

SP Energy Networks 2015–2023 Business Plan

Updated March 2014

Annex

**RRP Narrative Explaining Changes in Table
V1 - Changes in Opening Balance**

SP Energy Networks

June 2013

ScottishPower : Energy Networks

RRP Narrative explaining changes in Table V1

- Changes in Opening Balance

1. Executive Summary

This report explains the key changes reflect in SPD and SPM's Table V1 for the 2012-13 RRP submission. As explained to Ofgem through several meetings over the last year ScottishPower have been completing a significant formal review of the Asset Base volumes within SPD and SPM. The results of this work are detailed in Table V1, and adjustments to the opening balances are reflected in the Data Cleanse Column within Table V1.

The results described below represent the 77 of the 161 RRP asset volume categories applicable across both SPD and SPM representing ~90% of the MEAV. The remainder of the asset categories are being reviewed through the remainder of 2013.

The key points are

- Volume impacts identified are small overall; increasing by 0.6% in SPM and <0.01% in SPD, from the 2012 RRP.
- 40% of the 77 asset categories reviewed to date have only minor variations (5% or less).
- Additional areas have been captured, which were not reported to Ofgem previously, including EHV GM Switches & 132kV Substations.
- Separation of Pole and Tower Line lengths for EHV and 132kV OHLs has also been implemented.
- Improvements in the granularity of ownership of EHV breakers at the SPD / SPT Boundary.

The significant volume changes are

- LV Mains UG Cables where, due to vectorisation, the size of the network has reduced by 3264km (12%) in SPD and 1987km (10%) in SPM, and the network validated against Ofgem's definition of "4 customers or more = LV Main"
- EHV UG Cables in SPD, where reporting of cable length, rather than circuit length (for single core cables) led to over reporting of 894km (28%).
- HV GM Switches in SPD and SPM, where double counting of OHL Air Break Switches (ABSDs) led to over reporting of 2464 switches in SPD (33%) and 1465 switches in SPM (81%).
- 132KV overhead lines in SPM, where we have never reported tower line lengths due to system limitations, and where tower line length now stands at 1086km (previously zero), and wood pole length reduces by 85% to 203km.

The validation of this data has been implemented through a robust and structured process, with multiple levels of Quality Assurance. It has involved validation of data discrepancies and synchronisation of assets between systems; with site visits where required. A total of over 40,000 exceptions were investigated, with over 2000 site visits.

In addition an external validation report is being produced by David Porter of PA Consulting to review and comment upon the processes that have been followed.

The results from this work does not impact on DPCR5 allowances or the Main Health Index Outputs, although the reduction in the cables volumes does worsen SPD and SPM's comparative league position in Fault Rate against other DNOs for the assets described above.

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2. Introduction: Issues with table V1

At the start of the detailed RRP volume tables in 2004-05, the best information available from our systems were used to establish a baseline of asset volumes. The robustness of this data had inherent limitations due to the limited coverage of the assets in our Asset Registers, and the capability of these systems.

Since that date, significant improvements have been made, with the implementation of data capture and vectorisation of assets, particularly on the LV network, and implementation of best of breed asset registers (ESRI (Geographic Information System) for Cables and Lines in 2008-09 and SAP GAMAD for Plant assets in 2010-11).

Due to these significant changes over the past few years in systems and data, a full verification of the asset register has not been possible, and therefore the annual RRP asset total asset volumes has been derived from the approach of

1. Opening Balance = Previous Years Closing Balance then add
2. Additions & Disposals from IT reports from Systems which then
3. Results in the Closing Balance for the current year

Our assurance processes identified that this approach required review, and therefore a full reconciliation to the asset register was proposed. This led to the establishment of a formal Network Data Improvement Programme, which in addition to reconciling the main asset register also considered improvements to processes around the management of data within ScottishPower.

This programme covered 6 key areas of Data Governance, Data Model, Data Quality, Data Capture, Data Reporting and Data Culture, and further details of these initiatives are given in Appendix 4.

3. Regulatory Impacts

Detailed below are the results from our review of the impact on the Regulatory arrangements impacted by these changes in Asset Volumes.

- ScottishPower believe there are no issues associated with allowances or outputs for DPCR5.

Regulatory Allowances, Incentives or Requirements	Impact from Changes in Volume of Opening Balance	Explanation
IIS Incentive (CI-CML)	None	Number of faults, or duration of customers being off supply has no connection to asset

		volumes.
Network Investment Allowances : Asset Replacement	None	Allowances based on a defined subset of end of life assets (HI5). Provided in defined lists of particular equipment and sites. Not linked to overall size of asset base.
Health Index Outputs	None	<ul style="list-style-type: none"> • Change in HI for assets or; • Volume of HI5 assets removed. None of which is linked to overall size of asset base and changes due to Data Cleanse are already excluded from the Outputs process as laid out in Ofgems “HI tracking” RRP Spreadsheet. The rows “Impact on volumes of data cleansing (before Material Changes)” apply.
Fault Rate Outputs	Volumes of work not impacted, but measurement reference changes	<ul style="list-style-type: none"> • Volumes of activity to improve Fault Rate will still be delivered. Faults / 100km measurement of fault rate will be impacted due to changes in opening balance (mainly applicable to cables and lines).
Network Investment Allowances : Reinforcement	None	Allowances based on identified projects non compliant with P2/6 and significantly overloaded substations (>120% in LI5). Not linked to size of asset base.
Load Index Outputs	None	Improvements in recorded loading at actual substations based on investment.
Network Operating Costs (Direct Opex Allowances for I&M and Trees)	None	Allowances based on benchmarking and regression analysis of historical costs, plus review of volumes of planned work.
Closely Associated Indirect Costs plus Business Support Costs	None	Allowances based on benchmarking and regression analysis of historical costs plus review of volumes of planned work.

4. Process / Approach to Validate Asset Base

4.1 Prioritisation

To improve the data within Table V1 (Opening Balance) a structured piece of work was established under the Data Quality umbrella of the Networks Data Improvement Programme. This identified all (161) applicable rows for SPD and SPM in Table V1 and prioritised them into Priority 1 to Priority 4.

- Priority 1 : 11kV Network and Above : Cables Lines and Main Plant & Equipment
 - 20 categories in SPD and 34 in SPM (total 54)
 - Priority 2 : Primarily LV Network Cables and Lines
 - 11 categories in SPD and 12 in SPM (Total 23)
- } 77 between P1 and P2
- Priority 3 : Other Equipment
 - 17 categories in SPD and 18 in SPM (Total 35)
 - Priority 4 : Secondary Equipment
 - 22 categories in SPD and 27 in SPM (Total 49)

The 2012-13 RRP submission reflects the results of our investigations in the 77 asset types forming the Priority 1 and 2 Assets, and corrections to opening balances are reflected through as Data Cleanse in Table V1.

We have a plan to review Priority areas 3&4 by the end of 2013, as previously discussed with Ofgem, and this can either be updated to Ofgem at that time, or will be submitted as part of the 2013-14 RRP.

The list of assets forming P1-P4 is shown in Appendix 1

4.2 Process

Each of the P1 and P2 assets were subject to individual detailed reviews which validated the data within our asset systems and compared the asset quantity data in the new systems to the current opening balance reported in the RRP to ensure consistency.

This work was carried out in 2 main ways; one for Plant items, the other for Cables and Lines

Plant Assets

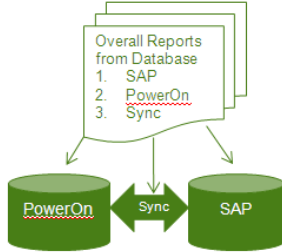
The plant assets are mastered in our SAP GAMAD systems where all the necessary engineering attributes are captured. Details of each plant item is also synchronised into our Real Time System (GE PowerOn Product which gives the accurate, up to the minute Real Time view of our network) to enable engineering attributes to be viewed in the Real Time environment.

- Validation of assets held in each system gives different views.
 - Real time views may include customer equipment, required to be viewed for safety management purposes at boundaries, but would not form part of the DNO asset base
- Review synchronisation between both systems(SAP and PowerON) allows us to compare and investigate any discrepancies
- This is done both at a desktop level and also through site surveys where required for clarification.
- As migration from legacy systems had been carried out within the past few years, a further comparison of data to legacy information was carried (where available).

Process : Plant Items (e.g. 11kV Circuit Breaker)



1. System & Sync Reports

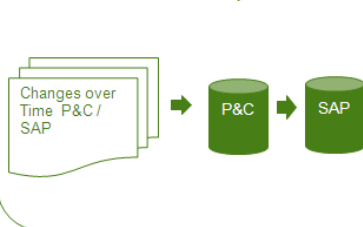


2. Investigation

Site	Commissioned in PowerOn	Commissioned in SAP	Comment
Sw A	X	X	OK
Sw B	X	X	OK
Sw C	X		Customer Equipment- Not Owned by SP
Sw D		X	Should be decommissioned

Individual Tracing Results for each section (Spreadsheet)

3. Historical Reports



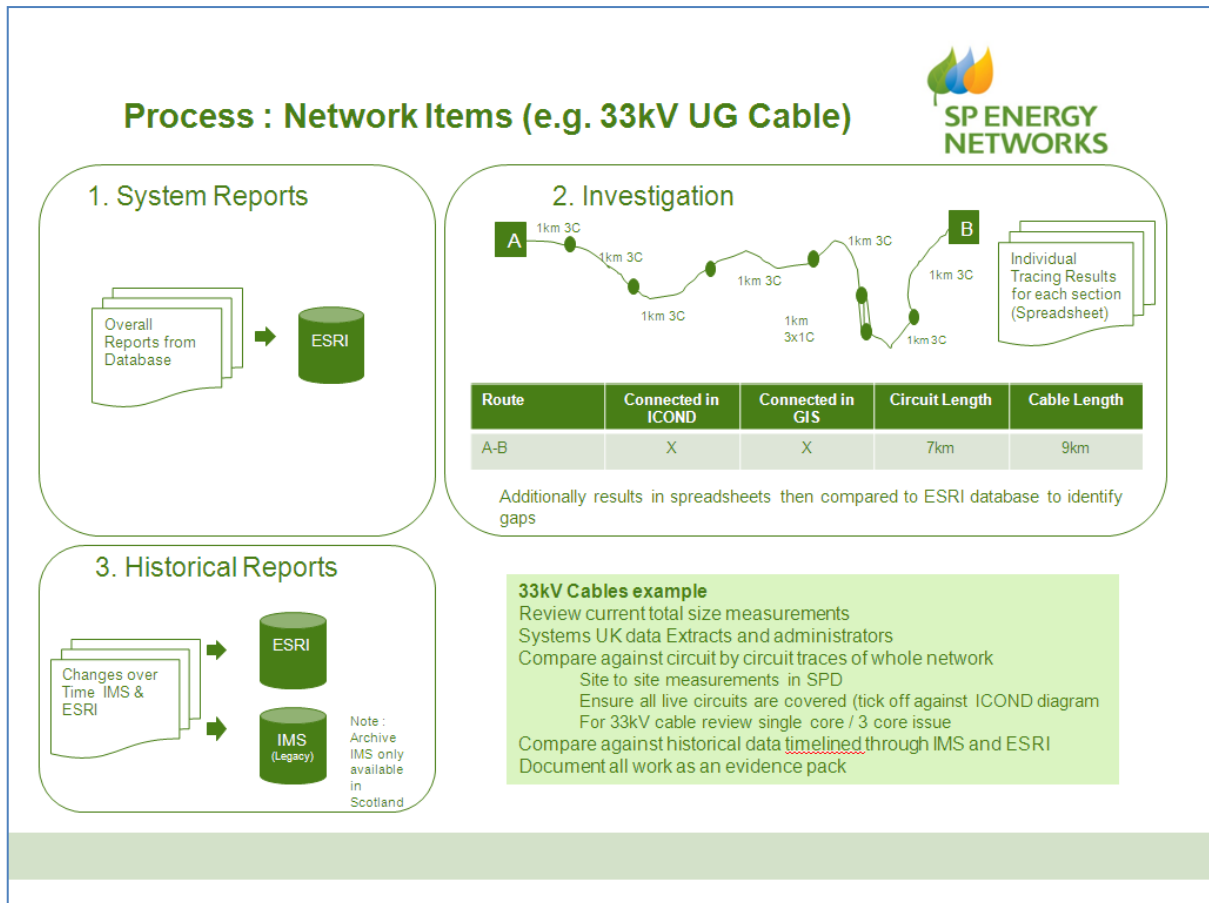
11kV Circuit Breaker example

- Review current total size asset volumes from SAP
- Systems UK data Extracts and administrators
- Compare against live network (PowerOn) through synchronisation reports
- Resolve / identify any synchronisation issues
- Validate size of network against PowerOn
- Document all work as an evidence pack

Cables and Lines Assets

Network Assets (Cables and Lines) are mastered in our Geographic Information System (GIS) supplied by ESRI. Unlike the plant assets there is not the same capability to compare data in this system with an entirely independent source. However verification can be carried out through a number of ways.

- The main HV and LV networks are fully vectorised, and the circuits are all linked together to form the main connectivity model used for customer service (identifying which customers are off supply for a fault) and to provide necessary connectivity for HVCI / disaggregated data reporting. Discrepancies could include
 - De-energised assets
 - Assets not on connectivity model
- Any exceptions in these models can be investigated and resolved. This connectivity is provided through a product called 'Feeder Manager' as a subsidiary module of the main GIS system.
- This is done both at a desktop level and also through site surveys where required for clarification.
- Where the "feeder manager" connectivity model was not available, manual network tracing was required to validate appropriate networks e.g. EHV UG cables in SPD.



The adjustments that are required to some opening balances are explained further below.

5. Finding from Investigation for Priority 1&2 Asset Types

The key points for the 77 Priority 1 and 2 Asset Categories that have been updated in the 2012-13 RRP submission are:

1. Volume impacts identified are small overall; increasing by 0.6% in SPM and by <0.01% for SPD, from the 2012 RRP.
2. Many asset types (40% of the 77 asset categories reviewed to date) have only minor variations.
3. Data Capture of additional areas have been included, which was not reported to Ofgem previously, including EHV GM Switches and 132kV substations.
4. Separation of Pole and Tower Line lengths for EHV and 132kV OHLs has also been implemented.
5. Improvements in the granularity of ownership of EHV breakers at the SPD / SPT Boundary.

The significant volume changes are:

6. LV Mains UG Cables where, due to vectorisation, the size of the network has reduced by 3264km (12%) in SPD and 1987km (10%) in SPM, and the network validated against Ofgems definition of "4 customers or more = LV Main"
7. EHV UG Cables in SPD, where reporting of cable length, rather than circuit length (for single core cables) led to over reporting of 894km (28%).
8. HV GM Switches in SPD and SPM, where double counting of OHL Air Break Switches (ABSDs) led to over reporting of 2464 switches in SPD (33%) and 1465 switches in SPM (81%).

9. 132KV overhead lines in SPM, where we have never reported tower line lengths due to system limitations, and where tower line length now stands at 1086km (previously zero), and wood pole length reduces by 85% to 203km.

These points are expanded further with supporting data below

5.1 Overall Volume Impacts for Priority1 & 2 asset categories

The two tables below show the overall volume impacts for the 77 (out of 161) asset categories associated with Priority 1 & 2 asset categories

SP Distribution: Summary	Voltage	Units	2011/12 Volumes	2012/13 Volumes	Difference (#)	Difference (%)
Plant	HV/EHV	Each	73,265	73,581	316	0.4%
Poles & Towers	LV/HV/EHV	Each	282,860	288,470	5,610	2.0%
Cable	LV/HV/EHV	km	42,846	38,321	-4,525	-10.6%
Line	LV/HV/EHV	km	20,960	19,478	-1,482	-7.1%
Totals			419,931	419,850	-81	0.0%

SP Manweb: Summary	Voltage	Units	2011/12 Volumes	2012/13 Volumes	Difference (#)	Difference (%)
Plant	HV/EHV/132KV	Each	70,251	71,146	895	1.3%
Poles & Towers	LV/HV/EHV/132KV	Each	291,551	294,366	2,815	1.0%
Cable	LV/HV/EHV/132KV	km	28,055	25,997	-2,058	-7.3%
Line	LV/HV/EHV/132KV	km	20,197	20,931	734	3.6%
Totals			410,054.5	412,441	2,386	0.6%

5.2 Many Asset types have only Minor Variations

40% (31) of the 77 asset categories reviewed to date have only minor variations (<=5%) shown in the tables below including 14 asset categories in SPD and 17 in SPM. The average total variation for these assets in each of the licence area is 1%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse Adjustment	% Change from 2011/12 RRP
SPD	LV Poles	LV	62,096	61,459	124	0%
SPD	LV Main (UG Plastic)	LV	8,431	8,698	193	2%
SPD	6.6/11kV OHL (Conventional Conductor)	HV	14,051	13,695	-289	-2%
SPD	6.6/11kV Poles	HV	185,876	188,241	2,542	1%
SPD	6.6/11kV UG Cable	HV	12,721	12,361	-364	-3%
SPD	6.6/11kV CB (GM) Primary	HV	4,483	4,540	65	1%
SPD	6.6/11kV CB (GM) Secondary	HV	4,918	5,017	219	4%
SPD	6.6/11kV RMU	HV	12,946	13,623	598	5%
SPD	6.6/11kV Transformer (PM)	HV	24,541	25,060	424	2%
SPD	6.6/11kV Transformer (GM)	HV	15,970	16,268	320	2%
SPD	33kV UG Cable (Oil)	EHV	29	29	1	3%
SPD	33kV UG Cable (Gas)	EHV	4	4	0	0%
SPD	33kV Transformer (PM)	EHV	90	91	0	0%
SPD	33kV Transformer (GM)	EHV	763	756	1	0%
	Totals		346,919	349,842	3,833	1%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse Adjustment	% Change from 2011/12 RRP
SPM	LV Poles	LV	125,598	127,771	2,972	2%
SPM	LV Main (UG Plastic)	LV	6,199	6,039	-230	-4%
SPM	6.6/11kV OHL (Conventional Conductor)	HV	12,622	12,380	-160	-1%
SPM	6.6/11kV Poles	HV	166,276	165,814	-339	0%
SPM	6.6/11kV UG Cable	HV	7,247	7,180	-116	-2%
SPM	6.6/11kV CB (PM)	HV	666	652	-24	-4%
SPM	6.6/11kV RMU	HV	5,893	6,070	147	2%
SPM	6.6/11kV X-type RMU	HV	4,943	4,951	-11	0%
SPM	6.6/11kV Transformer (PM)	HV	32,481	33,105	309	1%
SPM	6.6/11kV Transformer (GM)	HV	11,095	11,290	298	3%
SPM	33kV Pole	EHV	21,243	20,497	-639	-3%
SPM	33kV UG Cable (Non Pressurised)	EHV	1,722	1,790	46	3%
SPM	33kV RMU	EHV	369	361	-6	-2%
SPM	132kV UG Cable (Gas)	132kV	34	34	2	5%
SPM	132kV CB (Air Insulated Busbars)(ID) (GM)	132kV	54	57	3	6%
SPM	132kV Switchgear - Other	132kV	1,185	1,184	0	0%
SPM	132kV CB (Gas Insulated Busbars)(OD) (GM)	132kV	0	0	0	0%
	Totals		397,627	399,176	2,252	1%

These minor data cleanse adjustment reflect improvements and validation of data in our asset registers, through investigation and resolution of minor synchronisation issues or minor asset discrepancies in our connectivity models.

In addition a further 16% (12) of the 77 asset categories reviewed to date have variations between 5% and 10% shown in the tables below comprising 4 asset categories in SPD and 8 in SPM. The average total variation for these in each of the licence area is 4% in SPM and 6% in SPD.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse Adjustment	% Change from 2011/12 RRP
SPD	33kV Pole	EHV	35,776	38,477	2,721	8%
SPD	6.6/11kV CB (PM)	HV	919	851	-69	-8%
SPD	33kV OHL (Pole Line) Conductor	EHV	2,688	2,501	-173	-6%
SPD	Substations - GM	33 kV	566	599	33	6%
	Totals		39,949	42,428	2,512	6%

In SPD these changes are either associated with 33kV lines or 33kV CBs (discussed separately in this document), and pole mounted reclosers, where only a small numeric variation has been established from review of synchronisation between PowerOn and SAP.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse Adjustment	% Change from 2011/12 RRP
SPM	33kV OHL (Pole Line) Conductor	EHV	1,906	1,725	-181	-9%
SPM	132kV CB (Gas Insulated Busbars)(ID) (GM)	132kV	11	11	-1	-9%
SPM	6.6/11kV CB (GM) Primary	HV	5,125	5,463	368	7%
SPM	6.6/11kV CB (GM) Secondary	HV	2,473	2,643	147	6%
SPM	33kV Transformer (GM)	EHV	730	809	74	10%
SPM	132kV CB (Air Insulated Busbars)(OD) (GM)	132kV	139	151	13	9%
SPM	132kV UG Cable (Oil)	132kV	159	170	12	8%
SPM	132kV Transformer	132kV	132	144	11	8%
	Totals		10,675	11,116	443	4%

In SPM the 132kV and 33kV Plant variations reflect data improvements enabled by new asset synchronisation that our new PowerOn real time system (in 2013) has enabled us to apply in this network. The previous system (Thales NMS) used for the operational control of the 132kV and 33kV network in SPM was not synchronised with our (SAP) asset register.

Assets with variations of 10% or greater are listed in the table below. These are generally explained individually as per the further sections in this document, or are small numeric variations, but due to the small size of the asset base result in large percentages; or that reflect the new PowerOn synchronisation (for 33kV & 132kV assets in SPM) as described above.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse Adjustment	% Change from 2011/12 RRP
SPD	LV Main (OHL) Conductor	LV	4,344	3,094	-1,187	-27%
SPD	LV Main (UG Paper)	LV	18,415	14,953	-3,457	-19%
SPD	6.6/11kV OHL (BLX or similar Conductor)	HV	6	33	27	424%
SPD	6.6/11kV Switch (GM)	HV	7,507	5,002	-2,464	-33%
SPD	33kV OHL (Tower line) Conductor	EHV	14	155	141	1007%
SPD	33kV Tower	EHV	70	293	223	319%
SPD	33kV UG Cable (Non Pressurised)	EHV	3,180	2,276	-897	-28%
SPD	33kV CB (Air Insulated Busbars)(ID) (GM)	EHV	373	315	-54	-14%
SPD	33kV CB (Air Insulated Busbars)(OD) (GM)	EHV	427	337	-59	-14%
SPD	6.6/11kV X-type RMU	HV	0	14	6	N/A
SPD	33kV CB (Gas Insulated Busbars)(OD) (GM)	EHV	0	2	2	N/A
SPD	33kV Switch (GM)	EHV	0	1,323	1,372	N/A
SPD	EHV Sub Cable	EHV	0	2	2	N/A
SPD	33kV CB (Gas Insulated Busbars)(ID) (GM)	EHV	391	382	-45	-12%
	Totals		34,337	27,799	-6,346	-18%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse Adjustment	% Change from 2011/12 RRP
SPM	LV Main (OHL) Conductor	LV	5,657	6,645	973	17%
SPM	LV Main (UG Paper)	LV	12,774	10,988	-1,757	-14%
SPM	6.6/11kV OHL (BLX or similar Conductor)	HV	10	13	2	26%
SPM	6.6/11kV Switch (GM)	HV	1,804	337	-1,465	-81%
SPM	33kV OHL (Tower line) Conductor	EHV	68	168	100	147%
SPM	33kV UG Cable (Gas)	EHV	1	0	-1	-100%
SPM	33kV CB (Air Insulated Busbars)(ID) (GM)	EHV	625	942	333	53%
SPM	33kV CB (Air Insulated Busbars)(OD) (GM)	EHV	595	176	-424	-71%
SPM	33kV CB (Gas Insulated Busbars)(ID) (GM)	EHV	392	661	226	58%
SPM	33kV Switch (GM)	EHV	1,247	2,134	892	72%
SPM	132kV OHL (Pole Line) Conductor	132kV	1,213	203	-1,030	-85%
SPM	132kV Pole	132kV	3,752	2,868	-1,030	-27%
SPM	132kV OHL (Tower Line) Conductor	132kV	-24	1,086	1,121	-4769%
SPM	132kV Tower	132kV	2,176	2,718	542	25%
SPM	33kV Tower	EHV	704	781	75	11%
SPM	Substations - GM	33 kV	799	952	153	19%
SPM	132kV UG Cable (Non Pressurised)	132kV	35	45	8	23%
SPM	33kV UG Cable (Oil)	EHV	0	1	1	N/A
SPM	33kV CB (Gas Insulated Busbars)(OD) (GM)	EHV	0	5	5	N/A
SPM	Substations - GM	132kV	0	108	108	N/A
	Totals		31,828	30,831	-1,167	-4%

5.3 Data Capture of Additional Items

The following tables highlight the asset areas which were not previously effectively captured

- Our interpretation of the definition for EHV GM switches includes all metal enclosed GM switches (excl RMUs): plus ABSDs at substation sites (providing busbar & line disconnectors), and any separate earth switches and fault throwers in substations.
- 132kV substation numbers, not previously reported previously.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPD	33kV Switch (GM)	EHV	-49	1,323	1,372	-2800%
SPM	33kV Switch (GM)	EHV	1,242	2,134	892	72%
			1,193	3,457	2,264	190%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	Substations - GM	132kV	0	108	108	N/A
			0	108	108	N/A

5.4 Pole and Tower Line Circuit Length Separation

Although our GIS system has had the capability to report poles and towers separately, configuration had previously not been applied to separately report circuit length by pole line and tower line. Due to this limitation, management adjustments were carried out to provide indicative splits, or as in the case of the 132kV OHL in SPM, it was all allocated to one asset type only (Pole lines). This limitation has been addressed by reconfiguring our GIS systems to identify spans as either a “pole line” span or a “tower line” span. This has been applied on individual overhead line spans on mixed (tower / pole line) circuits in our GIS system, identifying any span which touches a tower as being part of a tower line, and individual spans which are on wood poles at both ends as “pole lines”

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPD	33kV OHL (Pole Line) Conductor	EHV	2,674	2,501	-173	-6%
SPD	33kV OHL (Tower line) Conductor	EHV	14	155	141	1007%
			2,688	2,656	-32	-1%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	33kV OHL (Pole Line) Conductor	EHV	2,674	2,501	-173	-6%
SPM	33kV OHL (Tower line) Conductor	EHV	14	155	141	1007%
			2,688	2,656	-32	-1%

A review of poles and wide based steel towers also identified a change of mix of supports

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPD	33kV Tower	EHV	70	293	223	319%
SPD	33kV Pole	EHV	35,756	38,477	2,721	8%
			35,826	38,770	2,944	8%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	132kV OHL (Pole Line) Conductor	132kV	1,233	203	-1,030	-85%
SPM	132kV OHL (Tower Line) Conductor	132kV	-35	1,086	1,121	-4769%
			1,198	1,289	91	8%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	33kV Tower	EHV	706	781	75	11%
SPM	33kV Pole	EHV	21,136	20,497	-639	-3%
			21,842	21,278	-564	-3%

5.5 EHV / HV Circuit breakers at SPT / SPD Boundary

Clarification of ownership at the SPD / SPT boundary has confirmed that ~200 circuit breakers (primarily EHV) required to be identified as SPT assets. These had historically been reported under as SPD ownership as they were grouped under our asset hierarchy as being part of a “Grid Sub” rather than a “Trans sub”. This is being aligned in both the SPT and SPD RRP submissions. This also affects a small number of 11kV circuit breakers at 132kV to 11kV sites

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPD	EHV Circuit Breakers	EHV	1,192	1,036	37	3%
SPD	Removal of SPT EHV CBs	EHV	As above		-193	-16%
SPD	HV Circuit Breakers (Primary)	HV	9,273	9,557	291	3%
SPD	Removal of SPT HV CBs	HV	As above		-7	0%
			10,465	10,593	128	1%

5.6 LV Mains Cables

The following tables highlight the changes in asset volumes associated with the LV underground network.

The main issue that affected reporting of the network size is that

- The vectorisation of the network carried out as part of our ESRI implementation in 2008 resulted in a lower length of LV that had been historically reported. These historical LV records would have been based upon estimates from the film or paper based maps held in local drawing offices since the network was installed. Only now by vectorising the network, including LV cables (incl services feeding individual property blocks), are we now able to report this from an IT system. This was not reported through to Ofgem at the time of implementation (2009) as the project implementation had some significant issues trying to separate “real” asset additions and disposals from “system derived” disposals which led to some uncertainty over reporting and computations from this system. These issues are now resolved, and a fully reflective report from the data in this system can now be provided.

In addition we have now improved our reporting capabilities to align with Ofgem’s definition of LV mains cables for those feeding “4 or more customers” This has now been addressed by implementing new features within our GIS system. Our reporting capability was previously only able to indentify “main or service” cables by size / type.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPD	LV Main (UG Plastic)	LV	8,505	8,698	193	2%
SPD	LV Main (UG Paper)	LV	18,410	14,953	-3,457	-19%
			26,915	23,651	-3,264	-12%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	LV Main (UG Plastic)	LV	6,269	6,039	-230	-4%
SPM	LV Main (UG Paper)	LV	12,745	10,988	-1,757	-14%
			19,014	17,027	-1,987	-10%

5.7 EHV UG Cables in SPD,

Review of this asset type identified that reporting had been by “cable length” rather than “circuit length” due to misunderstanding of the definition. This review confirmed that single core cables (particularly modern XLPE cables) had been reporting individually, particularly within SPD, rather than by their 3 phase circuit length. This led to over reporting of 896km (28%). This particularly applied in SPD, as single core cables were drawn individually to form a 3 phase circuit. However in SPM they were generally drawn as one cable with an attribute of “3x 1Core”, so the problem was did not appear.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPD	33kV UG Cable (Non Pressurised)	EHV	3,173	2,276	-897	-28%
SPD	33kV UG Cable (Oil)	EHV	28	29	1	3%
SPD	33kV UG Cable (Gas)	EHV	4	4	0	0%
			3,205	2,309	-896	-28%

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	33kV UG Cable (Non Pressurised)	EHV	1,744	1,790	46	3%
SPM	33kV UG Cable (Oil)	EHV	0	1	1	#DIV/0!
SPM	33kV UG Cable (Gas)	EHV	1	0	-1	-100%
			1,745	1,791	46	3%

5.8 HV GM Switches in SPD and SPM,

For this asset type, changes in Ofgem's definition between 2004-05 and 2005-06 were not correctly recognised by ScottishPower. The 2004-05 definition for Switches included pole mounted switches, whereas in 2005-06, the definition changed to split out the pole mounted assets separately. The removal of the pole mounted OHL Air Break Switches (ABSDs) was not correctly applied by ScottishPower in both SPD and SPM and resulted in over counting of HV GM switches. This led to over reporting of 2464 switches in SPD (33%) and 1465 switches in SPM (81%).

Note : The validation of HV Pole Mounted Switches has not yet been completed, as these are a Priority 3 asset category.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	6.6/11kV Switch (GM)	HV	1,802	337	-1,465	-81%
SPD	6.6/11kV Switch (GM)	HV	7,466	5,002	-2,464	-33%
			9,268	5,339	-3,929	-42%

5.9 132KV overhead lines in SPM,

As discussed in the above section on pole line and tower lines, we have never reported tower line lengths due to system limitations, and where tower line length now stands at over 1000km (previously zero), and wood pole length reduces by over 80% to 203km.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	132kV OHL (Pole Line) Conductor	132kV	1,233	203	-1,030	-85%
SPM	132kV OHL (Tower Line) Conductor	132kV	-35	1,086	1,121	-4769%
			1,198	1,289	91	8%

Results of further validation of poles and wide based steel towers led to a change in the mix of these supports.

Licence	Name	Voltage	2011/2012 Closing balance + 2012/13 Add - 2012/13 Disp.	2012/13 Closing Balance	Data Cleanse	% Change
SPM	132kV Pole	132kV	3,898	2,868	-1,030	-26%
SPM	132kV Tower	132kV	2,176	2,718	542	25%
			6,074	5,586	-488	-8%

6. Validation / Review of Results

The validation of this data has been implemented through a robust and structured process, with multiple levels of Quality Assurance. It has involved validation of data discrepancies and synchronisation of assets between systems; with site visits where required. A total of over 40,000 exceptions were investigated, with over 2000 site visits.

A team of over 20 people was allocated to validate exceptions associated with network assets and the structured process; through exception reports, business validation rules, desktop investigation, quality assurance, site surveys (by our Zonal staff) plus validation at each stage of the process with our Data Management expertise ensured that an effective and robust process was followed. A diagram of the process is provided in Appendix 3.

Further to this process a further external validation / audit report is being produced by PA Consulting (David Porter) to review and comment upon the processes that have been followed. This is also being submitted along with the 2012-13 RRP submission.

7. Conclusions

This report has explained the key changes reflect in SPD and SPM's Table V1 for the 2012-13 RRP submission. This is consistent with briefings given to Ofgem through several meetings over the last year where it was described how ScottishPower have been completing a significant formal review of the Asset Base volumes within SPD and SPM.

Within the 2012-13 RRP the results of this review are detailed in Table V1, and adjustments to the opening balances are reflected in the Data Cleanse Column within Table V1.

The results described below represent the 77 of the 161 RRP asset volume categories applicable across both SPD and SPM representing ~90% of the MEAV. The remainder of the asset categories are being reviewed through the remainder of 2013.

The key points are

- Volume impacts identified are small overall; increasing by 0.6% in SPM and <0.01% in SPD, from the 2012 RRP.
- 40% of the 77 asset categories reviewed to date have only minor variations (5% or less).
- Additional areas have been captured, which were not reported to Ofgem previously, including EHV GM Switches & 132kV Substations.
- Separation of Pole and Tower Line lengths for EHV and 132kV OHLs has also been implemented.
- Improvements in the granularity of ownership of EHV breakers at the SPD / SPT Boundary.

The significant volume changes are

- LV Mains UG Cables where, due to vectorisation, the size of the network has reduced by 3264km (12%) in SPD and 1987km (10%) in SPM, and the network validated against Ofgems definition of "4 customers or more = LV Main"
- EHV UG Cables in SPD, where reporting of cable length, rather than circuit length (for single core cables) led to over reporting of 894km (28%).
- HV GM Switches in SPD and SPM, where double counting of OHL Air Break Switches (ABSDs) led to over reporting of 2464 switches in SPD (33%) and 1465 switches in SPM (81%).

- 132KV overhead lines in SPM, where we have never reported tower line lengths due to system limitations, and where tower line length now stands at 1086km (previously zero), and wood pole length reduces by 85% to 203km.

The validation of this data has been implemented through a robust and structured process, with multiple levels of Quality Assurance. It has involved validation of data discrepancies and synchronisation of assets between systems; with site visits where required. A total of over 40,000 exceptions were investigated, with over 2000 site visits.

In addition an external validation report is being produced by PA Consulting to review and comment upon the processes that have been followed.

The results from this work does not impact on DPCR5 allowances or the Main Health Index Outputs, although the reduction in the cables volumes does worsen SPD and SPM's comparative league position in Fault Rate against other DNOs for the assets described above.

This work reflects a positive improvement in Asset Data processes within ScottishPower, reflecting our focus on assurance of data in our RRP submissions. This piece of work has delivered confidence in our asset base size for the prioritised assets that have been reviewed, has delivered clearly defined reporting requirements and improved granularity and processes around reporting and data validation for regulatory reporting. It reflects ScottishPowers ongoing commitment to effective assurance around data.

8. Appendices

Appendix 1 : List of Priority 1-4 asset Categories

Appendix 2 : Detail of Results of P1 and P2 assets

Appendix 3 : Detailed Process diagram

Appendix 4 : NDIP Programme overview

Appendix 1 : List of Priority 1-4 asset types

	Licence	Asset	Name	Voltage	Units
1	SPD	Overhead Pole Line	6.6/11kV OHL (Conventional Conductor)	HV	km
1	SPD	Overhead Pole Line	6.6/11kV OHL (BLX or similar Conductor)	HV	km
1	SPD	Cable	6.6/11kV UG Cable	HV	km
1	SPD	Switchgear	6.6/11kV CB (GM) Primary	HV	Each
1	SPD	Switchgear	6.6/11kV CB (GM) Secondary	HV	Each
1	SPD	Switchgear	6.6/11kV Switch (GM)	HV	Each
1	SPD	Switchgear	6.6/11kV RMU	HV	Each
1	SPD	Transformer	6.6/11kV Transformer (GM)	HV	Each
1	SPD	Overhead Pole Line	33kV OHL (Pole Line) Conductor	EHV	km
1	SPD	Overhead Pole Line	33kV Pole	EHV	Each
1	SPD	Overhead Tower Line	33kV OHL (Tower line) Conductor	EHV	km
1	SPD	Overhead Tower Line	33kV Tower	EHV	Each
1	SPD	Cable	33kV UG Cable (Non Pressurised)	EHV	km
1	SPD	Cable	33kV UG Cable (Oil)	EHV	km
1	SPD	Cable	33kV UG Cable (Gas)	EHV	km
1	SPD	Switchgear	33kV CB (Air Insulated Busbars)(ID) (GM)	EHV	Each
1	SPD	Switchgear	33kV CB (Air Insulated Busbars)(OD) (GM)	EHV	Each
1	SPD	Switchgear	33kV CB (Gas Insulated Busbars)(ID) (GM)	EHV	Each
1	SPD	Switchgear	33kV CB (Gas Insulated Busbars)(OD) (GM)	EHV	Each
1	SPD	Transformer	33kV Transformer (GM)	EHV	Each
1	SPM	Overhead Pole Line	6.6/11kV OHL (Conventional Conductor)	HV	km
1	SPM	Overhead Pole Line	6.6/11kV OHL (BLX or similar Conductor)	HV	km
1	SPM	Cable	6.6/11kV UG Cable	HV	km
1	SPM	Switchgear	6.6/11kV CB (GM) Primary	HV	Each
1	SPM	Switchgear	6.6/11kV CB (GM) Secondary	HV	Each
1	SPM	Switchgear	6.6/11kV Switch (GM)	HV	Each
1	SPM	Switchgear	6.6/11kV RMU	HV	Each
1	SPM	Switchgear	6.6/11kV X-type RMU	HV	Each
1	SPM	Transformer	6.6/11kV Transformer (GM)	HV	Each
1	SPM	Overhead Pole Line	33kV OHL (Pole Line) Conductor	EHV	km
1	SPM	Overhead Pole Line	33kV Pole	EHV	Each
1	SPM	Overhead Tower Line	33kV OHL (Tower line) Conductor	EHV	km
1	SPM	Overhead Tower Line	33kV Tower	EHV	Each
1	SPM	Cable	33kV UG Cable (Non Pressurised)	EHV	km
1	SPM	Cable	33kV UG Cable (Oil)	EHV	km
1	SPM	Cable	33kV UG Cable (Gas)	EHV	km
1	SPM	Switchgear	33kV CB (Air Insulated Busbars)(ID) (GM)	EHV	Each
1	SPM	Switchgear	33kV CB (Air Insulated Busbars)(OD) (GM)	EHV	Each
1	SPM	Switchgear	33kV CB (Gas Insulated Busbars)(ID) (GM)	EHV	Each

1	SPM	Switchgear	33kV CB (Gas Insulated Busbars)(OD) (GM)	EHV	Each
1	SPM	Switchgear	33kV RMU	EHV	Each
1	SPM	Transformer	33kV Transformer (GM)	EHV	Each
1	SPM	Overhead Pole Line	132kV OHL (Pole Line) Conductor	132kV	km
1	SPM	Overhead Pole Line	132kV Pole	132kV	Each
1	SPM	Overhead Tower Line	132kV OHL (Tower Line) Conductor	132kV	km
1	SPM	Overhead Tower Line	132kV Tower	132kV	Each
1	SPM	Cable	132kV UG Cable (Non Pressurised)	132kV	km
1	SPM	Cable	132kV UG Cable (Oil)	132kV	km
1	SPM	Cable	132kV UG Cable (Gas)	132kV	km
1	SPM	Switchgear	132kV CB (Air Insulated Busbars)(ID) (GM)	132kV	Each
1	SPM	Switchgear	132kV CB (Air Insulated Busbars)(OD) (GM)	132kV	Each
1	SPM	Switchgear	132kV CB (Gas Insulated Busbars)(ID) (GM)	132kV	Each
1	SPM	Switchgear	132kV CB (Gas Insulated Busbars)(OD) (GM)	132kV	Each
1	SPM	Transformer	132kV Transformer	132kV	Each
2	SPD	Overhead Pole Line	LV Main (OHL) Conductor	LV	km
2	SPD	Overhead Pole Line	LV Poles	LV	Each
2	SPD	Cable	LV Main (UG Plastic)	LV	km
2	SPD	Cable	LV Main (UG Paper)	LV	km
2	SPD	Overhead Pole Line	6.6/11kV Poles	HV	Each
2	SPD	Switchgear	6.6/11kV CB (PM)	HV	Each
2	SPD	Switchgear	6.6/11kV X-type RMU	HV	Each
2	SPD	Transformer	6.6/11kV Transformer (PM)	HV	Each
2	SPD	Switchgear	33kV Switch (GM)	EHV	Each
2	SPD	Transformer	33kV Transformer (PM)	EHV	Each
2	SPD	Substation	Substations - GM	33 kV	Each
2	SPM	Overhead Pole Line	LV Main (OHL) Conductor	LV	km
2	SPM	Overhead Pole Line	LV Poles	LV	Each
2	SPM	Cable	LV Main (UG Plastic)	LV	km
2	SPM	Cable	LV Main (UG Paper)	LV	km
2	SPM	Overhead Pole Line	6.6/11kV Poles	HV	Each
2	SPM	Switchgear	6.6/11kV CB (PM)	HV	Each
2	SPM	Transformer	6.6/11kV Transformer (PM)	HV	Each
2	SPM	Switchgear	33kV Switch (GM)	EHV	Each
2	SPM	Transformer	33kV Transformer (PM)	EHV	Each
2	SPM	Switchgear	132kV Switchgear - Other	132kV	Each
2	SPM	Substation	Substations - GM	33 kV	Each
2	SPM	Substation	Substations - GM	132kV	Each
3	SPD	Cable	EHV Sub Cable	EHV	km
3	SPD	Substation	Substation - GM Indoor	HV	Each
3	SPD	Substation	Substation - GM Outdoor	HV	Each
3	SPD	Substation	Substation - GM Third Party	HV	Each
3	SPM	Cable	EHV Sub Cable	EHV	km
3	SPM	Cable	132kV Sub Cable	132kV	km
3	SPM	Substation	Substation - GM Indoor	HV	Each
3	SPM	Substation	Substation - GM Outdoor	HV	Each
3	SPM	Substation	Substation - GM Third Party	HV	Each

3	SPD	Cable	LV Main (UG Consac)	LV	km
3	SPD	Switchgear	LV Circuit Breaker	LV	Each
3	SPD	Switchgear	LV Pillar (ID)	LV	Each
3	SPD	Switchgear	LV Pillar (OD at Substation)	LV	Each
3	SPD	Switchgear	LV Board (WM)	LV	Each
3	SPD	Switchgear	LV UGB & LV Pillars (OD not at Substation)	LV	Each
3	SPD	Switchgear	LV Board (X-type Network) (WM)	LV	Each
3	SPD	Switchgear	LV Transformers/Regulators	LV	Each
3	SPD	Cable	HV Sub Cable	HV	km
3	SPD	Switchgear	6.6/11kV Switch (PM)	HV	Each
3	SPD	Switchgear	6.6/11kV Switchgear - Other (PM)	HV	Each
3	SPD	Switchgear	33kV Switchgear - Other	EHV	Each
3	SPD	Switchgear	33kV Switch (PM)	EHV	Each
3	SPM	Cable	LV Main (UG Consac)	LV	km
3	SPM	Switchgear	LV Circuit Breaker	LV	Each
3	SPM	Switchgear	LV Pillar (ID)	LV	Each
3	SPM	Switchgear	LV Pillar (OD at Substation)	LV	Each
3	SPM	Switchgear	LV Board (WM)	LV	Each
3	SPM	Switchgear	LV UGB & LV Pillars (OD not at Substation)	LV	Each
3	SPM	Switchgear	LV Board (X-type Network) (WM)	LV	Each
3	SPM	Switchgear	LV Transformers/Regulators	LV	Each
3	SPM	Cable	HV Sub Cable	HV	km
3	SPM	Switchgear	6.6/11kV Switch (PM)	HV	Each
3	SPM	Switchgear	6.6/11kV Switchgear - Other (PM)	HV	Each
3	SPM	Switchgear	33kV Switchgear - Other	EHV	Each
3	SPM	Switchgear	33kV Switch (PM)	EHV	Each
4	SPD	Overhead Pole Line	LV Service (OHL)	LV	Each
4	SPD	Cable	Rising & Lateral Mains	LV	No. of Mains
4	SPD	Cable	LV Service (UG)	LV	Each
4	SPD	Cable	LV Service associated with RLM	LV	Each
4	SPD	Switchgear	Cut Out (Metered)	LV	Each
4	SPD	Protection	Batteries at GM HV Substations	HV	Each
4	SPD	Overhead Tower Line	33kV Fittings	EHV	
4	SPD	Protection	Batteries at 33kV Substations	EHV	Each
4	SPD	Protection	Pilot Wire Overhead	Other	km
4	SPD	Protection	Pilot Wire Underground	Other	km
4	SPD	Civils	Cable Tunnels (DNO owned)	Other	Each
4	SPD	Civils	Cable Bridges (DNO owned)	Other	Each
4	SPD	Switchgear	Fuses (PM)	LV	Each
4	SPD	Switchgear	Fuses (GM) (TM)	LV	Each
4	SPD	Switchgear	Switching Points with Remote Control/Automation Facility	All	Each
4	SPD	Cable	UG Cable (Oil & Gas) - Decommissioned	33 kV	km
4	SPD	Shared Poles		LV	#
4	SPD	Shared Poles		HV	#
4	SPD	Shared Poles/Towers		EHV	#
4	SPD	Percentage of Poles Shared		LV	%
4	SPD	Percentage of Poles Shared		HV	%

4	SPD	Percentage of Poles/Towers Shared		EHV	%
4	SPM	Overhead Pole Line	LV Service (OHL)	LV	Each
4	SPM	Cable	Rising & Lateral Mains	LV	km
4	SPM	Cable	LV Service (UG)	LV	Each
4	SPM	Cable	LV Service associated with RLM	LV	Each
4	SPM	Switchgear	Cut Out (Metered)	LV	Each
4	SPM	Protection	Batteries at GM HV Substations	HV	Each
4	SPM	Overhead Tower Line	33kV Fittings	EHV	
4	SPM	Protection	Batteries at 33kV Substations	EHV	Each
4	SPM	Overhead Tower Line	132kV Fittings	132kV	Each
4	SPM	Protection	Batteries at 132kV Substations	132kV	Each
4	SPM	Protection	Pilot Wire Overhead	Other	km
4	SPM	Protection	Pilot Wire Underground	Other	km
4	SPM	Civils	Cable Tunnels (DNO owned)	Other	Each
4	SPM	Civils	Cable Bridges (DNO owned)	Other	Each
4	SPM	Switchgear	Fuses (PM)	LV	Each
4	SPM	Switchgear	Fuses (GM) (TM)	LV	Each
4	SPM	Switchgear	Switching Points with Remote Control/Automation Facility	All	Each
4	SPM	Cable	UG Cable (Oil & Gas) - Decommissioned	33 kV	km
4	SPM	Cable	UG Cable (Oil & Gas) - Decommissioned	132kV	km
4	SPM	Shared Poles		LV	#
4	SPM	Shared Poles		HV	#
4	SPM	Shared Poles/Towers		EHV	#
4	SPM	Shared Poles/Towers		132kV	#
4	SPM	Percentage of Poles Shared		LV	%
4	SPM	Percentage of Poles Shared		HV	%
4	SPM	Percentage of Poles/Towers Shared		EHV	%
4	SPM	Percentage of Poles/Towers Shared		132kV	%

Appendix 2 Detail of Results of P1 and P2 assets

SP Distribution: Plant	Voltage	Units	2011/2012 RRP+ 2012/13 Adds & Disposals	2012/2013 Revised Closing	Variance	
			Volume	Volume	Volume	Volume %
6.6/11kV CB (PM)	HV	Each	920	851	-69	-7.5%
6.6/11kV CB (GM) Primary	HV	Each	4,475	4,540	65	1.5%
6.6/11kV CB (GM) Secondary	HV	Each	4,798	5,017	219	4.6%
6.6/11kV Switch (GM)	HV	Each	7,466	5,002	-2,464	-33.0%
6.6/11kV RMU	HV	Each	13,025	13,623	598	4.6%
6.6/11kV X-type RMU	HV	Each	8	14	6	75.0%
6.6/11kV Transformer (PM)	HV	Each	24,636	25,060	424	1.7%
6.6/11kV Transformer (GM)	HV	Each	15,948	16,268	320	2.0%
33kV CB (Air Insulated Busbars)(ID) (GM)	EHV	Each	369	315	-54	-14.6%
33kV CB (Air Insulated Busbars)(OD) (GM)	EHV	Each	396	337	-59	-14.9%
33kV CB (Gas Insulated Busbars)(ID) (GM)	EHV	Each	427	382	-45	-10.5%
33kV CB (Gas Insulated Busbars)(OD) (GM)	EHV	Each	0	2	2	N/A
33kV Switch (GM)	EHV	Each	-49	1,323	1,372	-2800.0%
33kV Transformer (PM)	EHV	Each	91	91	0	0.0%
33kV Transformer (GM)	EHV	Each	755	756	1	0.1%
Totals			73,265	73,581	316	0.4%

SP Distribution: Substations	Voltage	Units	2011/2012 RRP	2012/2013 Proposed	Variance	
			Volume	Volume	Volume	Volume %
Substations - GM	33 kV	Each	566	599	33	5.8%
Totals			566	599	33	5.8%

SP Distribution: Poles & Towers	Voltage	Units
LV Poles	LV	Each
6.6/11kV Poles	HV	Each
33kV Pole	EHV	Each
33kV Tower	EHV	Each
Totals		

2011/2012 RRP	2012/2013 Proposed	Variance	
Volume	Volume	Volume	Volume %
61,335	61,459	124	0.2%
185,699	188,241	2,542	1.4%
35,756	38,477	2,721	7.6%
70	293	223	318.6%
282,860	288,470	5,610	2.0%

SP Distribution: Cable	Voltage	Units
LV Main (UG Plastic)	LV	km
LV Main (UG Paper)	LV	km
6.6/11kV UG Cable	HV	km
33kV UG Cable (Non Pressurised)	EHV	km
33kV UG Cable (Oil)	EHV	km
33kV UG Cable (Gas)	EHV	km
Totals (Subject to TBC's being completed)		

2011/2012 RRP	2012/2013 Proposed	Variance	
Volume	Volume	Volume	Volume %
8,505	8,698	193	2.3%
18,410	14,953	-3,457	-18.8%
12,725	12,361	-364	-2.9%
3,173	2,276	-897	-28.3%
28	29	1	3.4%
4	4	0	0.0%
42,845.6	38,321	-4,525	-10.6%

SP Distribution: Line	Voltage	Units
LV Main (OHL) Conductor	LV	km
6.6/11kV OHL (Conventional Conductor)	HV	km
6.6/11kV OHL (BLX or similar Conductor)	HV	km
33kV OHL (Pole Line) Conductor	EHV	km
33kV OHL (Tower line) Conductor	EHV	km
Totals		

2011/2012 RRP	2012/2013 Proposed	Variance	
Volume	Volume	Volume	Volume %
4,281	3,094	-1,187	-27.7%
13,984	13,695	-289	-2.1%
6	33	27	423.8%
2,674	2,501	-173	-6.5%
14	155	141	1007.1%
20,960.4	19,478.0	-1,482	-7.1%

SP Manweb: Plant	Voltage	Units	2011/2012 RRP+ 2012/13 Adds & Disposals	2012/2013 Revised Closing	Variance	
			Volume	Volume	Volume	Volume %
6.6/11kV CB (PM)	HV	Each	676	652	-24	-3.6%
6.6/11kV CB (GM) Primary	HV	Each	5,095	5,463	368	7.2%
6.6/11kV CB (GM) Secondary	HV	Each	2,496	2,643	147	5.9%
6.6/11kV Switch (GM)	HV	Each	1,802	337	-1,465	-81.3%
6.6/11kV RMU	HV	Each	5,923	6,070	147	2.5%
6.6/11kV X-type RMU	HV	Each	4,962	4,951	-11	-0.2%
6.6/11kV Transformer (PM)	HV	Each	32,796	33,105	309	0.9%
6.6/11kV Transformer (GM)	HV	Each	10,992	11,290	298	2.7%
33kV CB (Air Insulated Busbars)(ID) (GM)	EHV	Each	609	942	333	54.7%
33kV CB (Air Insulated Busbars)(OD) (GM)	EHV	Each	600	176	-424	-70.7%
33kV CB (Gas Insulated Busbars)(ID) (GM)	EHV	Each	435	661	226	52.0%
33kV CB (Gas Insulated Busbars)(OD) (GM)	EHV	Each	0	5	5	N/A
33kV Switch (GM)	EHV	Each	1,242	2,134	892	71.8%
33kV RMU	EHV	Each	367	361	-6	-1.6%
33kV Transformer (PM)	EHV	Each	0	0	0	N/A
33kV Transformer (GM)	EHV	Each	735	809	74	10.1%
132kV CB (Air Insulated Busbars)(ID) (GM)	132kV	Each	54	57	3	5.6%
132kV CB (Air Insulated Busbars)(OD) (GM)	132kV	Each	138	151	13	9.4%
132kV CB (Gas Insulated Busbars)(ID) (GM)	132kV	Each	12	11	-1	-8.3%
132kV CB (Gas Insulated Busbars)(OD) (GM)	132kV	Each	0	0	0	N/A
132kV Switchgear - Other	132kV	Each	1,184	1,184	0	0.0%
132kV Transformer	132kV	Each	133	144	11	8.3%
Totals (Subject to TBC's being completed)			70,251	71,146	895	1.3%

SP Manweb: Substations	Voltage	Units	2011/2012 RRP	2012/2013 Proposed	Variance	
			Volume	Volume	Volume	Volume %
Substations - GM	33 kV	Each	799	952	153	19.1%
Substations - GM	132kV	Each	0	108	108	#DIV/0!
Totals (Subject to TBC's being completed)			799	952	153	19.1%

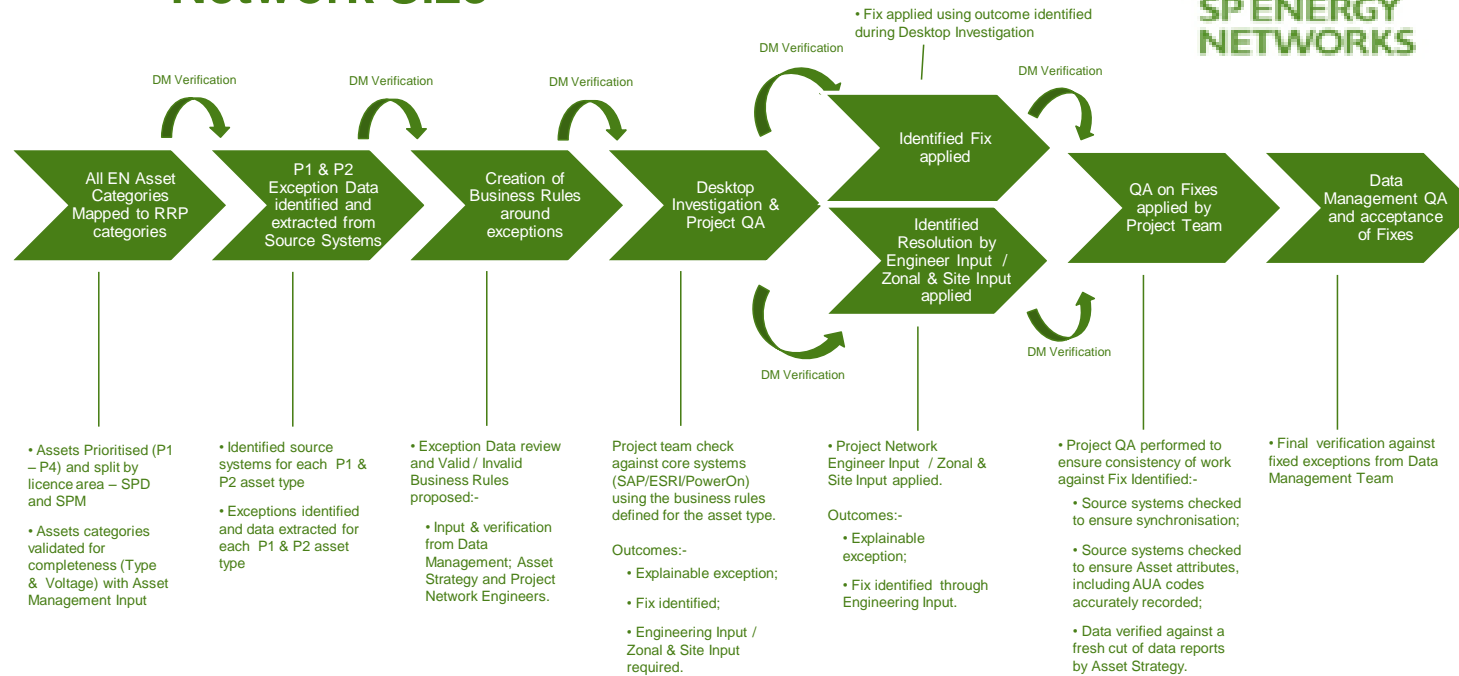
			2011/2012 RRP	2012/2013 Proposed	Variance	
SP Manweb: Poles & Towers	Voltage	Units	Volume	Volume	Volume	Volume %
LV Poles	LV	Each	124,799	127,771	2,972	2.4%
6.6/11kV Poles	HV	Each	166,153	165,814	-339	-0.2%
33kV Pole	EHV	Each	-107	0	107	-100.0%
33kV Tower	EHV	Each	706	781	75	10.6%
132kV Pole	132kV	Each	3,898	2,868	-1,030	-26.4%
132kV Tower	132kV	Each	2,140	2,718	578	27.0%
Totals			291,551	294,366	2,815	1.0%

			2011/2012 RRP	2012/2013 Proposed	Variance	
SP Manweb: Cable	Voltage	Units	Volume	Volume	Volume	Volume %
LV Main (UG Plastic)	LV	km	6,269	6,039	-230	-3.7%
LV Main (UG Paper)	LV	km	12,745	10,988	-1,757	-13.8%
6.6/11kV UG Cable	HV	km	7,296	7,180	-116	-1.6%
33kV UG Cable (Non Pressurised)	EHV	km	1,744	1,790	46	2.6%
33kV UG Cable (Oil)	EHV	km	0	0	0	-100.0%
33kV UG Cable (Gas)	EHV	km	1	0	-1	-100.0%
132kV UG Cable (Non Pressurised)	132kV	km	37	45	8	22.0%
132kV UG Cable (Oil)	132kV	km	158	170	12	7.7%
132kV UG Cable (Gas)	132kV	km	32	34	2	5.3%
Totals (Subject to TBC's being completed)			28,055.4	25,997	-2,058	-7.3%

			2011/2012 RRP	2012/2013 Proposed	Variance	
SP Manweb: Line	Voltage	Units	Volume	Volume	Volume	Volume %
LV Main (OHL) Conductor	LV	km	5,672	6,645	973	17.2%
6.6/11kV OHL (Conventional Conductor)	HV	km	12,541	12,380	-160	-1.3%
6.6/11kV OHL (BLX or similar Conductor)	HV	km	10	13	2	24.1%
33kV OHL (Pole Line) Conductor	EHV	km	1,906	1,725	-181	-9.5%
33kV OHL (Tower line) Conductor	EHV	km	68	168	100	146.7%
132kV OHL (Pole Line) Conductor	132kV	km	1,233	203	-1,030	-83.5%
132kV OHL (Tower Line) Conductor	132kV	km	-35	1,086	1,121	-3228.4%
Totals			20,197.2	20,931.5	734	3.6%

Appendix 3 : Detailed Process diagram

5. Process Adopted to Validate Network Size



Project in Numbers:



Appendix 4 : NDIP Programme overview

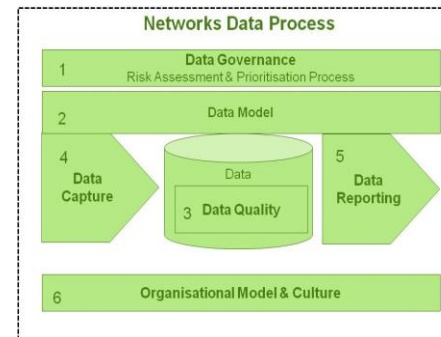
Data Integrity

Networks Data Improvement Programme



Scope : To improve the governance and management of Networks' Data through addressing key deliverables of data improvement across 6 areas

Data Area	Key Areas
1. Governance	<ul style="list-style-type: none"> • Monthly Governance Meetings with Directors • Vision and Programme developed • KPI's and scorecards implemented on Data Returns • Monthly Change control forum established across key systems
2. Model	<ul style="list-style-type: none"> • Implement data models for 7 key asset areas • Develop and implement asset information improvements, including Asset Condition Data • Develop RASCI Responsibilities
3. Quality	<ul style="list-style-type: none"> • Complete investigation and update of data across ~170 RRP asset categories for network assets Opening Balance
4. Capture	<ul style="list-style-type: none"> • Blackbelt working to implement "Process Assurance" to ensure necessary quantity of data returns is received.
5. Reporting	<ul style="list-style-type: none"> • Delivery of Business Reporting Warehouse IT solution for asset volume reporting
6. Culture	<ul style="list-style-type: none"> • Data returns embedded in Performance Management • Team Brief material • Telephone survey of field staff • Behavioural safety involvement of data • Toolbox talks Safety audits incl Data



Improved governance and control of data through programme

6