

LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT FOR 1st APRIL 2020 – 31st MARCH 2021

July 2021



REPORTS



WALES&WEST
UTILITIES

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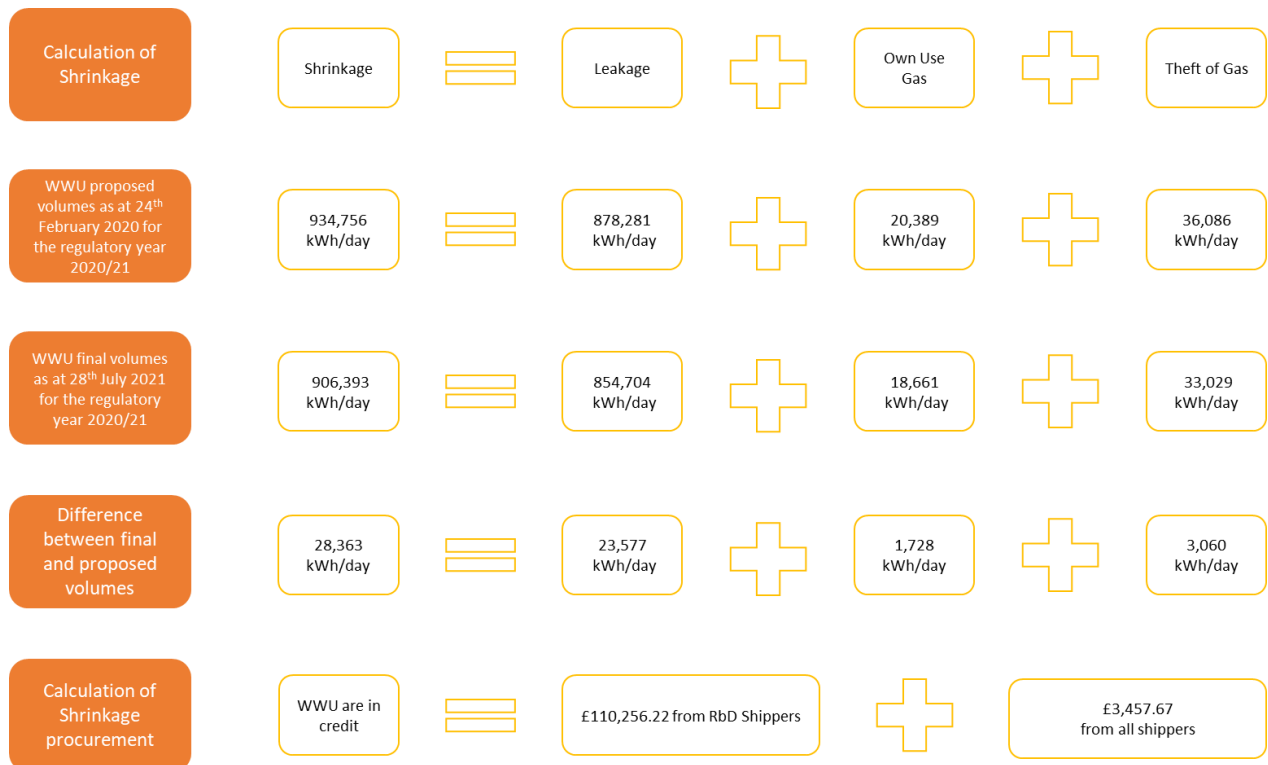
1. Executive Summary

The purpose of this document is to present our assessment of LDZ Shrinkage for the period 1st April 2020 to 31st March 2021, in accordance with Uniform Network Code Section N 3.3.

Wales & West Utilities' (WWU) Final LDZ Shrinkage Quantity Proposal for the Formula Year 2020/21, published on the 24th February 2020¹, proposed individual LDZ Shrinkage Quantities equating to a total Distribution Network Shrinkage Quantity of 934,756 kWh per day. The Final LDZ Shrinkage Proposal for the Formula Year 2020/21 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.

Please note the values contained within this document have been rounded to an appropriate level of accuracy. This may cause immaterial discrepancies between the totals presented within this document and the summation of their constituent parts, however each individual figure is correct in its rounded form.

This year's shrinkage assessment calculates that WWU proposed and procured 28,363 kWh/day more gas than actually required. This comprised:



¹<https://www.gasgovernance.co.uk/shrinkage/20-21final>
LDZ Shrinkage Assessment and Adjustment for 1st April 2020 – 31st March 2021



2. LDZ Shrinkage Quantity Assessment

LDZ Shrinkage Quantities are comprised of three main components:

- **Leakage**, with individual quantities being applied at LDZ level;
- **Own Use Gas (OUG)**, with a consistent percentage factor of the total consumption being applied across all LDZs; and
- **Theft of Gas (TOG)**, with a consistent percentage factor of the total consumption being applied across all LDZs

2.1 Leakage

LDZ specific Shrinkage Quantities for 2020/21 were proposed based on an assessment of leakage for the formula year 2020/21 with anticipated mains replacement being taken into account, leading to a procurement requirement of 320.57GWh.

WWU 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.

Table 1 Estimated and Assessed Leakage Energy by LDZ

LDZ	2020/21 Estimated Leakage (GWh)	2020/21 Final assessed Leakage (GWh)	2020/21 Estimated Leakage (kWh/Day)	2020/21 Final assessed Leakage (kWh/Day)
WN	39.84	41.03	109,142	112,421
WS	93.39	85.80	255,865	235,059
SW	187.35	185.14	513,274	507,223
WWU	320.57	311.97	878,281	854,704

The total assessed Leakage of 311.97 GWh (Table 1) represents a decrease in energy of approximately 8.61 GWh when compared to the estimate of 320.57 GWh. This is equivalent to 23,577 kWh per day or 2.7%.

2.2 Operational Usage

Own Use Gas is gas used within the LDZ for such purposes as pre-heater fuel to counter the impact of the Joule-Thomson² effect and for other minor operational purposes.

Pre-heater fuel is the largest component of OUG and has always been determined using the output from a model that utilises the thermodynamic principles of the Joule-Thomson effect and gas volume, calorific value, pressure and temperature data. The currently accepted factor is based on a model developed by GL Noble Denton, which has been shared with the User community through the Shrinkage Forum.

For the purposes of assessment in respect of the 2020/21 Formula Year, the proposed factor of 0.0113% of consumption, based on the GL Noble Denton model, was used.

² Natural gas is a compressible fluid, as the pressure of the gas is reduced at pressure reduction stations it undergoes isenthalpic expansion causing the gas too cool.
LDZ Shrinkage Assessment and Adjustment for 1st April 2020 – 31st March 2021

Table 2 Assessment of OUG

LDZ	Consumption	Applied OUG Factor	Daily OUG Quantity
	(GWh)		(kWh)
WN	6,640	0.0113%	2,056
WS	23,081		7,145
SW	30,557		9,460
WWU	60,277		18,661

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.

A national factor of 0.02%³ of consumption over the gas year was applied.

Table 3 Assessment of ToG

LDZ	Consumption	Applied ToG Factor	Daily ToG Quantity
	(GWh)		(kWh)
WN	6,640	0.02%	3,638
WS	23,081		12,647
SW	30,557		16,743
WWU	60,277		33,029

³ Agreed via the Shrinkage Forum

2.4 Impact of Consumption Assumptions

The Shrinkage volumes procured in 2020/21 in respect of OUG and ToG were based on the application of the agreed factors (0.0313%, combined, of consumption) to the seasonal normal demand.

Table 4 Assessment of the Impact of Consumption Assumptions

LDZ	Est 2020/21 Consumption (GWh)	2020/21 Actual Consumption (GWh)	Combined OUG/ToG Factor	Estimated OUG/ToG (kWh)	Outturn OUG/ToG (kWh)	Adjustment (kWh)
WN	8,184	6,640	0.0313%	2,561,584	2,078,362	-483,222
WS	19,186	23,081		6,005,224	7,224,199	1,218,975
SW	38,488	30,557		12,046,696	9,564,238	-2,482,458
WWU	65,858	60,277		20,613,504	18,866,799	-1,746,705

2.5 LDZ Specific Shrinkage Quantities

WWU proposed final LDZ specific Shrinkage Quantities for the Formula Year 2020/21 in February 2020. The WWU proposal was not subject to Ofgem disapproval under Standard Special Condition A11 (18), with the proposed LDZ specific Shrinkage Quantities being applied with effect from the 1st April 2020. The proposed (applied) LDZ Shrinkage Quantities are shown in Table 5, along with the Assessed LDZ specific Shrinkage Quantities for 2020/21 produced in the method detailed within this document.

Table 5 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
WN	112,421	2,056	3,638	118,115	116,160	1,956
WS	235,059	7,145	12,647	254,852	272,318	-17,466
SW	507,223	9,460	16,743	533,426	546,279	-12,853
WWU	854,704	18,661	33,029	906,393	934,756	-28,363

2.5.1 Reasons for Differences

The difference between WWU's estimated and assessed LDZ Shrinkage Quantities is 28,363 kWh/day or a 3.0% decrease. This is due to milder weather causing lower than expected system pressures and consumption.

3. LDZ Shrinkage Adjustment

3.1 Introduction

This Section advises Shippers of the Shrinkage Adjustment for WWU operated LDZs for the period 1st April 2020 to 31st March 2021, as referred to in Network Code Section N 3.4.1. The Shrinkage Adjustments have been calculated in accordance with the LDZ Shrinkage Adjustments Methodology Version 2.0.

The Shrinkage Adjustments are due because WWU procured a greater quantity of Shrinkage gas than required, after accounting for using a lower volume of Shrinkage gas than had been forecast.

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 (SLPQ). This reconciliation quantity is the amount that WWU has over or under procured.

Therefore, for each LDZ:

$$S_{LRQ} = (S_{LAQ} - S_{LPQ})$$

Where S_{LRQ} = Reconciliation LDZ specific Daily Shrinkage Quantity (kWh)
 S_{LAQ} = Assessed LDZ specific Daily Shrinkage Quantity (kWh)
 S_{LPQ} = Procured LDZ specific Daily Shrinkage Quantity (kWh)

Table 6, shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1st April 2020 to 31st March 2021.

Table 6 LDZ Shrinkage Reconciliation Quantity (kWh/day)

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
WN	1,956
WS	- 17,466
SW	- 12,853
WWU	- 28,363

3.3 Financial Adjustment

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

$$FA(\pounds) = \sum_{01/04/20}^{31/03/21} S_{LRQ} (kWh) \times SAP(p / kWh) / 100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1st April 2020 to 31st 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 RbD affected portfolio in each LDZ for each month.

Table 7, shows the financial adjustment by LDZ for the period 1st April 2020 to 31st March 2021, calculated on a daily basis in line with the methodology indicated above.

Table 7 LDZ Shrinkage Reconciliation for the period 1st April 2020 to 31st March 2021

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
WN	1,956	£7,603.29
WS	-17,466	-£67,896.59
SW	-12,853	-£49,962.93
WWU	-28,363	-£110,256.22

The overall financial value for the Energy Adjustment, £110,256.22 is therefore a debit to Shippers. Under the rules of Reconciliation by Difference, this is an adjustment of equal and opposite value to Shippers, i.e. a debit of £110,256.22.

4. LDZ Shrinkage Commodity Charge Adjustment

4.1 Introduction

This section advises Shippers of the Commodity Charge associated with the WWU operated LDZ Shrinkage Adjustment for the period 1st April 2020 to 31st March 2021. The Commodity Charge Adjustments have been calculated in accordance with the LDZ Shrinkage Adjustments Methodology Version 3.0⁴

The Commodity Charge Adjustments are due because WWU paid for a higher proportion of Commodity Charges payable to the Distribution Networks during 2020/21 than it should have, after accounting for using a lower volume of gas than had been forecast.

4.2 Applicable Commodity Charges

Table 8 shows the Commodity Charges that applied over the period 1st April 2020 to 31st March 2021

Table 8 Applicable Commodity Charges 1st April 2020 to 31st March 2021

Commodity (£/kWh)		Period of Application	
		01/04/20 to 30/09/20	01/10/20 to 31/03/21
NTS Commodity		0.000000	0.000000
LDZ System Commodity Charge	SW	0.000334	0.000334
	WN	0.000334	0.000334
	WS	0.000334	0.000334

4.3 LDZ Shrinkage Reconciliation Quantities

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

Table 9 LDZ Shrinkage Reconciliation Quantities

LDZ (kWh)	Total over Period	01/04/20 to 30/09/20	01/10/20 to 31/03/21
WN	713,898	357,927	355,971
WS	-6,375,034	-3,196,250	-3,178,784
SW	-4,691,183	-2,352,018	-2,339,165
WWU	-10,352,319	-5,190,341	-5,161,978

⁴ <https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/UNC%20LDZ%20Shrinkage%20Adjustment%20Methodology%20V3.0.pdf>
 LDZ Shrinkage Assessment and Adjustment for 1st April 2020 – 31st March 2021

4.4 Financial Adjustment

The Financial Adjustment (FA) due for Commodity Charge reconciliation is calculated, as a sum for each LDZ, as shown below:

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

Where:

FAcc (£) = Financial Adjustment associated with the Commodity Charge

LRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

CC1 (£/kWh) = Commodity Charge applicable to the period 1st April 2020 to 30th September 2020

CC2 (£/kWh) = Commodity Charge applicable to the period 1st October 2020 to 31st March 2021

Table 10 shows the financial adjustment, calculated on a daily basis in line with the methodology indicated above.

The overall financial value for the Commodity Charge Adjustment is therefore £3,457.67, a debit to Domestic Shippers under the RbD process.

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

Transportation Charge					
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
WN	357,927	355,971	£119.55	£118.89	£238.44
WS	-3,196,250	-3,178,784	-£1,067.55	-£1,061.71	-£2,129.26
SW	-2,352,018	-2,339,165	-£785.57	-£781.28	-£1,566.86
WWU	-5,190,341	-5,161,978	-£1,733.57	-£1,724.10	-£3,457.67