qualifications). This functionality should be restricted to authorised personnel and allow the deletion of data migrated to the CSS	R	SI and CSS Provider Data Recovery requirement.

5 Testing, Reconciliation and Audit

5.1 Testing Approach

The SI will be expected to produce a CSS Data Migration and Transition (DMT) test phase plan in line with requirements of the E2E Testing Plan document[4]. The CSS DMT test phase plan should be based on several migration test windows, which will be referred to as 'test cycles', each test cycle conducting the full set of migration object activities as detailed in section 3.3 'CSS data migration scope'. Typically, the conducting of at least 3 test migration cycles would be anticipated.

The E2E Testing Plan document refers to the potential provision of a Pre-Production CSS environment for testing purposes. The provision of a Pre-Production CSS (and Address Service) environment – or multiple environments (as typically multiple environments would be provisioned for different uses) - is an assumption for the build and test of any new service/product, and certainly a requirement for data migration testing.

Each test cycle should have the required success criteria as objectives of the cycle. Test cycles should be a simulation of all CSS data migration activity as per the transition stages 1 to 3 as defined in 3.2 Table of transition stages – as per the transition approach to the CSS becoming fully operational.

The test cycles should be viewed as a path to perfection in terms of the level of data scope, objectives and criteria set. Earlier cycles would have a smaller data scope and lower set of success criteria – for example, the first test cycle may set an objective to ensure the successful migration of 30% of a reduced set of in scope data (for example only where the data scope is reduced to RMPs and registrations from a single supplier), the second test cycle objectives may require 100% of the same reduced set of data as defined in the first test and the objectives set for the third test cycle may require the successful migration of 100% of a full data set.

The number of test cycles should be determined by the SI, factoring in the cost of conducting each cycle, the DBT overall programme plan timeline and progress of the CSS and core system activities required for the CSS migration.

Timings of the load of migration objects should be recorded and tracked for test cycles where the test cycle scope requires the complete set of data to be migrated.

Data defects and issues should be captured, triaged and resolved as per the E2E Testing Plan and E2E Integration Plan with a suitable application quality management tool that assigns the issue to an appropriate team or individual and earmarks the test cycle where the defect and issue has arisen.

'Entry and exit gate' meetings should be employed by the SI to frame the objectives and criteria expected for the test cycle (which will be classed as test stages as defined by the E2E Testing Plan) – the entry gate would present the required objectives and criteria, whereas the exit gate meeting would evaluate whether the objectives have been met for the cycle and the cycle can be 'closed', or whether work should continue for the current cycle. One of the requirements of the exit gate may be to ensure that all issues and defects raised have been addressed. The exit gate for the last test cycle/stage may provide input to a "Go/No Go" decision for the production CSS migration.

The SI should plan for time for defect resolution and migration tool enhancements between test cycles. A test cycle is often a highly focussed period and 'breathing space' between test cycles is also an important factor in ensuring optimum migration function.

During a test cycle, the SI should conduct periodic migration meetings, employing the CSS data migration test plan to obtain statuses of migration objects that are due or overdue at that point, looking ahead to migration objects that are imminently due, discussing issues and defects that have arisen.

A 'dress rehearsal' would be anticipated after the final test cycle, a simulation of production execution with a 100% successful load criteria and careful monitoring of timings of the migration of each data object. The 'dress rehearsal' should not be viewed as a test cycle in the true sense, but a final opportunity to run through the migration processes prior to cutover as per the E2E Testing Plan.

For each CSS data migration test cycle, the CSS test environment to be used will be nominated (assuming there are more than one pre-production CSS environment) and provided in an initial state for the migration test. Each test cycle should be assigned a formal name – for 'Migration Test 1' (MT1), 'Migration Test 2' (MT2).

After a data migration test cycle, the CSS component pre-production environment employed (now populated with data of quality as per the criteria set for the cycle) may be retained for other forms of testing – e.g. integration testing.

Data migration testing for each cycle should employ reconciliation processes as discussed in section 5.2, to examine the following attributes with regards to data:

Completeness, Correctness (quality), Integrity and Reliability.

As discussed above, later test cycles should record timings of data object migrations – to feed into production CSS migration planning.

The figure below gives an illustrative view of data migration Test Cycles.

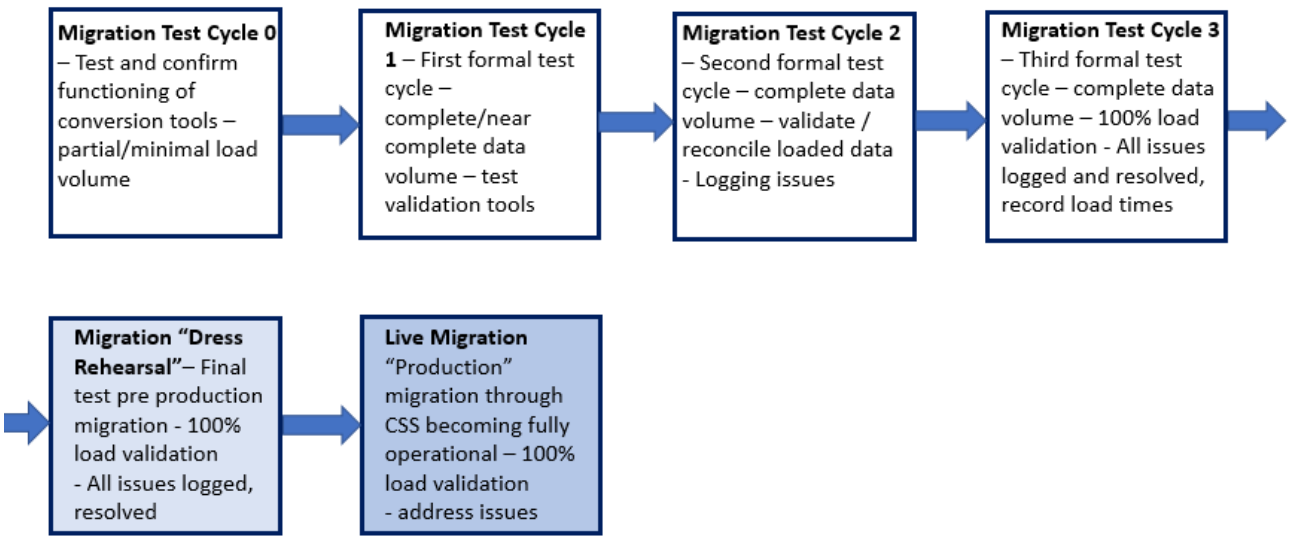

Figure 5 – Illustration of data migration test cycles

Note that this is purely an illustration and an example of a three-core cycle set of migration tests, the actual number of required test cycles is to be determined by the SI.

5.2 Reconciliation Approach

The SI will be required to provide reconciliation reporting and validation of data migration loads for several purposes:

1) To report on and provide evidence of the correctness and validity of loads (during load tests and cutover).

2) To highlight progress in migration correctness on the path to perfection

3) To provide input to issues and defects (during test loads and cutover)

4) To provide evidence for audit requirements

Reconciliation reports should be provided to the SI, the SRO and Ofgem during data migration testing and live migration enactment. Reports during live migration enactment should be retained for programme level audit purposes.

Apart from some of the reference data (Switching Domain Data) to be migrated to the CSS, most load objects – for example RMPs, Registrations and Address Data will be of a very high volume – in the range of 55 million records per object.

The SI should provide a strategy on reconciliation during DBT, determining, in consultation with governance parties and audit representatives, which data migration objects require complete reconciliation reporting. As registration data is the key data migration object to the CSS and the data migration of registrations being a change of mastership from the existing central data system and service providers to the CSS, comprehensive reconciliation of registration data is anticipated.

For data migration objects where the CSS will hold a synchronised 'copy' of data[7] that will continue to be mastered in UK Link and MPAS (such as RMPs, MEM IDs, DA IDs, DC IDs), comprehensive reconciliation may not be required – sample data selection for reconciliation, record counts between the source system and the CSS for the data object migrated and assurance of the integrity of the interface may suffice.

Should a detailed migration be required for synchronised data objects, the SI could consider liaising with existing central data system and service providers to obtain an alternative source of interfaced data for import to the staging database (should this be employed) or investigate alternative means of automated reconciliation for this data.

If an ETL/staging database tool has been employed as part of temporary interfaces, data for objects loaded to the CSS via this tool, such as registration data, can be imported back to the staging database. Automated reconciliation reporting could then be defined, linking extracted, transformed and loaded data records for the data object. Exception and Error reporting could also be generated from the ETL tool.

[7] via a production interface that should be employed for the data migration

5.3 Audit Approach

The SI shall work with the CSS Procurer and Manager, Project Audit and Assurance representatives and the Governance structure to obtain potential audit requirements for the CSS data migration.

The SI shall ensure that all documentation and data pertaining to the migration of data from the current switching solution to the CSS, where audit of the migration of this data is required, is preserved for potential auditing purposes.

This should include:

- Safeguarding of all planning and specification documents pertaining to the data migration.
- Archiving of the staging database after the CSS data migration has been completed.
- Archiving load files employed in temporary interfaces for CSS data migration.
- Safeguarding reports produced with regards to migration metrics and statistics.

As the CSS does not modify settlement aspects of the current switching process, it is unlikely that a BSC audit would be appropriate for the migration activity – however the The SI should be familiar with BSC audit requirements, and any other potential audit that could be applicable to the programme – to ensure that any required artefacts or evidence relating to the CSS data migration are available for relevant audit purposes.

5.4 Requirements – Testing, Reconciliation and Audit

ID	Data Migration Testing – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
5_1	The SI will produce a CSS Data Migration and Transition (DMT) test phase plan in line with requirements of the E2E Testing Plan document. The CSS DMT test plan should be based on several migration test windows – termed a test cycle – the number of test cycles to be defined by the SI.	R	CSS data migration test plan production by SI
5_2	Each DMT test cycle should have the required entry and exit criteria defined by the SI in line with the E2E Testing Plan	R	SI production of entry and exit gate criteria for each test cycle (test stages)
5_3	The SI will define data volume scope for each DMT test cycle – early cycles may have limited scope (e.g. single MPAS instance, single UK Link supplier) whereas later cycles should	R	SI definition of data volume scope for each test cycle.

ID	Data Migration Testing – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
	be complete scope in line with production data migration volumes.		
5_3	The SI and CSS Provider(s) will ensure that DMT test cycles are a simulation of all CSS data migration activity as per the transition stages 1 to 3 as defined in 3.2 Table of transition stages – as per the transition approach to the CSS becoming fully operational.	R	SI and CSS Provider test cycle simulation definition.
5_4	The SI will be responsible for recording test cycle data load timings and defect and issue capture and triaging within each cycle in line with the E2E Testing Plan and E2E Integration Plan.	R	SI test cycle load timing recording and defect capturing and resolution.
5_5	The SI shall employ a quality management tool (for defect capturing and resolution recording in line with the E2E Testing Plan.	A	SI quality management tool application for testing defects.
5_6	Entry and Exit gate meetings should be conducted by the SI to frame objectives and criteria expected for DMT test cycle (test stage).	R	Si delivery of Entry and Exit gate meetings for test cycles.
5_7	The SI will provide reconciliation reporting and validation of data migration loads	R	Reconciliation Requirement
5_8	The SI will provide a strategy for reconciliation during DBT, determining, in consultation with governance parties and audit representatives, which data migration objects require complete reconciliation reporting	R	Reconciliation Strategy provision
5_9	The SI shall work with the CSS Procurer and Manager, Project Audit representatives and the Governance structure to obtain potential audit requirements for the CSS data migration	R	Audit requirements determination.

ID	Data Migration Testing – Requirements, Assumptions	Type	Outputs/Deliverables/Mitigations
5_10	The SI shall ensure that all documentation and data pertaining to the migration of data from the current switching solution to the CSS, where audit of the migration of this data is required, is preserved for potential auditing purposes.	R	Preservation of artefacts for audit purposes.

Appendix A – Glossary - Terminology

A glossary of terms used in the Switching Programme can be found in the list of Defined Terms. Below are additional terms employed in this CSS Data Migration Plan.

Term	Description
Abacus	Software that holds the CSS logical data model, business process descriptions, and other artefacts for the new Switching Arrangements.
Address Service	A service to store and maintain an up-to-date list of GB standardised addresses and to obtain the GB address that most closely matches an address passed to it by the CSS.
API	Application Programming Interface - part of a service that receives requests and/or sends responses
BLPU	Basic Land and Property Unit
Existing central data systems and services	The existing data systems and services used as part of the current switching solution - MPAS, ECOES, UK Link, DES and Smart Metering DSP.
Existing central data system and service providers	Providers of the existing data systems and services, including Xoserve, St Clements, C&C Group, CGI
CSS Go-live	The date on which the CSS becomes master of registrations for RMPs to Suppliers when the new RP2a Switching Arrangements commence
Cutover	A weekend period immediately prior to go-live where legacy systems' switching components will be disabled and the new CSS will be in the process of being brought online with final migration activities being performed
Delta	A set of extract data that has been created subsequent to the last data extract, typically of lower volume than an initial extract.
Gaining Supplier	The Supplier that the customer has elected (contractually) to switch gas/electricity supply to.
ID	Identifier - data element/field employed as a key to related data
Go-Live	See CSS Go-live
Inbound	Inbound to the CSS (e.g. inbound interface)
Initial Registration	Registration of a RMP undertaken by the first supplier to the RMP
Losing Supplier	The Supplier that the customer has been (contractually) supplied with gas/electricity and has elected to move away from (and elect another supplier).
Master Data	Key static data that resides in one location (service) and which may be synchronised to other services which will then reference this master data (see reference data).

Term	Description
Meter Point Location (MPL)	The address that the network operator holds for a MPxN - held in UK Link and MPAS, provided to the CSS via RMP synchronisations (but not amended by the CSS)
Market Participant Identifier (MPID)	Unique ID associated with a market participant such as a supplier or agent (and mastered in the REC code).
Outbound	Outbound from the CSS (e.g. outbound interface).
Retail Energy Location (REL)	High quality addresses and address matching logic, from the Address Service will be used in conjunction with the Registration Service to create this data item, linked to a RMP and synchronised back to ECOES (linked to MPAS) and DES (linked to UK Link) to add to their records for the RMP
Registrable Measurement Point (RMP)	Means a Meter Point where Registration is permitted.
RMP Termination	When a RMP reaches end of its life - controlled by networks
RP2a	New Switching arrangements with a new Centralised Switching Service but no dedicated MI service

Appendix B – Transformation Catalogue

This appendix lists a catalogue of transformation Items covering data objects and elements within these objects where transformation is required or potentially required This catalogue is not exhaustive, and should be updated, maintained and expanded on by the SI.

Data Object	Data Element	Transformation Required
RMP (MPAS)	Metering Point Energy Flow	Mapping required from “Line Loss Factor Field” value held in MPAS
Registration (MPAS)	Domestic/Non-Domestic Indicator	Mapping required from MPAS Dom/Non-Dom values
Registration (UK Link)	Domestic/Non-Domestic Indicator	Mapping required from UK Link Dom/Non-Dom values

Appendix C – Cleansing Catalogue

This appendix lists a catalogue of data objects and data elements within these objects where cleansing is required or potentially required. This catalogue is not exhaustive, and is required to be maintained and expanded on by the SI.

Cleansing will exclude terminated RMPs by UK Link and MPAS and will not form part of initial migration (stage 0). However, RMPs that are terminated during Stages1-3 of the transition plan should be migrated to the CSS as delta migrations as described in section 3.1.2.

Data Object	Data Element	Cleansing Required
RMP (MPAS)	MPL Address	Potential cleansing and formatting of MPL address by MPAS as per RMP Interface layout for CSS Interface
RMP (UK Link)	MPL Address	Potential cleansing and formatting of MPL address by UK Link as per RMP Interface layout for CSS Interface
RMP (MPAS and UK Link)	MPxN	Cleansing by MPAS and UK Link required to ensure terminated MPxN data is excluded from initial RMP data migration.

Appendix D – Validation Catalogue

This appendix lists a catalogue data objects and data elements within these objects where validation is required or potentially required. This catalogue is not exhaustive, and is required to be maintained and expanded on by the SI.

Data Object	Data Element	Validation Required
Registration Data (MPRN)	RMP ID	Ensure RMP data exists in the staging database for this RMP ID (gas only)
Registration Data (MPAN)	RMP ID	Ensure RMP data exists in the staging database for this RMP ID (electricity only)
Registration Data	Registration status	Validate this against REC table held in CSS
Registration Data	Gaining Supplier MPID	Validate this against REC table held in CSS
Registration Data	Losing Supplier MPID	Validate this against REC table held in CSS
Registration Data	Shipper MPID	Validate this against REC table held in CSS (gas only)
Registration Data	Domestic Indicator	Validate against Domain values
Registration Data	Meter Point Energy Flow	Validate against Domain values (electricity only)
RMP Data	RMP Status	Validate this against REC table held in CSS
RMP Data	RMP Fuel Type	Ensure MPAS RMPs are all Electricity and UK Link RMPs are all Gas
RMP Data	MPL Address data	Validate address required formats (e.g. post code)

Appendix E – ABACUS definitions - inbound Interfaces for data migration

This appendix covers the data elements associated with the inbound interfaces from UK Link, MPAS, the Governance service and DCC Smart Metering. Note this includes information currently in the CSS design documentation that has not formally been incorporated into Abacus at this time. These data definitions must therefore be updated should Abacus specification changes and Abacus should be used as the final authoritative source of these definitions for CSS Data Migration

MeteringPointSync Interface (from MPAS)

Data Element	Notes
MPAN Core	to be mapped to RMP ID on CSS (load) side of interface
RMP Fuel Type	Gas/Electricity Indicator - should always be Electricity here
Metering Point Metered Indicator	Indicates whether the energy supply is metered – no requirement to create REL where not a metered supply.
Metering Point Energy Flow	
RMP Lifecycle Status Type Identifier	Will need to be mapped by MPAS
RMP Lifecycle Status from Date	
RMP Lifecycle Status Through Date	
RMP Association Type Identifier Reference	Stage 0' work required from MPAS here
RMP Association Primary RMP Identifier	Stage 0' work required from MPAS here
RMP Association Secondary RMP Identifier	Stage 0' work required from MPAS here
RMP Association from Date	Stage 0' work required from MPAS here
RMP Association Through Date	Stage 0' work required from MPAS here
RMP Event Type Identifier Reference	Will need to be mapped by MPAS
RMP Green Deal Event Indicator	
RMP DCC Service Event Indicator	
RMP License Exempt Network Event Indicator	
RMP Primary Asset Ownership MAP Identifier	
RMP Event Effective from Date	
RMP Event Effective Through Date	
RMP Network Provider Market Participant Identifier	Referenced to REC
RMP Network Provision Effective from Date	
RMP Network Provision Effective Through Date	
Location Address Source Identifier Reference	MPL Address - MPAS to format to this
Location Address LPI Primary Addressable Object	MPL Address - MPAS to format to this
Location Address LPI Secondary Addressable Object	MPL Address - MPAS to format to this

Data Element	Notes
Location Address Post Town	MPL Address - MPAS to format to this
Location Address Post Code	MPL Address - MPAS to format to this
Location Address Street Name	MPL Address - MPAS to format to this
Location Address Street Number	MPL Address - MPAS to format to this
Location Address BLPU Organisation	MPL Address - MPAS to format to this

SupplyMeterPointSync Interface (from UK Link)

Data Element	Notes
Supply Meter Point Reference Number	MPRN Number - to be mapped to RMP ID on CSS (load) side of interface
RMP Fuel Type	Gas/Electricity Indicator - Should always be Gas here
RMP Lifecycle Status Type Identifier	Will need to be mapped by UK Link
RMP Lifecycle Status from Date	
RMP Lifecycle Status Through Date	
RMP Event Type Identifier Reference	
RMP DCC Service Event Indicator	Will need to be mapped by UK Link
RMP License Exempt Network Event Indicator	
RMP Primary Asset MAP Identifier	
RMP Event Effective from Date	
RMP Event Effective Through Date	
RMP Network Provider Market Participant Identifier	Referenced to REC
RMP Network Provision Effective from Date	
RMP Network Provision Effective Through Date	
Location Address Source Identifier Reference	MPL Address - UK Link to format to this
Location Address LPI Primary Addressable Object	MPL Address - UK Link to format to this
Location Address LPI Secondary Addressable Object	MPL Address - UK Link to format to this
Location Address Post Town	MPL Address - UK Link to format to this
Location Address Post Code	MPL Address - UK Link to format to this
Location Address Street Name	MPL Address - UK Link to format to this
Location Address Street Number	MPL Address - UK Link to format to this
Location Address BLPU Organisation	MPL Address - UK Link to format to this

SwitchingDomainData Inbound Interface (from Governance service)

Data Element
Domestic Objection Window Duration
Domestic Objection Window Duration Unit of Measure

Data Element
Non-Domestic Objection Window Duration
Non-Domestic Objection Window Duration Unit of Measure
Registration Effective Time of Day
Registration Effective Time of Day Time Zone
Execution Window Duration
Execution Window Duration Unit of Measure
Maximum Switch Period
Maximum Switch Period Unit of Measure
Domestic Minimum Switch Period
Domestic Minimum Switch Period Unit of Measure
Non-Domestic Minimum Switch Period
Non-Domestic Minimum Switch Period Unit Of Measure
DCC Serviced Meter Standstill Duration
DCC Serviced Meter Standstill Duration Unit of Measure
Non DCC Serviced Meter Standstill Duration
Non DCC Serviced Meter Standstill Duration Unit of Measure
Registration Request Mode
Calendar Date
Retail Market Processing Day Indicator
Retail Energy Company Registration Number
Retail Energy Company Registration Authority
Retail Energy Company Name
Retail Energy Company Group Name
Retail Energy Company Group Description
Retail Energy Company Group Membership Company Name Reference
Retail Energy Company Group Membership Group Name Reference
Retail Energy Company Group Membership Effective from Date
Retail Energy Company Group Membership Effective Through Date
Market Participant MPID
Market Participant MPID Description
Market Role Name
Market Role Description

Data Element
Market Participant Role Identifier
Market Participant Role MPID
Market Participant Role Market Role Name
Market Participant Role Effective from Date
Market Participant Role Effective Through Date
Market Participant Role Ownership Market Participant Role Identifier
Market Participant Role Ownership Retail Energy Company Name
Market Participant Role Ownership Effective from Date
Market Participant Role Ownership Effective Through Date
Market Participant Role Event Type Identifier
Market Participant Role Event Type Name
Market Participant Role Event Type Description
Market Alliance Constituent Market Role Identifier
Market Alliance Constituent Nominator Market Role
Market Alliance Constituent Nominee Market Role
Market Participant Role Alliance Identifier
Market Participant Role Alliance Nominator Participant
Market Participant Role Alliance Nominee Participant
Market Participant Role Alliance Constituent Market Role Identifier Reference
Market Participant Role Alliance Effective from Date
Market Participant Role Alliance Effective Through Date
Market Participant Role Event Identifier
Market Participant Role Event Market Participant Identifier
Market Participant Role Event Type Identifier Reference
Market Participant Role Event Effective from Date
Market Participant Role Event Effective Through Date
RMP Lifecycle Status Type Identifier
RMP Lifecycle Status Type Name
RMP Lifecycle Status Type Description
RMP Association Type Identifier
RMP Association Type Name
RMP Association Type Description

Data Element
RMP Event Type Identifier
RMP Event Type Name
RMP Event Type Description
Location Address Source Identifier
Location Address Source Name
Location Address Source Description
Location Address Selection Method Identifier
Location Address Selection Method Name
Location Address Selection Method Description
Registration Event Type Identifier
Registration Event Type Name
Registration Event Type Description
Registration Lifecycle Status Type Identifier
Registration Lifecycle Status Type Name
Registration Lifecycle Status Type Description
Registration Intervention Type Identifier
Registration Intervention Type Name
Registration Intervention Type Description
Registration Management Request Type Identifier
Registration Management Request Type Name
Registration Management Request Type Description
Registration Management Request SubType Identifier
Registration Management Request SubType Name
Registration Management Request SubType Description
Request Failure Reason Type Identifier
Request Failure Reason Type Name
Request Failure Reason Type Description
Registration Management Request Lifecycle Status Type Identifier
Registration Management Request Lifecycle Status Type Name
Registration Management Request Lifecycle Status Type Description

DADC Appointment inbound Interface (from MPAS)

Data Element
MPAN Core
Supplier Arranged Appointment Registration Identifier
Supplier Arranged Appointment Market Participant Role Identifier
Supplier Arranged Appointment Effective From Date
Supplier Arranged Appointment Effective Through Date

MEM Appointment inbound Interface (from MPAS / UK Link)

Data Element
MPAN Core
MPRN
RMP Fuel Type
Supplier Arranged Appointment Registration Identifier
Supplier Arranged Appointment Market Participant Role Identifier
Supplier Arranged Appointment Effective From Date
Supplier Arranged Appointment Effective Through Date

CommsHubDataLink inbound Interface (from Smart Metering)

Data Element
MPAN Core
MPRN
RMP Fuel Type
RMP CommsHub Link Device GUID
RMP CommsHub Link From Date
RMP CommsHub Link Through Date
Supplier Arranged Appointment Effective Through Date

Appendix F – Potential registration temporary interface layout

This appendix defines a potential layout of the temporary interface to be used for migration of registration data to the CSS. This migration can only use a temporary interface as no production interface exists for this data. The SI is required to develop the final details for this temporary interface, and any other temporary interfaces it recommends are required in line with its final CSS data migration approach.

Data Element	Description/Notes
Request ID	**Request ID from MPAS/UK Link**
MPxN	**MPAN Core or MPRN reference**
Fuel Type	**Indicator for Gas/Electricity**
Registration Type	**Switch/New Connection Registration Indicator**
Gaining Supplier MPID	**Market Participant ID of Gaining Supplier**
Losing Supplier MPID	**Market Participant ID of Losing Supplier (blank if a new connection)**
Shipper MPID	**Market Participant ID of Shipper (Populated for Gas only)**
Effective From Date	**Date Registration to become active**
Effective Through Date	**Date Registration will cease**
Domestic Indicator	**Indicator for Domestic or Non-Domestic Indicator**
Meter Point Energy Flow	**Indicator for Export/Import**

Note that the following fields that are present in the new Switching Arrangements registration interface are not relevant to the registration migration:

‘OFAF’ indicator

Change of occupancy indicator

Error switch indicator