

# Water Resources Planning Tables 2019

v15 - June 2018

All queries on the content of this workbook should be sent to:  
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**Environment Agency**



**Cyfoeth Naturiol Cymru  
Natural Resources Wales**

## Water resource zone information

<b>Company:</b>	Essex & Suffolk Water
<b>Resource Zone Name:</b>	Northern Central
<b>Resource Zone Number:</b>	5
<b>Planning Scenario Name:</b>	Dry Year Annual Average
<b>Chosen Level of Service:</b>	Planned
<b>Base Year:</b>	2016/17
<b>Responsible Officer:</b>	William Robinson
<b>Version:</b>	Draft Final

Signed: William Robinson

Dated:

[Digital signature is acceptable]

## Key to cells

- Clear cells - indicate an input is required
- Yellow shaded cells - indicates a formula.
- Blue shaded cells - indicate base year data.
- Light grey shaded cells - indicate preceding years.
- Dark grey cells - indicate that no data entry is required.

## Worksheet

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- 3. BL Demand**
- 4. BL SDB**
- 5. Feasible options**
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## Content

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- 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
- Drought plan links



**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)
<b>All individual licences:</b>								
0.1BL	Sum (0.1BL+...)	-	-	-	37.83	17483.90	-	
-	Input	7/35/02/*G/0085	Northern Central Borehole 11	GW	1.232876712	450	Annual average daily licence	
-	Input	7/34/19/*G/0058	Northern Central Borehole 1 & 9	GW	9.02	3409.5	Annual average daily licence & pump capacity	
-		7/34/19/*G/0104	Northern Central Borehole 2	GW	3.41260274	1245.6	Annual average daily licence	
-		7/34/19/*G/0103	Northern Central Borehole 10	GW	2.279178082	831.9	Annual average daily licence	
-		7/34/19/*S/0060	Lound Lakes	SW:Other	8.09	2954.9	Annual average daily licence	
-		7/34/19/*G/0135	Northern Central Borehole 12	GW	0	1092	Emergency Use	
-		7/34/19/*S/0108	River Waveney	SW:River	13.8	7500	Flows & Climate Change	
	Input							
<b>Grouped licences</b>								
Derivation	Licence number	Source name	Source type	DYAA deployable output (MI/d)	Annual licensed quantity (MI/d)			
0.2BL	Sum (0.2BL+...)	-	<b>Total</b>	-	34.61	-	-	
-	-	<b>Group #:</b>	<b>[Enter name of group]</b>	-	34.61	-	-	
-	Input	7/34/09/*S/0054	River Bure & Ormesby Broad	SW:Other	27.39726027	10000	Annual average daily licence (includes climate change for Ormesby)	
-	Input	7/35/02/*G/0083	Northern Central Borehole 6 & 7	GW	2.86	2085.5	Annual average daily licence	
-	Input	7/34/18/*G/0036	Northern Central Borehole 3 & 4	GW	4.356	1590	Annual average daily licence	
-	Input							
-	Input							
<b>Unused licences:</b>								
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	380.00	-	
-	Input	7/34/18/*G/0037	Northern Central 13	GW	0.00	380.00		
-	Input							
<b>New licences (within current AMP):</b>								
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							

<b>Company:</b>	Essex & Suffolk Water
<b>Resource Zone Name:</b>	Northern Central
<b>Resource Zone Number:</b>	5
<b>Planning Scenario Name:</b>	Dry Year Annual Average
<b>Chosen Level of Service:</b>	Planned

**README**



Table 3: Baseline demand. This is a large table with columns for Row #, Component, Derivation, Units, Decimal places, and years from 2017 to 2059. The table is organized into several sections: Consumption, PCC and consumption by component, Laundry, Customer Properties, and Meter-Excise/Customer Population. Each row represents a specific metric or component, and the columns show the projected values for each year.

Category: Essex & Suffolk Water  
Resource Zone Name: Northern Central  
Resource Zone Number: 5  
Planning Scenario Name: Dry Year Annual Average  
Chosen Level of Service: Planned

Table 4: Baseline supply demand balance

Row ref	Component	Derivation	Unit	Decimal places	2016/17	Est 2017-18	Est 2018-19	Est 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	
118L	Distribution input	118L+218L+178L+228L+138L+138L+138L	M3	2	48.68	48.26	47.97	47.69	48.09	48.71	48.72	48.75	48.78	48.80	48.80	48.82	48.85	48.90	48.96	47.02	47.06	47.13	47.21	47.32	47.47	47.61	47.76	47.89	48.06	48.21	48.36	48.50	48.65	48.79	48.78	48.93	49.08	49.25	49.41	49.57	49.72	49.87	50.02	50.16	50.30	50.44	50.59	50.73	
128L	Water Available For Use (user sources)	178L+188L+138L+138L	M3	2	73.24	73.21	73.21	73.21	73.23	73.28	73.44	73.52	73.55	73.55	73.61	73.61	73.60	73.60	73.59	73.59	73.58	73.58	73.57	73.57	73.56	73.56	73.55	73.55	73.54	73.53	73.53	73.52	73.52	73.51	73.51	73.50	73.49	73.49	73.48	73.48	73.47	73.47	73.46	73.46	73.45	73.45			
138L	User Water Available For Use	128L+138L+138L+138L+138L	M3	2	70.69	70.66	70.66	70.66	70.68	70.74	70.78	70.78	70.81	70.81	70.87	70.87	70.86	70.86	70.85	70.85	70.84	70.84	70.83	70.83	70.82	70.82	70.81	70.81	70.80	70.79	70.79	70.78	70.78	70.77	70.77	70.76	70.75	70.75	70.74	70.74	70.73	70.73	70.72	70.72	70.71	70.71			
148L	Target headroom (climate change component)	Input	M3	2	0.50	0.50	0.50	0.50	0.50	0.53	0.58	0.59	0.57	0.74	0.83	0.80	0.80	0.80	0.80	0.84	0.84	0.89	0.89	0.86	0.92	0.97	1.01	0.99	0.95	0.93	0.95	1.02	1.10	1.01	1.06	1.13	1.06	1.09	1.09	1.11	1.11	1.11	1.18	1.20	1.17	1.13	1.22	1.21	1.13
158L	Target headroom (all other components)	Input	M3	2	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.71	0.53	0.42	0.31	0.24	0.13	0.07	0.04	0.04	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06			
168L	Target headroom	148L+158L	M3	2	0.50	0.50	0.50	0.50	0.78	0.50	0.58	0.57	0.38	0.27	0.25	0.12	0.04	0.02	0.01	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			
178L	Available Headroom	118L+128L	M3	2	23.62	23.05	23.05	23.05	23.90	23.93	23.98	24.01	24.03	24.08	24.08	24.04	24.01	23.95	23.88	23.82	23.77	23.71	23.62	23.51	23.35	23.20	23.05	22.91	22.74	22.58	22.43	22.29	22.13	21.99	21.89	21.84	21.67	21.52	21.34	21.18	21.02	20.87	20.72	20.58	20.43	20.28	20.13	19.97	
188L	Supply Demand Balance	178L+138L	M3	2	23.62	23.05	23.05	23.05	23.12	23.44	23.73	23.87	23.86	23.81	23.81	23.82	23.87	23.83	23.85	23.82	23.77	23.71	23.62	23.51	23.35	23.20	23.05	22.91	22.74	22.58	22.43	22.29	22.13	21.99	21.89	21.84	21.67	21.52	21.34	21.18	21.02	20.87	20.72	20.58	20.43	20.28	20.13	19.97	

Company: Essex & Suffolk Water  
 Resource Zone Name: Northern Central  
 Resource Zone Number:  
 Planning Scenario Name: Dry Year Annual Average  
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Table 3. Financial performance indicators		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030	
Indicator	Unit	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Revenue	€ million	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	
Operating Profit	€ million	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	
Net Profit	€ million	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Operating Profit Margin	%	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
Net Profit Margin	%	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Operating Profit per Share	€	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	
Net Profit per Share	€	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	
Operating Profit per Share	€	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	
Net Profit per Share	€	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	

Table 4. Financial performance indicators		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030	
Indicator	Unit	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Revenue	€ million	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	
Operating Profit	€ million	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	
Net Profit	€ million	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Operating Profit Margin	%	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
Net Profit Margin	%	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Operating Profit per Share	€	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	
Net Profit per Share	€	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	
Operating Profit per Share	€	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.92	0.94	0.96	0.98	1.00	
Net Profit per Share	€	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	





Table 7: Final planning water supply

Row Ref	Component	Derivation	Unit	Decimal places	2016/17	For Info 2017/18	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
RP	Raw Water Abstracted	18	Mld	2	45.95	46.01	46.07	46.13	46.19	46.24	46.29	46.34	46.39	46.44	46.49	46.54	46.59	46.64	46.69	46.74	46.79	46.84	46.89	46.94	46.99	47.04	47.09	47.14	47.19	47.24	47.29	47.34	47.39	47.44	47.49	47.54	47.59	47.64	47.69	47.74	47.79	47.84	47.89	47.94	47.99			
RP	Raw Water Imported	18L x 18. Preferred scenario ref 58.23	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		
RP	Possible Water Imported	18L x 18. Preferred scenario ref 58.31	Mld	2	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	
RP	Raw Water Exported (raw exports and non-possible uses)	18L x 18. Preferred scenario ref 58.31	Mld	2	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38		
RP	Possible Water Exported	18L x 18. Preferred scenario ref 58.63	Mld	2	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73		
RP	Deployable Output	18L x 18L x 18. Preferred scenario ref 58.71 x 18. Preferred scenario ref 58.71	Mld	2	76.24	76.23	76.21	76.19	76.18	76.17	76.16	76.14	76.13	76.11	76.10	76.08	76.07	76.05	76.04	76.02	76.01	77.09	77.08	77.06	77.05	77.03	77.02	77.00	77.09	77.08	77.06	77.05	77.02	77.00	77.09	77.07	77.05	77.04	77.01	77.00	77.01	77.00	77.01	77.00	77.01	77.00	77.01	
RP	Raw water losses, treatment works losses and operational loss	18L x 18. Preferred scenario ref 58.71 x 18L x 18. Preferred scenario ref 58.71	Mld	2	3.64	3.64	3.63	3.62	3.61	3.60	3.59	3.57	3.56	3.54	3.53	3.51	3.50	3.48	3.47	3.45	3.44	3.42	3.41	3.39	3.38	3.36	3.35	3.33	3.32	3.30	3.29	3.27	3.26	3.24	3.23	3.21	3.20	3.18	3.17	3.15	3.14	3.12	3.11	3.09	3.08	3.07	3.05	
RP	Change allowance	18L x 18. Preferred scenario ref 58.71	Mld	2	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38			

Company: Essex & Suffolk Water  
 Resource Zone Name: Northern Central  
 Resource Zone Number: 8  
 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
11FF	Distribution Input	10FF+20FF+30FF+40FF+50FF+60FF+70FF+80FF+90FF	Ml/d	2	48.65	48.49	48.51	48.60	48.48	48.30	48.12	47.95	47.79	47.65	47.52	47.39	47.27	47.17	47.09	47.01	46.91	46.83	46.77	46.69	46.65	46.68	46.61	46.51	46.05	45.17	45.30	45.41	45.53	45.67	45.87	46.82	46.99	46.15	46.31	46.47	46.82	46.77	46.92	47.06	47.21	47.35	47.50	47.65
12FF	Water Available For Use (own source)	10FF+20FF+30FF+40FF+50FF+60FF+70FF+80FF+90FF	Ml/d	2	73.24	73.21	73.27	73.33	73.36	73.44	73.50	73.55	73.61	73.61	73.60	73.59	73.59	73.59	73.59	73.59	73.59	73.57	73.57	73.56	73.56	73.56	73.55	73.54	73.53	73.53	73.53	73.52	73.52	73.51	73.51	73.50	73.50	73.49	73.49	73.48	73.48	73.47	73.47	73.46	73.46	73.45	73.45	
13FF	Total Water Available For Use	10FF+20FF+30FF+40FF+50FF+60FF+70FF+80FF+90FF	Ml/d	2	78.89	78.47	78.93	78.99	78.84	78.76	78.76	78.81	78.87	78.86	78.86	78.86	78.86	78.86	78.86	78.86	78.84	78.84	78.83	78.83	78.83	78.83	78.83	78.82	78.81	78.80	78.80	78.79	78.79	78.79	78.78	78.78	78.77	78.77	78.76	78.76	78.75	78.75	78.74	78.74	78.73	78.73	78.72	78.71
14FF	Target headroom (climate change component)	Input	Ml/d	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			
15FF	Target headroom (all other components)	Input	Ml/d	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		
16FF	Target headroom	14FF+15FF	Ml/d	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	
17FF	Available Headroom	13FF-16FF	Ml/d	2	23.82	23.89	23.93	24.11	24.34	24.58	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81	24.81
18FF	English Demand Balance	17FF-18FF	Ml/d	2	23.82	24.00	19.15	19.16	19.33	19.05	19.34	19.47	19.66	19.96	20.10	20.36	20.64	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86	20.86

Comname: Essex & S/Drk Water  
 Resource Zone Name: Northern Central  
 Resource Zone Number: 5  
 Planning Scenario Name: Dry Year Annual Average  
 Closure 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		
Historic Droughts	1997	0.5% chance in any given year	Y	Y	80.2	None	0.0	80.2	Level 1 and 2 Demand Restrictions	Not known	80.2	80.2	Drought Plan Supply Actions	2.17	80.2	Level 1 and 2 Demand Restrictions	N/A	80.2	46.68	41.08
Additional Drought Scenarios	200	Severe Drought	Y	Y	80.2	None	0.0	80.2	Level 1 and 2 Demand Restrictions	Not known	80.2	80.2	Drought Plan Supply Actions	2.17	80.2	Level 1 and 2 Demand Restrictions	N/A	80.2	46.68	41.08

Reported DO for WRMP tables highlighted in yellow

### 10.5 Summary report

WRMP DO Overview	Drought Plan Overview
<p><b>DO Approach</b> - A variety of approaches were taken to deployable output assessment. Aquator modelling was used for the River Waveney, and spreadsheet calculations were used for the River Bure, Lound Ponds, Ormesby Broad and Fritton Lake. The standard UKWIR methodology (1995) entitled "A Methodology for the Determination of Outputs for Groundwater Sources" was used to determine the DO of the groundwater sources. The regional groundwater model was used to determine the DO at groundwater sources during a 1 in 200-year drought scenario. These approaches are outlined in chapter 3 of the WRMP.</p> <p><b>LoS</b> - the planned levels of service for our customers are 1 in 20 years for temporary use bans, 1 in 50 years for drought order bans, and 1 in 250 years for pressure reduction.</p> <p><b>Constraint on DO</b> - our deployable output is licence-constrained.</p> <p><b>Critical Year</b> - our worst historical drought year in the Northern Central WRZ is 1997.</p> <p><b>Data length &amp; quality</b> - due to the variety in deployable output assessment approaches, the data length and quality varies between sources.</p> <p><b>Approach to drought severity</b> - estimation of drought severity was carried out using analysis of rainfall data and Tabony tables, outlined in section 2.9.1 of the WRMP.</p>	<p>The supply and demand side measures included within our Drought Plan are listed below, alongside their associated daily benefit (as a reduction in demand or increase in yield).</p>
Additional Drought Scenarios	Drought Supply Measures and Demand Restrictions Further Details
<p><b>Drought scenarios chosen &amp; justification</b> - a severe (1 in 200 year) drought scenario was tested for all sources using the same methodology as the baseline deployable output assessment, with the exception of Ormesby Broad, Lound Ponds and Fritton Lake as there is no water balance model for these systems. The baseline deployable output is based upon utilisation of the abstractions during the worst historical drought, which is estimated to have a return period greater than 1 in 200 years.</p>	<p>Demand – Appeals for restraint – 7% demand reduction                      Demand – Temporary use ban – further 5% demand reduction                      Demand – Drought order ban – further 2% demand reduction                      Supply – Increase annual licence and Apr-Oct quantity on Lound licence – 0.81MI/d benefit                      Supply – Increase annual quantity on Ormesby/Bure licence – 1.36MI/d benefit                      Supply – Tankering</p>
Impact on Supply Demand	
<p>We have not included any supply side drought measures in WRMP deployable output assessments, but demand side restrictions are taken into account. Only Level 1 and 2 demand restrictions were enforced our worst historic drought.</p>	
Demands	
<p>We have used the Dry Year Distribution Input figures for base year 2016/17 as the Unrestricted Demand. Restricted Demand is the Unrestricted Demand minus the 12% demand reduction from Level 1 and 2 restrictions.</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	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)	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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