

SGN

LDZ Shrinkage

Assessment and Adjustment

For 1 April 2020 - 31 March 2021

July 2021



SGN

Your gas. Our network.

Contents

1 Executive Summary	3
2 LDZ Shrinkage Quantity Assessment	3
2.1 Assessment of 2020/21 Leakage	3
2.2 Operational Usage	4
2.3 Theft of Gas	5
2.4 LDZ Specific Shrinkage Quantities.....	5
3 LDZ Specific Shrinkage Adjustment	6
3.1 Introduction	6
3.2 LDZ Shrinkage Reconciliation Calculations	6
3.3 Financial Adjustment	7
4 LDZ Shrinkage Commodity Charge Adjustment.....	8
4.1 Introduction	8
4.2 Commodity Charges	8
4.3 LDZ Shrinkage Reconciliation Quantities.....	8
4.4 Financial Adjustment	9

LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2020 – 31 March 2021

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2020 to 31 March 2021, in accordance with Uniform Network Code Section N 3.3.3, in addition to providing notification of the leakage and shrinkage volumes to be used for incentive purposes as required by Special Condition 1F.14 of the Gas Transporter License.

In accordance with Uniform Network Code Section N3.3.3 the following information provides an assessment of shrinkage for Scotland, Thurso, Wick, Campbeltown, Oban, Stranraer, South, and South East LDZs. SGNs Final LDZ Shrinkage Proposals for the Formula Year 2020/21 were 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 2020/21 detailed within this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Quantities for the period.

For the 2020/21 shrinkage assessment, SGN has applied V1.4, which has been approved for use. The assessment for the purposes of the 2020/21 shrinkage adjustment has resulted in annual shrinkage for 2020/21 of 638.5 GWh, which is 1.3 GWh lower than estimated.

The Leakage Volume (LVt) and Actual Shrinkage Volume (ASVt) to be used for incentive revenue purposes for 2020/21 are 597.4 GWh (LVt) and 641.8 GWh (ASVt). The values relating to each specific LDZ can be found in Table 1. The values used for incentive revenue purposes differ from those used to calculate the Shrinkage Adjustment for UNC purposes because they are calculated using the same calorific value assumptions underpinning the incentive baseline targets, thus avoiding potential windfall gains or losses arising from variations in outturn calorific value.

2 LDZ Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2020/21 were proposed based on an assessment of leakage for the formula year 2018/19. SGN applied V1.4 of the Leakage Model to carry out the assessment of leakage for the formula Year 2020/21. No further amendments have been made to the methodologies applied within the leakage model.

LDZ	Baseline CV				Actual CV	
	2020/21 Assessed Shrinkage - ASVt (GWh)	2020/21 Assessed Leakage - LVt (GWh)	2020/21 Estimated Leakage (GWh)	2020/21 Estimated Leakage (kWh/Day)	2020/21 Assessed Leakage (GWh)	2020/21 Assessed Leakage (kWh/Day)
South	194	182	182.6	500,274	181.9	498,455
South East	274	257	253.2	693,770	256.2	702,021
Scotland	173	158	158.1	433,068	155.0	424,594
Campbeltown	0	0	0.2	427	0.1	353
Oban	0	0	0.3	844	0.3	856
Stranraer	0	0	0.2	514	0.2	671
Thurso	0	0	0.1	359	0.1	349
Wick	0	0	0.1	406	0.1	396
SGN Total	641.8	597.4	594.8	1,629,661	594.1	1,627,695

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

Table 1: Estimated and Assessed Energy by LDZ

As shown in Table 1, above the assessment of leakage has resulted in a decrease in energy of 0.7 GWh.

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-Thomson 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-Thomson effect and LDZ throughput, calorific value, pressure and temperature data. The OUG factor applied for 2020/21 is 0.0113% which was determined from Advantica's 2006 review of their OUG model.

Table 2: Assessment of Own Use Gas

LDZ	Consumption 2020/21 (GWh)	Applied OUG Factor 2020/21	Daily OUG Quantity (kWh)
South	39,179	0.0113%	12,129
South East	53,745		16,639
Scotland	48,626		15,054
Campbeltown	32		10
Oban	28		9
Stranraer	150		46
Thurso	42		13
Wick	39		12
SGN Total	141,840		

The assessment of OUG has resulted in a decrease in energy of 0.2 GWh from the 2020/21 Final Proposal position. This is due to a decrease in consumption from the Final Proposal forecast view.

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 0.0200% of throughput for 2020/21.

Table 3: Assessment of Theft of Gas

LDZ	Consumption 2020/21 (GWh)	Applied ToG Factor 2020/21	Daily ToG Quantity (kWh)
South	39,179	0.0200%	21,468
South East	53,745		29,449
Scotland	48,626		26,644
Campbeltown	32		18
Oban	28		15
Stranraer	150		82
Thurso	42		23
Wick	39		21
SGN Total	141,840		

The assessment of TOG has resulted in a decrease in energy of 0.4 GWh for the 2020/21 Final Proposal position. This is due to a decrease in consumption from the Final Proposal forecast view.

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

SGN made their final LDZ specific Shrinkage Quantities proposal for the Formula Year 2020/21 in February 2020. SGN'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 2020. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2020/21 produced in the method detailed within this document.

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

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2020/21	Applied Shrinkage Quantities 2020/21	Difference Between Assessed & Applied Quantities (kWh/day)
South	498,455	12,129	21,468	532,053	534,018	-1,965
South East	702,021	16,639	29,449	748,109	740,986	7,123
Scotland	424,594	15,054	26,644	466,293	474,959	-8,666
Campbeltown	353	10	18	380	460	-80
Oban	856	9	15	879	875	5
Stranraer	671	46	82	799	653	147
Thurso	349	13	23	384	403	-19
Wick	396	12	21	429	448	-18
SGN Total	1,627,695	43,912	77,721	1,749,327	1,752,800	-3,473

The difference between SGN's estimated and assessed LDZ Shrinkage Quantities is 3,473KWh per day, as shown in Table 4.

3 LDZ Shrinkage Adjustment

3.1 Introduction

This document advises Shippers of the Shrinkage Adjustment for SGN operated LDZs for the period 1 April 2020 to 31 March 2021, 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 SGN has over or under procured.

Therefore, for each LDZ;

$$\begin{array}{rcccl} \text{LDZ Shrinkage} & & \text{Assessed LDZ} & & \text{Procured LDZ} \\ \text{Reconciliation Quantity} & = & \text{Shrinkage Quantity} & - & \text{Shrinkage} \\ \text{(SLRQ)} & & \text{(SLAQ)} & & \text{Quantity (SLPQ)} \end{array}$$

Table 5 below shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2020 to 31 March 2021.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
South	-1,965
South East	7,123
Scotland	-8,666
Campbeltown	-80
Oban	5
Stranraer	147
Thurso	-19
Wick	-18
SGN Total	-3,473

3.3 Financial Adjustment

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

$$FA(\pounds) = \sum_{1/4/20}^{31/3/21} SLRQ(kWh) \times SAP(p/kWh)/100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2020 to 31 March 2021

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, summing this by LDZ by month and apportioning this by the relevant Shipper affected portfolio in each LDZ for each month.

Table 6, below, shows the financial adjustment by LDZ for the period 1 April 2020 to 31 March 2021, calculated on a daily basis in line with the methodology indicated above.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
South	-1,965.12	-£7,639.20
South East	7,123	£27,690.26
Scotland	-8,666	-£33,687.31
Campbeltown	-80	-£309.46
Oban	5	£18.92
Stranraer	147	£570.35
Thurso	-19	-£72.39
Wick	-18	-£71.51
SGN Total	-3,473	-£13,500.35

The overall financial value for the Energy Adjustment of negative £13,500.35 is therefore identified as a credit to SGN and a debit to Shippers.

4 LDZ Commodity Charge Adjustment

4.1 Introduction

This section advises Shippers of the Commodity Charge associated with the SGN operated LDZ Shrinkage Adjustment for the period 1 April 2020 to 31 March 2021.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2020 to 31 March 2021.

Table 7: Scotland LDZ Commodity Charges for the 2020/21 period

Commodity	Period of Application	
	01/04/20 to 30/09/20	01/10/20 to 31/03/21
NTS Commodity (=TO+SO)	0.000350	0.000128
LDZ System Commodity Charge	0.000333	0.000333

Table 8: Southern LDZ Commodity Charges for the 2020/21 period

Commodity	Period of Application	
	01/04/20 to 30/09/20	01/10/20 to 31/03/21
NTS Commodity (=TO+SO)	0.000350	0.000128
LDZ System Commodity Charge	0.000365	0.000365

4.3 LDZ Shrinkage Reconciliation Quantities

Table 9 below shows the LDZ Shrinkage Reconciliation Quantities (LRQ) for each LDZ for each period of differing Commodity Charges.

Table 9: LDZ Shrinkage Reconciliation Quantities kWh

LDZ	Total over Period	01/04/20 to 30/09/20	01/10/20 to 31/03/21
South	-717,270	-359,617	-357,652
South East	2,599,930	1,303,526	1,296,403
Scotland	-3,163,013	-1,585,839	-1,577,173
Campbeltown	-29,056	-14,568	-14,488
Oban	1,776	891	886
Stranraer	53,552	26,849	26,702
Thurso	-6,797	-3,408	-3,389
Wick	-6,715	-3,367	-3,348
SGN Total	-1,267,592	-635,533	-632,060

4.4 Financial Adjustment

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

$$FA_{cc}(\pounds) = \sum_{01/04/20}^{30/09/20} LRQ(kWh) \times CC_1(\pounds/kWh) + \sum_{1/10/20}^{31/03/21} LRQ(kWh) \times CC_2(\pounds/kWh)$$

Where:

$FA_{cc}(\pounds)$ = Financial Adjustment associated with the SGN LDZ and Customer Commodity Charges

$LRQ(kWh)$ = LDZ Shrinkage Reconciliation Quantity

$CC_1(\pounds/kWh)$ = SGN LDZ and Customer Commodity Charges applicable to the period 1 April 2020 to 30 September 2020

$CC_2(\pounds/kWh)$ = SGN LDZ and Customer Commodity Charge applicable to the period 1 October 2020 to 31 March 2021

Table 10: Financial Adjustment due to SGN by LDZ for the period 1 April 2020 to 31 March 2021

Transportation Charges - Scotia Gas Networks					
LDZ	Pricing Period		Pricing Period		Assessment Period
	01/04/20 to 30/09/20	01/10/20 to 31/03/21	01/04/20 to 30/09/20	01/10/20 to 31/03/21	01/04/20 to 31/03/21
	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
South	-359,617	-357,652	£257.13	£176.32	£433.45
South East	1,303,526	1,296,403	£932.02	£639.13	£1,571.15
Scotland	-1,585,839	-1,577,173	£1,083.13	£727.08	£1,810.21
Campbeltown	-14,568	-14,488	£9.95	£6.68	£16.63
Oban	891	886	£0.61	£0.41	£1.02
Stranraer	26,849	26,702	£18.34	£12.31	£30.65
Thurso	-3,408	-3,389	£2.33	£1.56	£3.89
Wick	-3,367	-3,348	£2.30	£1.54	£3.84
SGN Total	-635,533	-632,060	£403.86	£261.34	£665.20

The overall financial value for the LDZ and Commodity Charge Adjustment is negative £665.20 and therefore identified as a credit to SGN and a debit to Shippers.