LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT

FOR 1 APRIL 2013 – 31 March 2014

Scotia Gas Networks

July 2014

Version 1.0

CONTENTS

LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2013 – 31 March 2014

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2013 to 31 March 2014, in accordance with *Uniform Network Code Section N 3.3.3*.

In accordance with Uniform Network Code Section N3.3.3 the following information provides an assessment of shrinkage for Scotland, Thurso, Wick, Campbletown, Oban, Stranraer, South, and South East LDZs. SGN's final proposals for the Formula Year 2013/14 was not subject to Standard Special Condition A11(18) disapproval and as a result, the proposed LDZ Shrinkage Quantities were applied in accordance with *Uniform Network Code Section N 3.1.8*.

LDZ Shrinkage Quantities are comprised of three main components:

- Leakage with individual quantities being applied at LDZ level;
- Operational Usage with a single factor being applied across all LDZs; and
- Transporter responsible Theft of Gas with a single factor being applied across all LDZs

The assessment of LDZ Shrinkage for the Formula Year 2013/14 detailed within this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Quantities for the period.

For this year's leakage assessment, SGN applied v1.3 of the Leakage Model. SGN applied this model in last year's leakage assessment and no further modifications have been made. The leakage assessment resulted in an annual leakage for 2013/14 of 790GWh for the purposes of the Shrinkage Adjustment, which is 2GWh lower than original estimated, and 794GWh[1] for the purposes of the Environmental Emissions Incentive ($LV_{t,i}$ as defined in Special Condition E9 of the Distribution Gas Transporter Licences). LDZ specific values can be found in Table 1.

2 LDZ Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2013/14 were proposed based on an assessment of leakage for the formula year 2013/14.

2.1.1 Assessment of 2013/14 Leakage

SGN applied V1.3 of the Leakage Model to carry out the assessment of leakage for the formula Year 2013/14. No further amendments have been made to the methodologies applied within the leakage model.

Estimated and assessed leakage quantities for each LDZ are shown in Table 1;

Table 1. Estimated and Assessed Leakage Energy by LDZ

LDZ	2013/14 Estimated Leakage (GWh)	2013/14 Assessed Leakage (LVt,i) (GWh)	2013/14 Estimated Leakage (kWh/Day)	2013/14 Assessed Leakage (kWh/Day)	2013/14 Assessed Leakage (GWh)
SOUTH	229	225	628,274	613,300	224
SOUTH EAST	341	344	933,068	941,943	344
SCOTLAND	220	224	603,205	605,748	221
CAMPBELTOWN	0.24	0.24	658	636	0.23
OBAN	0.40	0.39	1,096	1,030	0.38
STRANRAER	0.30	0.31	822	825	0.30
THURSO	0.24	0.24	658	630	0.23
WICK	0.28	0.28	767	724	0.26
Total	**792**	**794**[1]	**2,168,548**	**2,164,835**	**790**

1 Calculated using the LDZ specific Baseline CVs

As shown in Table 1, above the assessment of leakage has resulted in a decrease in energy of approximately 2GWh.

2.2 Operational Usage

Operational Usage is gas, also known as Own Use Gas (OUG), used within the LDZ for such purposes as pre-heater fuel to counter the impact of the Joule-Thompson effect and for other minor operational purposes, e.g. venting.

Pre-heater fuel is the largest component of OUG and it is determined using the output from a model that utilises the thermodynamic principles of the Joule-Thompson effect and LDZ throughput, calorific value, pressure and temperature data.

The OUG factor for 2013/14 of 0.0113% was determined from Advantica's 2006 review of their OUG model. The assessed figure remains the same.

LDZ	Consumption 2013/14 (GWh)	Applied OUG Factor 2013/14	Daily OUG Quantity (kWh)
SOUTH	37854.46	0.0113%	11,719
SOUTH EAST	54071.40		16,740
SCOTLAND	50101.18		15,511
CAMPBELTOWN	33.12		10
OBAN	32.63		10
STRANRAER	136.38		42
THURSO	47.58		15
WICK	43.23		13
SGN	**142319.98**		**44,061**

Table 2. Assessment of OUG

2.3 Theft of Gas

Uniform Network Code Section N1.3.2 states that LDZ Shrinkage shall include gas lost through theft either upstream of the customer control valve or downstream where there is no shipper serving the gas consumer. Unidentified theft was estimated to be 0.02% of throughput for 2013/14.

LDZ	Consumption 2013/14 (GWh)	Applied ToG Factor 2013/14	Daily ToG Quantity (kWh)
SOUTH	37854.46	0.020%	20,742
SOUTH EAST	54071.40		29,628
SCOTLAND	50101.18		27,453
CAMPBELTOWN	33.12		18
OBAN	32.63		18
STRANRAER	136.38		75
THURSO	47.58		26
WICK	43.23		24
SGN	**142319.98**		**77,984**

Table 3. Assessment of ToG

The assessed figure remains the same. The quantification of the level of theft and proportion attributable to Transporters is under review – both in the Shrinkage Gas Forum and Theft of Gas Forum**.**

2.4 LDZ Specific Shrinkage Quantities

Scotia Gas Networks made their final LDZ specific Shrinkage Quantities proposal for the Formula Year 2013/14 in July 2013. Scotia Gas Network's proposal was not subject to Ofgem disapproval under Licence Condition A11(18) disapproval, with the proposed LDZ specific Shrinkage Quantities being applied with effect from the 1 April 2013. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2013/14 produced in the method detailed within this document.

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2013/14	Applied Shrinkage Quantities 2013/14	Difference Between Assessed & Applied Quantities (kWh/day)
SOUTH	613,300	11,719	20,742	645,761	661,601	-15,840
SOUTH EAST	941,943	16,740	29,628	988,311	984,267	4,044
SCOTLAND	605,748	15,511	27,453	648,711	647,363	1,348
CAMPBELTOWN	636	10	18	665	698	-33
OBAN	1,030	10	18	1,058	1,114	-56
STRANRAER	825	42	75	942	960	-18
THURSO	630	15	26	671	704	-33
WICK	724	13	24	761	796	-35
Total	**2,164,835**	**44,061**	**77,984**	**2,286,879**	**2,297,503**	**-10,624**

Table 4. LDZ Specific Shrinkage Quantities (kWh/day)

2.4.1 Reasons for Differences

The difference between Scotia Gas Network's estimated and assessed LDZ Shrinkage Quantities is 10,624kWh per day, as displayed in table 4, which is primarily due to slightly lower than forecast operating pressures.

3 LDZ Shrinkage Adjustment

3.1 Introduction

This document advises Shippers of the Shrinkage Adjustment for Scotia Gas Networks operated LDZs for the period 1 April 2013 to 31 March 2014, as referred to in the *Uniform Network Code* Section N 3.4.1. The Shrinkage Adjustments have been calculated in accordance with the LDZ Shrinkage Adjustments Methodology Version 2.0.

3.2 LDZ Shrinkage Reconciliation Calculations

The LDZ Shrinkage Reconciliation Quantity (SLRQ) is calculated as the difference between the Assessed and Procured LDZ Shrinkage Quantities. This reconciliation quantity is the amount that Scotia Gas Networks has over or under procured.

Therefore, for each LDZ;

LDZ Shrinkage Reconciliation Quantity (SLRQ)	**=**	**Assessed LDZ Shrinkage Quantity (SLAQ)**	**-**	**Procured LDZ Shrinkage Quantity (SLPQ)**

Table 5 below shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2013 to 31 March 2014.

Table 5. LDZ Shrinkage Reconciliation Quantity (kWh/day)

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
SOUTH	-15,840
SOUTH EAST	4,044
SCOTLAND	1,348
CAMPBELTOWN	-33
OBAN	-56
STRANRAER	-18
THURSO	-33
WICK	-35
SGN	-10,624

3.3 Financial Adjustment

The Financial Adjustment (FA) due to Scotia Gas Networks for Energy (cost of the gas) is calculated as shown below:

$$FA(£) = \sum_{1/4/13}^{31/3/14} SLRQ(kWh) \times SAP(p/kWh)/100$$

Where:

FA (£) = Financial Adjustment
SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity
SAP = Daily System Average Price for the period 1 April 2013 to 31 March 2014

The allocation of any debit or credit to Shippers resulting from the Adjustment process is achieved by calculating the energy adjustment on a daily basis, multiplying this by the daily system average price, summating this by LDZ by month and apportioning this by the relevant Shipper RbD affected portfolio in each LDZ for each month.

Table 6, below, shows the financial adjustment by LDZ for the period 1 April 2013 to 31 March 2014, calculated on a daily basis in line with the methodology indicated above.

Table 6. LDZ Shrinkage Reconciliation for the period 1 April 2013 to 31 March 2014

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
SOUTH	-15,840	-£127,122.98
SOUTH EAST	4,044	£32,454.11
SCOTLAND	1,348	£10,819.07
CAMPBELTOWN	-33	-£267.91
OBAN	-56	-£450.67
STRANRAER	-18	-£142.44
THURSO	-33	-£265.11
WICK	-35	-£283.82
SGN	-10,624	-£85,259.74

The overall financial value for the Energy Adjustment, £85,259.74 is therefore a credit to Scotia Gas Networks. Under the rules of Reconciliation by Difference, this is an adjustment of equal and opposite value to Domestic Shippers, i.e. a debit of £85,259.74.

4 LDZ Shrinkage Commodity Charge Adjustment

4.1 Introduction

This section advises Shippers of the Commodity Charge associated with the Scotia Gas Networks operated LDZ Shrinkage Adjustment for the period 1 April 2013 to 31 March 2014.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2013 to 31 March 2014.

Scotland LDZs

Commodity	Period of Application		
	1/04/13 to 30/09/13	1/10/13 to 31/01/14	1/2/14 to 31/3/14
NTS Commodity (=TO+SO)	0.000288	0.000368	0.00029
LDZ System Commodity Charge	0.000257	0.000257	0.000257

Table 7.1. Scotland Commodity Charges for the period 1 April 2013 to 31 March 2014

Southern and South-Eastern LDZs

Commodity	Period of Application		
	1/04/13 to 30/09/13	1/10/13 to 31/01/14	1/2/14 to 31/3/14
NTS Commodity (=TO+SO)	0.000288	0.000368	0.00029
LDZ System Commodity Charge	0.000329	0.000329	0.000329

Table 7.2. Southern Commodity Charges for the period 1 April 2013 to 31 March 2014

4.3 LDZ Shrinkage Reconciliation Quantities

Table 8, below, shows the LDZ Shrinkage Reconciliation Quantities (LRQ) for each LDZ for each period of differing Commodity Charges.

Table 8. LDZ Shrinkage Reconciliation Quantities

LDZ	Total over Period	1/04/13 to 30/09/13	1/10/13 to 31/01/14	1/2/14 to 31/3/14
SOUTH	-4,846,973	-2,898,680	-1,948,293	-934,547
SOUTH EAST	1,237,417	740,024	497,393	238,587
SCOTLAND	412,512	246,698	165,814	79,537
CAMPBELTOWN	-10,215	-6,109	-4,106	-1,970
OBAN	-17,183	-10,276	-6,907	-3,313
STRANRAER	-5,431	-3,248	-2,183	-1,047
THURSO	-10,108	-6,045	-4,063	-1,949
WICK	-10,821	-6,472	-4,350	-2,086
SGN	**-3,877,591**	**-1,944,107**	**-1,306,695**	**-626,789**

4.4 Financial Adjustment

Scotia Gas Networks

The Financial Adjustment (FA) due to Scotia Gas Networks for Commodity Charge reconciliation is calculated as shown below;

$$FA_{cc}(£) = \sum_{1/04/13}^{30/09/13} LRQ(kWh) \times CC_1(£/kWh) + \sum_{1/10/13}^{31/01/14} LRQ(kWh) \times CC_2(£/kWh) + \sum_{1/02/14}^{31/03/14} LRQ(kWh) \times CC_2(£/kWh)$$

Where:

FA_{cc} (£) = Financial Adjustment associated with the SGN LDZ and Customer Commodity Charges
LRQ (kWh) = LDZ Shrinkage Reconciliation Quantity
CC_1 (£/kWh) = SGN LDZ and Customer Commodity Charges applicable to the period 1 April 2013 to 31 March 2014
CC_2 (£/kWh) = SGN LDZ and Customer Commodity Charge applicable to the period 1 April 2013 to 31 March 2014

Table 9, below, shows the financial adjustment by LDZ calculated on a daily basis in line with the methodology indicated above.

Transportation Charges - Scotia Gas Networks							
	Pricing Period			Pricing Period			Assessment Period
	1/04/13 to 30/09/13	1/10/13 to 31/01/14	1/2/14 to 31/3/14	1/04/13 to 30/09/13	1/10/13 to 31/01/14	1/2/14 to 31/3/14	01/04/13 to 31/03/14
LDZ	Total Volume (kWh)	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment	Total Adjustment
SOUTH	-2,898,680	-1,948,293	-934,547	-£1,788.49	-£1,357.96	-£578.48	-£3,724.93
SOUTH EAST	740,024	497,393	238,587	£456.59	£346.68	£147.69	£950.96
SCOTLAND	246,698	165,814	79,537	£134.45	£103.63	£43.51	£281.59
CAMPBELTOWN	-6,109	-4,106	-1,970	-£3.33	-£2.57	-£1.08	-£6.97
OBAN	-10,276	-6,907	-3,313	-£5.60	-£4.32	-£1.81	-£11.73
STRANRAER	-3,248	-2,183	-1,047	-£1.77	-£1.36	-£0.57	-£3.71
THURSO	-6,045	-4,063	-1,949	-£3.29	-£2.54	-£1.07	-£6.90
WICK	-6,472	-4,350	-2,086	-£3.53	-£2.72	-£1.14	-£7.39
SGN	**-1,944,107**	**-1,306,695**	**-626,789**	**-£1,214.96**	**-£921.15**	**-£392.96**	**-£2,529.07**

Table 9. Financial Adjustment due to Scotia Gas Networks, **by LDZ for the period** 1 April 2013 to 31 March 2014

The overall financial value for the LDZ and Commodity Charge Adjustment is therefore £2,529.07 a debit to Domestic Shippers under the RbD Process.