

Water Resources Planning Tables 2019

v15 - June 2018

All queries on the content of this workbook should be sent to:
water-company-plan@environment-agency.gov.uk



**Environment
Agency**



**Cyfoeth Naturiol Cymru
Natural Resources Wales**

Water resource zone information

Company:	Northumbrian Water
Resource Zone Name:	Berwick
Resource Zone Number:	1
Planning Scenario Name:	Dry Year Annual Average
Chosen Level of Service:	Planned
Base Year:	2016/17
Responsible Officer:	William Robinson
Version:	Draft Final

Signed: William Robinson Dated:

[Digital signature is acceptable]

Key to cells

<input style="width: 100px; height: 15px;" type="text"/>	Clear cells - indicate an input is required
<div style="background-color: yellow; width: 100px; height: 15px;"></div>	Yellow shaded cells - indicates a formula.
<div style="background-color: lightblue; width: 100px; height: 15px;"></div>	Blue shaded cells - indicate base year data.
<div style="background-color: lightgrey; width: 100px; height: 15px;"></div>	Light grey shaded cells - indicate preceding years.
<div style="background-color: darkgrey; width: 100px; height: 15px;"></div>	Dark grey cells - indicate that no data entry is required.

Worksheet

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- 3. BL Demand**
- 4. BL SDB**
- 5. Feasible options**
- 6. Preferred options**
- 7. FP Supply**
- 8. FP Demand**
- 9. FP SDB**
- 10. Drought plan links**

Content

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- Baseline water supplies
- Baseline demand
- Baseline supply demand balance
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- Final Planning water supplies (impact of Scenario options)
- Final Planning demand (impact of Scenario options)
- Final Planning supply demand balance
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Table 1: Baseline licences

Row ref	Derivation	Licence number	Source name	Source type	Deployable output (MI/d)	Annual licensed quantity (MI/d)	Constraints on deployable output	Additional notes (if desired)
All individual licences:								
0.1BL	Sum (0.1BL+...)	-	-	-	3.20	3.64	-	
-	Input	1/21/00/052	Source Berwick 1	GW	3.20	3.64	none	
-	Input							
Grouped licences								
Derivation	Licence number	Source name	Source type	DYAA deployable output (MI/d)	Annual licensed quantity (MI/d)			
0.2BL	Sum (0.2BL+...)	-	Total	-	8.40	-	-	
-	-	Group #:	[Enter name of group]	-	8.40	-	-	
-	Input	1/21/0/72	Source Berwick 2	GW	0.00	2.88		
-	Input	1/21/0/001	Source Berwick 3	GW	8.40	6.82	DO is the combined DO for all the boreholes.	
-	Input	1/21/00/068	Source Berwick 4	GW	0.00	4.60		
-	Input	1/21/00/069	Source Berwick 5	GW	0.00	3.00		
-	Input							
Unused licences:								
Derivation	Licence number	Source name	Source type	DYAA deployable output (MI/d)	Annual licensed quantity (MI/d)	Reason licence is unused		
0.3BL	Sum (0.3BL+...)	-	-	-	0.00	0.00	-	
-	Input							
-	Input							
New licences (within current AMP):								
Derivation	Licence number	Source name	Source type	DYAA deployable output (MI/d)	Annual licensed quantity (MI/d)	Status of licence		
0.4BL	Sum (0.4BL+...)	-	-	-	0.00	0.00	-	
-	Input							
-	Input							

Company:	Northumbrian Water
Resource Zone Name:	Berwick
Resource Zone Number:	1
Planning Scenario Name:	Dry Year Annual Average
Chosen Level of Service:	Planned

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Table 4: Baseline supply demand balance

Row ref	Component	Derivation	Unit	Decimal places	2016/17	For info 2016-18	For info 2018-19	For info 2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40	2040-41	2041-42	2042-43	2043-44	2044-45	2045-46	2046-47	2047-48	2048-49	2049-50	2050-51	2051-52	2052-53	2053-54	2054-55	2055-56	2056-57	2057-58	2058-59	2059-60			
118c	Distribution input	$10BL+20BL+21BL+22BL+23BL+24BL+25BL$	Mgd	2	6.98	6.98	6.97	6.97	6.97	6.97	6.97	6.97	6.96	6.96	6.96	6.96	6.95	6.95	6.95	6.95	6.95	6.95	6.96	6.97	6.97	6.97	6.98	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99	6.99		
128c	Water Available For Use (own sources)	$76L+86L+96L+106L+116L$	Mgd	2	11.33	11.34	11.33	11.33	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	
138c	Water Available For Use	$129L+139L+149L+159L+169L$	Mgd	2	11.33	11.34	11.33	11.33	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32
148c	Target headroom (climate change component)	Input	Mgd	2	0.00	0.00	0.01	0.03	-0.04	0.03	0.01	0.02	0.05	0.02	0.02	-0.04	-0.03	0.00	-0.04	0.03	0.03	0.04	0.01	-0.03	0.02	0.00	0.04	-0.01	0.03	0.02	0.06	0.00	0.06	0.03	0.00	0.06	0.00	0.01	0.00	0.04	0.05	0.04	0.04	-0.01	0.03	0.04	0.05	0.03			
158c	Target headroom (all other components)	Input	Mgd	2	0.00	0.00	0.00	0.00	2.26	2.19	2.24	2.19	2.16	2.12	2.07	2.02	1.95	1.89	1.83	1.77	1.69	1.61	1.57	1.53	1.48	1.44	1.38	1.36	1.32	1.27	1.23	1.20	1.16	1.14	1.11	1.08	1.04	1.00	0.96	0.93	0.90	0.88	0.84	0.78	0.76	0.73	0.71				
168c	Target headroom	$148L+158L$	Mgd	2	0.00	0.00	0.01	0.03	2.22	2.22	2.25	2.21	2.23	2.14	2.09	1.98	1.91	1.89	1.79	1.60	1.72	1.64	1.58	1.51	1.50	1.44	1.43	1.35	1.34	1.29	1.29	1.20	1.21	1.17	1.11	1.11	1.04	1.03	1.02	0.97	0.95	0.90	0.90	0.82	0.81	0.80	0.78	0.73			
178c	Available headroom	$138L+148L$	Mgd	2	4.33	4.37	4.33	4.33	4.15	4.15	4.15	4.15	4.15	4.16	4.16	4.16	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.16	4.15	4.15	4.14	4.12	4.12	4.11	4.10	4.09	4.09	4.08	4.08	4.07	4.06	4.05	4.04	4.02	4.01	4.00	3.99	3.98	3.97	3.96	3.94				
188c	Supply Demand Balance	$178L+188L$	Mgd	2	4.33	4.37	4.33	4.33	4.15	4.15	4.15	4.15	4.16	4.16	4.16	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.16	4.15	4.15	4.14	4.12	4.12	4.11	4.10	4.09	4.09	4.08	4.08	4.07	4.06	4.05	4.04	4.02	4.01	4.00	3.99	3.98	3.97	3.96	3.94					

Company: Northumbrian Water
Resource Zone Name: Berwick
Resource Zone Number: 1
Planning Scenario Name: Dry Year Annual Average
Chosen Level of Service: Planned

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Table 2: Financial activities detailed view

Table 2 provides a detailed view of the financial activities for the period from 2017 to 2024, broken down by quarter and month. The table is organized into several columns: Activity, Period, and a grid of values for each quarter and month.

Activity	Period	2017			2018			2019			2020			2021			2022			2023			2024		
		Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3
Operating Income
Operating Expenses
Operating Profit
Non-Operating Income
Non-Operating Expenses
Non-Operating Profit
Operating Profit
Non-Operating Profit
Operating Profit
Non-Operating Profit
Operating Profit
Non-Operating Profit

Notes:

- 1. All amounts are in USD million.
- 2. Operating Income includes interest income and expense, and other non-interest income and expense.
- 3. Operating Expenses include salaries and benefits, rent and occupancy, and other operating expenses.
- 4. Non-Operating Income includes gains on sale of assets, and other non-operating income.
- 5. Non-Operating Expenses include losses on sale of assets, and other non-operating expenses.
- 6. Operating Profit is calculated as Operating Income minus Operating Expenses.
- 7. Non-Operating Profit is calculated as Non-Operating Income minus Non-Operating Expenses.
- 8. Operating Profit and Non-Operating Profit are calculated on a consistent basis.
- 9. The table is subject to audit and may be revised.

Table 7: Final planning water supply

Row Ref	Component	Derivation	Unit	Decimal places	2016/17	For info 2017	For info 2018	For info 2019	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40	2040-41	2041-42	2042-43	2043-44	2044-45	2045-46	2046-47	2047-48	2048-49	2049-50	2050-51	2051-52	2052-53	2053-54	2054-55	2055-56	2056-57	2057-58	2058-59	2059-60	
195	Raw Water Abstracted	195	Mld	2	7.25	7.25	7.25	7.25	7.05	6.98	6.92	6.85	6.81	6.77	6.73	6.69	6.64	6.61	6.58	6.54	6.51	6.48	6.45	6.43	6.40	6.38	6.37	6.37	6.35	6.35	6.34	6.33	6.32	6.31	6.34	6.36	6.38	6.39	6.41	6.44	6.45	6.47	6.49	6.51	6.52	6.53	6.55	6.57	
196	Raw Water Imported	25L + 195 Preferred scenario ref 58.2)	Mld	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
197	Potable Water Imported	195L + 195 Preferred scenario ref 58.3)	Mld	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
198	Raw Water Exported (see exports and non-potable uses)	195L + 195 Preferred scenario ref 58.3)	Mld	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
199	Potable Water Exported	195L + 195 Preferred scenario ref 58.6)	Mld	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200	Deployable Output	195L + 195L + 195 Preferred scenario ref 58.7) + 195 Preferred scenario ref 58.1)	Mld	2	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60	11.60
201	Raw water losses, treatment works losses and operational loss	195L + 195 Preferred scenario ref 58.11)	Mld	2	0.27	0.28	0.29	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	
202	Outage allowance	195L + 195 Preferred scenario ref 58.2)	Mld	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Company: Northumbrian Water
 Resource Zone Name: Berwick
 Resource Zone Number: 1
 Planning Scenario Name: Dry Year Annual Average
 Chosen Level of Service: Planned

Table 9: Final planning water supply

Row Ref	Component	Derivation	Unit	Decimal places	2016/17	For info 2017	For info 2018	For info 2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40	2040-41	2041-42	2042-43	2043-44	2044-45	2045-46	2046-47	2047-48	2048-49	2049-50	2050-51	2051-52	2052-53	2053-54	2054-55	2055-56	2056-57	2057-58	2058-59	2059-60
11FP	Distribution Input	10FP+20FP+21FP+22FP+23FP+24FP+25FP	Mld	2	6.58	6.57	6.57	6.41	6.75	6.68	6.60	6.53	6.45	6.43	6.38	6.34	6.29	6.24	6.20	6.17	6.12	6.08	6.05	6.02	5.99	5.96	5.94	5.93	5.91	5.90	5.88	5.87	5.85	5.86	5.86	5.87	5.88	5.89	5.90	5.92	5.93	5.94	5.95	5.96	5.97	5.97	5.98	6.00
12FP	Water Available For Use (own sources)	7FP-10FP+10FP	Mld	2	11.33	11.04	11.03	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	
13FP	Total Water Available For Use	10FP+12FP+13FP+14FP	Mld	2	11.33	11.04	11.03	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	
14FP	Target headroom (climate change component)	Input	Mld	2	0.00	0.00	0.01	0.03	-0.04	0.03	0.01	0.02	0.05	0.02	0.02	-0.04	-0.03	0.00	-0.04	0.03	0.03	0.04	0.01	-0.03	0.02	0.00	0.04	-0.01	0.03	0.02	0.06	0.00	0.06	0.03	0.00	0.06	0.00	0.01	0.06	0.04	0.05	0.04	-0.01	0.03	0.04	0.05	0.03	
15FP	Target headroom (all other components)	Input	Mld	2	0.00	0.00	2.20	2.20	2.19	2.24	2.19	2.18	2.18	2.12	2.07	2.02	1.96	1.89	1.81	1.77	1.69	1.61	1.57	1.53	1.48	1.44	1.38	1.36	1.32	1.27	1.23	1.20	1.16	1.14	1.11	1.08	1.06	1.02	0.98	0.93	0.88	0.86	0.84	0.78	0.76	0.71		
16FP	Target headroom	14FP+15FP	Mld	2	0.00	0.00	2.20	2.20	2.22	2.22	2.25	2.21	2.25	2.14	2.09	1.98	1.91	1.89	1.79	1.80	1.72	1.64	1.58	1.51	1.50	1.44	1.43	1.35	1.34	1.29	1.29	1.20	1.21	1.17	1.11	1.08	1.04	1.03	0.97	0.95	0.90	0.82	0.81	0.80	0.78	0.73		
17FP	Available headroom	13FP-16FP	Mld	2	4.33	4.17	4.16	4.21	4.27	4.34	4.42	4.49	4.54	4.69	4.64	4.68	4.73	4.77	4.81	4.85	4.90	4.93	4.96	5.00	5.03	5.06	5.07	5.09	5.11	5.12	5.14	5.15	5.17	5.16	5.16	5.15	5.10	5.10	5.13	5.12	5.10	5.09	5.08	5.04	5.03	5.02		
18FP	Supply Demand Balance	17FP-18FP	Mld	2	4.33	4.17	4.16	4.21	4.27	4.34	4.42	4.49	4.54	4.69	4.64	4.68	4.73	4.77	4.81	4.85	4.90	4.93	4.96	5.00	5.03	5.06	5.07	5.09	5.11	5.12	5.14	5.15	5.17	5.16	5.16	5.15	5.10	5.10	5.13	5.12	5.10	5.09	5.08	5.04	5.03	5.02		

Company: Northumbrian Water
 Resource Zone Name: Bewick
 Resource Zone Number: 1
 Planning Scenario Name: Dry Year Annual Average
 Chosen Level of Service: Planned

Table 10: Drought plan links and Deployable Output Overview

10.1 Planning scenarios				10.2 Water resources management plan								10.3 Drought plan						10.4 Demand		
Drought Scenarios	Drought Description	Drought Severity	Plan in which scenario is used (highlights overlaps)		WRMP DO of Sources (not including drought measures)	WRMP Additional Yield from Drought Supply Measures (eg drought permits or orders)			WRMP Impact on DO of drought plan Demand Restrictions (eg TUBs)			WRMP DO Levels of Service	Drought Plan Additional Yield from Further Supply Measures (eg drought permits or orders)			Drought Plan Impact on DO of Further Demand Restrictions (eg TUBs)			Unrestricted Demand	Restricted Demand
			WRMP	Drought Plan	DO (MI/d)	Description	Marginal Benefit (MI/d)	DO (MI/d)	Description	Marginal Benefit (MI/d)	DO (MI/d)	DO (MI/d)	Description	Marginal Benefit (MI/d)	DO (MI/d)	Description	Marginal Benefit (MI/d)	DO (MI/d)	MI/d	MI/d
Historic Droughts		Unknown	Y	n	11.6	N/A	0.0	11.6	N/A	N/A	11.6	11.6	N/A	N/A	N/A	N/A	N/A	N/A	6.98	6.98
Additional Drought Scenarios																				

10.5 Summary report	
<p>WRMP DO Overview</p> <p>Unable to fully model drought impacts in the Berwick and Fowberry WRZ as the lack of historical data is a constraint, as is the lack of a groundwater model for the Fell Sandstone. However, now that our AMP6 NEP investigation has improved the conceptual understanding of the Fell Sandstone, we are now able to start developing a Fell Sandstone groundwater model.</p>	<p>Drought Plan Overview</p> <p>N/A</p>
<p>Additional Drought Scenarios</p> <p>None</p>	<p>Drought Supply Measures and Demand Restrictions Further Details</p> <p>None</p>
<p>Impact on Supply Demand</p> <p>None</p>	
<p>Demands</p> <p>None</p>	

2.3 Making changes to the WRP tables

Please see below slight changes to the WRP tables

Structure: no changes

Content: see below

Table	Row ref	Component	Derivaion	Unit	DP	What has been amended	Reasoning
2	7BL	Deployable Output (baseline profile with	sum(0.1BI+0.2BL+0.3BL+0.4BL)	MI/d	2	Formula has been removed, this row is Input from Supply data	DO is calculated for consistency on Supply calculations, DO is not sum of licences
9	11FP	Distribution Input	19FP+20FP+21FP+22FP+32FP+33FP+39FP	MI/d	2	Void SPL removed row 38 from calculation, NWL/ESW following UKWIR/NRA WR1 demand forecasting methodology, void usage which includes SPL is included in Water unbilled. So to not double count this volume of water Void SPL has been removed from the total DI calculation. Unbilled contains both void usage as well as SPL, this row is already included in the DI calculation.	Consistency between WRP and water balance assumptions/calculations Following UKWIR/NRA WR1 demand forecasting methodology. Reflects WRMP report Void SPL ranges from 0.01% to 0.3% of DI
4	11BL	Distribution input	19BL+20BL+21BL+22BL+32BL+33BL+3	MI/d	2	As above	As above
8	30FP	Unmeasured Household - PCC	(26FP*1,000,000)/(52FP*1,000)	l/h/d	1	Formula amended to 1 decimal place rather than 0 as per table requirement New =ROUND((H10*1000000)/(H55*1000),1) Old =ROUND((H10*1000000)/(H55*1000),1)	For consistency between BL/FB as well as complying with table requirements
8	29FP	Measured Household - PCC	(25FP*1,000,000)/(51FP*1,000)	l/h/d	1	As above	For consistency between BL/FB as well as complying with table requirements
2	8.21BL+	Total for the zone	Input (zero or negative number)	MI/d	2	Row reference	The row reference is a duplicate of 8.2 ie there are two 8.2's so one has been amended to 8.21 to enable an accurate data load of the tables.
7	1FP	Raw Water Abstracted	1BL	MI/d	2	FP should be different than = BP Input from Final Supply demand (DI for BL and FP are different) which means BL and FP raw water abstracted will be different figures	Final plan DI + raw water imports - raw water exports + process losses should = Final Plan Raw water abstracted
6	61.4	Change volume delivered to unmeasured households (input reductions as -ve)	-	MI/d	2	The volume associated in the row if consumption rather than the previous water delivered, changes made due to the version 15 including SPL to the water delivered figure	
6	61.3	Change volume delivered to measured households (input reductions as -ve)	-	MI/d	2	The volume associated in the row if consumption rather than the previous water delivered, changes made due to the version 15 including SPL to the water delivered figure	

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