

CWW1 - Totex analysis - wastewater network+ and bioresources (post frontier shift and real price effects)

Line description		Commentary
	Operating expenditure	
1	Base operating expenditure	There are no equity issuance costs within our AMP8 plan.
2	Enhancement operating expenditure	For data table CWW1 (also CW1 and RET1) we have made an active decision to deviate from the additional guidance at paragraph 3.1 – for AMP7 periods only - which states: 3.1 This table mirrors CWW1a but includes the impact of the frontier shift and real price effects assumptions included in table SUP11.
3	Developer services operating expenditure	
4	Total operating expenditure excluding third party services	
5	Total third party services	
6	Total operating expenditure	
	Developer services revenue	The application of the blended RPE and frontier shift inflation adjustments across categories of totex and wholesale price controls is a practical way to build up our forecasts for AMP8, and AMP8 periods have a clear link to CWW1a and SUP11. This is in line with the data table guidance.
7	Grants and contributions - operating expenditure	For AMP7 periods, however, this methodology does not support accurate reporting of our forecast performance for the remainder of AMP7, developed as part of our internal business planning and forecasting process. Attempting to force compliance with paragraph 3.1 of the table guidance results in mis-stated AMP7 forecasts. The additional guidance at paragraph 3.5 states: 3.5 This table contains inputs needed for populating the PR19 Cost reconciliation model and calculating the end of period revenue and RCV adjustments to be applied at PR24.
	Capital expenditure	
8	Base capital expenditure	The AMP7 periods of this table are populated so that application of the CPIH (FYA) in table PD1 generates our AMP7 forecasts in projected outturn prices, for entry into the PR19 cost reconciliation model.
9	Enhancement capital expenditure	
10	Developer services capital expenditure	
11	Total gross capital expenditure excluding third party services	
12	Third party services	
13	Total gross capital expenditure	We believe that accurate reporting of AMP7 forecasts, to support population of the PR19 cost reconciliation model, justifies deviation from the table guidance at paragraph 3.1.
	Developer services revenue	
14	Grants and contributions - capital expenditure	For details of the principal use recharges between business units and other relevant information see table CWW1a
15	Net totex	
	Cash expenditure	
16	Pension deficit recovery payments	
17	Other cash items	
18	Totex including cash items	
	Atypical expenditure	

19	Item 1	There are no Atypical items in our plan.
20	Item 2	
21	Item 3	
22	Item 4	
23	Item 5	
24	Total atypical expenditure	Calculated Cells



CWW1a - Totex analysis - wastewater network+ and bioresources

Line description		Commentary																																																															
	Operating expenditure																																																																
1	Base operating expenditure	<p>Principal use recharges are included within this row. Details are as below, in £m</p> <table border="1"> <thead> <tr> <th>Business unit</th> <th>22-23</th> <th>23-24</th> <th>24-25</th> <th>25-26</th> <th>26-27</th> <th>27-28</th> <th>28-29</th> <th>29-30</th> </tr> </thead> <tbody> <tr> <td>Sewage collection</td> <td>-10.952</td> <td>-8.825</td> <td>-8.825</td> <td>-8.993</td> <td>-6.675</td> <td>-3.641</td> <td>-2.306</td> <td>-2.130</td> </tr> <tr> <td>Sewage treatment</td> <td>-10.952</td> <td>-8.825</td> <td>-8.825</td> <td>-8.993</td> <td>-6.675</td> <td>-3.641</td> <td>-2.306</td> <td>-2.130</td> </tr> <tr> <td>Sludge transport</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Sludge treatment</td> <td>2.948</td> <td>2.575</td> <td>2.575</td> <td>2.763</td> <td>2.194</td> <td>1.080</td> <td>0.527</td> <td>0.485</td> </tr> <tr> <td>Sludge disposal</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Total wastewater</td> <td>-18.957</td> <td>-15.075</td> <td>-15.075</td> <td>-15.223</td> <td>-11.155</td> <td>-6.202</td> <td>-4.086</td> <td>-3.774</td> </tr> </tbody> </table> <p>PUA recharges are predominantly made for office leases, IT networks and security, as well as some commercial vehicles.</p>	Business unit	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	Sewage collection	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130	Sewage treatment	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130	Sludge transport	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Sludge treatment	2.948	2.575	2.575	2.763	2.194	1.080	0.527	0.485	Sludge disposal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Total wastewater	-18.957	-15.075	-15.075	-15.223	-11.155	-6.202	-4.086	-3.774
Business unit	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30																																																									
Sewage collection	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130																																																									
Sewage treatment	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130																																																									
Sludge transport	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																									
Sludge treatment	2.948	2.575	2.575	2.763	2.194	1.080	0.527	0.485																																																									
Sludge disposal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																									
Total wastewater	-18.957	-15.075	-15.075	-15.223	-11.155	-6.202	-4.086	-3.774																																																									
2	Enhancement operating expenditure	Any material changes year on year will be mentioned in the CWW3 commentary.																																																															
3	Developer services operating expenditure	No commentary – consistent over AMP 8																																																															
4	Total operating expenditure excluding third party services	Calculation																																																															
5	Total third party services	Nil																																																															
6	Total operating expenditure	Calculation																																																															
	Developer services revenue																																																																
7	Grants and contributions - operating expenditure	Nil																																																															
	Capital expenditure																																																																
8	Base capital expenditure	The AMP8 base capex programme is covered in detail in SRN19 Botex Technical Annex																																																															
9	Enhancement capital expenditure	Any material changes year on year will be mentioned in the CWW3 commentary.																																																															
10	Developer services capital expenditure	Any material changes year on year will be mentioned in the DS3 commentary.																																																															
11	Total gross capital expenditure excluding third party services	Calculation																																																															
12	Third party services	Variations due to timing of specific schemes for which 3 rd party contributions are anticipated																																																															
13	Total gross capital expenditure	Calculation																																																															



Developer services revenue																																																																	
14	Grants and contributions - capital expenditure	Any material changes year on year will be mentioned in the DS1e commentary.																																																															
15	Net totex	Calculated Cells																																																															
Cash expenditure																																																																	
16	Pension deficit recovery payments	Pension deficit recovery payments have been excluded from CW1 so as payments after 2025 are not recovered from customer per IN 13/17. Details are as below, in £m of the deficit payments we forecast to make across AMP8																																																															
		<table border="1"> <thead> <tr> <th>Business unit</th> <th>22-23</th> <th>23-24</th> <th>24-25</th> <th>25-26</th> <th>26-27</th> <th>27-28</th> <th>28-29</th> <th>29-30</th> </tr> </thead> <tbody> <tr> <td>Sewage collection</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>5.502</td> <td>5.502</td> <td>5.502</td> <td>5.502</td> <td>3.965</td> </tr> <tr> <td>Sewage treatment</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>6.462</td> <td>6.462</td> <td>6.462</td> <td>6.462</td> <td>4.657</td> </tr> <tr> <td>Sludge transport</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Sludge treatment</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>1.027</td> <td>1.027</td> <td>1.027</td> <td>1.027</td> <td>0.740</td> </tr> <tr> <td>Sludge disposal</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Total wastewater</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>15.197</td> <td>15.197</td> <td>15.197</td> <td>15.197</td> <td>10.951</td> </tr> </tbody> </table>	Business unit	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	Sewage collection	0.000	0.000	0.000	5.502	5.502	5.502	5.502	3.965	Sewage treatment	0.000	0.000	0.000	6.462	6.462	6.462	6.462	4.657	Sludge transport	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Sludge treatment	0.000	0.000	0.000	1.027	1.027	1.027	1.027	0.740	Sludge disposal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Total wastewater	0.000	0.000	0.000	15.197	15.197	15.197	15.197	10.951
		Business unit	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30																																																							
		Sewage collection	0.000	0.000	0.000	5.502	5.502	5.502	5.502	3.965																																																							
		Sewage treatment	0.000	0.000	0.000	6.462	6.462	6.462	6.462	4.657																																																							
		Sludge transport	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																							
		Sludge treatment	0.000	0.000	0.000	1.027	1.027	1.027	1.027	0.740																																																							
Sludge disposal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																									
Total wastewater	0.000	0.000	0.000	15.197	15.197	15.197	15.197	10.951																																																									
17	Other cash items	Nil																																																															
18	Totex including cash items	Calculated Cells - There are no equity issuance costs within our AMP8 plan.																																																															
Atypical expenditure																																																																	
19	Item 1	There are no atypical items within our plan.																																																															
20	Item 2																																																																
21	Item 3																																																																
22	Item 4																																																																
23	Item 5																																																																
24	Total atypical expenditure	Calculation																																																															



CWW2 - Base expenditure analysis - wastewater network + and bioresources

Line description		Commentary																																																															
	Operating expenditure																																																																
1	Power	All AMP8 base opex costs run off our 24-25 forecast, which is used as a baseline.																																																															
2	Income treated as negative expenditure																																																																
3	Bulk Supply/Bulk discharge																																																																
4	Renewals expensed in year (infrastructure)																																																																
5	Renewals expensed in year (non-infrastructure)																																																																
6	Other operating expenditure	<p>All AMP8 base opex costs run off our 24-25 forecast, which is used as a baseline.</p> <p>Principal use recharges are included within this row. Details are as below, in £m</p> <table border="1"> <thead> <tr> <th>Business unit</th> <th>22-23</th> <th>23-24</th> <th>24-25</th> <th>25-26</th> <th>26-27</th> <th>27-28</th> <th>28-29</th> <th>29-30</th> </tr> </thead> <tbody> <tr> <td>Sewage collection</td> <td>-10.952</td> <td>-8.825</td> <td>-8.825</td> <td>-8.993</td> <td>-6.675</td> <td>-3.641</td> <td>-2.306</td> <td>-2.130</td> </tr> <tr> <td>Sewage treatment</td> <td>-10.952</td> <td>-8.825</td> <td>-8.825</td> <td>-8.993</td> <td>-6.675</td> <td>-3.641</td> <td>-2.306</td> <td>-2.130</td> </tr> <tr> <td>Sludge transport</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Sludge treatment</td> <td>2.948</td> <td>2.575</td> <td>2.575</td> <td>2.763</td> <td>2.194</td> <td>1.080</td> <td>0.527</td> <td>0.485</td> </tr> <tr> <td>Sludge disposal</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Total wastewater</td> <td>-18.957</td> <td>-15.075</td> <td>-15.075</td> <td>-15.223</td> <td>-11.155</td> <td>-6.202</td> <td>-4.086</td> <td>-3.774</td> </tr> </tbody> </table> <p>PUA recharges are predominantly made for office leases, IT networks and security, as well as some commercial vehicles.</p> <p>There are no equity issuance cost within our AMP8 plan.</p>	Business unit	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30	Sewage collection	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130	Sewage treatment	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130	Sludge transport	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Sludge treatment	2.948	2.575	2.575	2.763	2.194	1.080	0.527	0.485	Sludge disposal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Total wastewater	-18.957	-15.075	-15.075	-15.223	-11.155	-6.202	-4.086	-3.774
Business unit	22-23	23-24	24-25	25-26	26-27	27-28	28-29	29-30																																																									
Sewage collection	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130																																																									
Sewage treatment	-10.952	-8.825	-8.825	-8.993	-6.675	-3.641	-2.306	-2.130																																																									
Sludge transport	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																									
Sludge treatment	2.948	2.575	2.575	2.763	2.194	1.080	0.527	0.485																																																									
Sludge disposal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000																																																									
Total wastewater	-18.957	-15.075	-15.075	-15.223	-11.155	-6.202	-4.086	-3.774																																																									
7	Local authority and Cumulo rates	Any movements in rates will be described in our CW10 commentary.																																																															
	Service Charges																																																																
8	Canal & River Trust abstraction charges/ discharge consents	Not applicable																																																															
9	EA / NRW abstraction charges/ discharge consents	All AMP8 base opex costs run off our 24-25 forecast, which is used as a baseline.																																																															



10	Other abstraction charges/ discharge consents	Not applicable
	Location specific costs & obligations	
11	Costs associated with Traffic Management Act	All AMP8 base opex costs run off our 24-25 forecast, which is used as a baseline.
12	Costs associated with lane rental schemes	
13	Cost associated with the Industrial Emissions Directive	
14	Total base operating expenditure	
	Capital expenditure	
15	Maintaining the long term capability of the assets - infra	The AMP8 base capex programme is covered in detail in SRN19 Botex Technical Annex
16	Maintaining the long term capability of the assets - non-infra	
17	Total base capital expenditure	
	Traffic Management Act	
18	Projects incurring costs associated with Traffic Management Act	This number is based on our 22-23 actual run rate.

CWW3 - Enhancement expenditure - wastewater network+ and bioresources

Line description		Commentary
	EA/NRW environmental programme wastewater (WINEP/NEP)	
1	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater capex	Some assumptions have been made around categorisation of sites into i) permit changes only, ii) simple meter installations or iii) more complex civils installations/works. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.
2	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater opex	Some assumptions have been made around categorisation of sites into i) permit changes only, ii) simple meter installations or iii) more complex civils installations/works. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.
3	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater totex	Some assumptions have been made around categorisation of sites into i) permit changes only, ii) simple meter installations or iii) more complex civils installations/works. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.
4	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater capex	Some assumptions have been made around categorisation of sites into i) permit changes only, ii) simple meter installations or iii) more complex civils installations/works. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.
5	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater opex	Some assumptions have been made around categorisation of sites into i) permit changes only, ii) simple meter installations or iii) more complex civils installations/works. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.
6	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater totex	Some assumptions have been made around categorisation of sites into i) permit changes only, ii) simple meter installations or iii) more complex civils installations/works. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.
7	Continuous river water quality monitoring (WINEP/NEP) wastewater capex	Costs reflect our proposal to pay as a service charge rather than capex investment. Refer to SRN41 WINEP Monitoring
8	Continuous river water quality monitoring (WINEP/NEP) wastewater opex	Costs reflect our proposal to pay as a service charge rather than capex investment. Refer to SRN41 WINEP Monitoring
9	Continuous river water quality monitoring (WINEP/NEP) wastewater totex	Costs reflect our proposal to pay as a service charge rather than capex investment. Refer to SRN41 WINEP Monitoring
10	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater capex	We have phased 75% of investment for MCERTs monitoring at emergency sewage pumping station overflows monitoring into AMP9 in line with Secretary of State's steer. Costs reflect this.
11	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater opex	We have phased 75% of investment for MCERTs monitoring at emergency sewage pumping station overflows monitoring into AMP9 in line with Secretary of State's steer. Costs reflect this.



12	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater totex	We have phased 75% of investment for MCERTs monitoring at emergency sewage pumping station overflows monitoring into AMP9 in line with Secretary of State's steer. Costs reflect this.																
13	Increase flow to full treatment; (WINEP/NEP) wastewater capex	<p>We are currently in discussion with the EA regarding deferring U_IMP5 regulatory outputs at 7 sites from AMP7 to early AMP8. As these changes are still subject to confirmation, we have not included their costs in 2025/26 as per data</p> <p>table guidance. For clarity, the sites and costs are shown in the following table:</p> <table border="1" data-bbox="748 483 1451 1062"> <thead> <tr> <th data-bbox="748 483 1055 584">WTW</th> <th data-bbox="1055 483 1451 584">Proposed deferred cost for U_IMP5 (£m)</th> </tr> </thead> <tbody> <tr> <td data-bbox="748 584 1055 651">Lidsey WTW</td> <td data-bbox="1055 584 1451 651">17.2</td> </tr> <tr> <td data-bbox="748 651 1055 718">Oxted WTW</td> <td data-bbox="1055 651 1451 718">8.5</td> </tr> <tr> <td data-bbox="748 718 1055 785">Peel Common WTW</td> <td data-bbox="1055 718 1451 785">15.7</td> </tr> <tr> <td data-bbox="748 785 1055 852">Sittingbourne WTW</td> <td data-bbox="1055 785 1451 852">21.9</td> </tr> <tr> <td data-bbox="748 852 1055 919">Budds Farm WTW</td> <td data-bbox="1055 852 1451 919">21.1</td> </tr> <tr> <td data-bbox="748 919 1055 986">Chichester WTW</td> <td data-bbox="1055 919 1451 986">9.5</td> </tr> <tr> <td data-bbox="748 986 1055 1062">Swalecliffe WTW</td> <td data-bbox="1055 986 1451 1062">1.9</td> </tr> </tbody> </table> <p>Figures for AMP include £27.139m capex costs for treatment of additional flows as a result of actions to reduce discharges from storm overflows (i.e. if we reduce the volume of spills discharged to the environment, then we need to treat the water that previously would have spilt).</p>	WTW	Proposed deferred cost for U_IMP5 (£m)	Lidsey WTW	17.2	Oxted WTW	8.5	Peel Common WTW	15.7	Sittingbourne WTW	21.9	Budds Farm WTW	21.1	Chichester WTW	9.5	Swalecliffe WTW	1.9
WTW	Proposed deferred cost for U_IMP5 (£m)																	
Lidsey WTW	17.2																	
Oxted WTW	8.5																	
Peel Common WTW	15.7																	
Sittingbourne WTW	21.9																	
Budds Farm WTW	21.1																	
Chichester WTW	9.5																	
Swalecliffe WTW	1.9																	
14	Increase flow to full treatment; (WINEP/NEP) wastewater opex	See commentary for CWW3.13																



15	Increase flow to full treatment; (WINEP/NEP) wastewater totex	See commentary for CWW3.13
16	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater capex	Our AMP8 plan includes proposals to deliver the actions to reduce spills from storm overflows over two AMPs to meet the Defra target of 2035. Our approach means focusing on green and phasing the grey infrastructure. Most overflows will need some grey infrastructure.
17	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater opex	See above
18	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater totex	See above
1 9	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater capex	The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
20	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater opex	The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
21	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater totex	The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
22	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater capex	Our AMP8 plan includes proposals to deliver the actions to reduce spills from storm overflows over two AMPs to meet the Defra target of 2035. Our approach means focusing on green and phasing the grey infrastructure. Most overflows will need some grey infrastructure.
23	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater opex	Costs as proposed
24	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater totex	Costs as proposed
25	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater capex	The costs in this table do not include those we propose will be delivered through DPC or an alternative delivery route. The majority of green infrastructure will be delivered through an alternative delivery route, and the costs are in SUP12.

26	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater opex	The costs in this table do not include those we propose will be delivered through DPC or an alternative delivery route. The majority of green infrastructure will be delivered through an alternative delivery route, and the costs are in SUP12.
27	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater totex	The costs in this table do not include those we propose will be delivered through DPC or an alternative delivery route. The majority of green infrastructure will be delivered through an alternative delivery route, and the costs are in SUP12.
28	Storm overflow - discharge relocation (WINEP/NEP) wastewater capex	Only one site proposed for discharge relocation within our Budds Farm system
29	Storm overflow - discharge relocation (WINEP/NEP) wastewater opex	No costs
30	Storm overflow - discharge relocation (WINEP/NEP) wastewater totex	Only one site proposed for discharge relocation within our Budds Farm system
31	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater capex	Not proposed as preferred option
32	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater opex	Not proposed as preferred option
33	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater totex	Not proposed as preferred option
34	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater capex	The majority of our investment in green infrastructure including SuDS is proposed to be delivered through DPC or alternative delivery routes. The costs in this line do not include the investment through the DPC and/or alternative delivery routes – see SUP12 for these costs.
35	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater opex	Opex costs commence in year 5. The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
36	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater totex	The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
37	Storm overflow - source surface water separation; (WINEP/NEP) wastewater capex	The majority of our investment in green infrastructure including surface water separation is proposed to be delivered through DPC or alternative delivery routes. The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route, see SUP12.



38	Storm overflow - source surface water separation; (WINEP/NEP) wastewater opex	Opex costs commence in year 5. The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
39	Storm overflow - source surface water separation; (WINEP/NEP) wastewater totex	The costs in this line do not include those we propose will be delivered through DPC or an alternative delivery route.
40	Storm overflow - infiltration management; (WINEP/NEP) wastewater capex	These costs are specifically related to the WINEP costs for the reduction of storm overflows, and they do not overlap with the infiltration reduction plans agree with the EA.
41	Storm overflow - infiltration management; (WINEP/NEP) wastewater opex	Nil cost
42	Storm overflow - infiltration management; (WINEP/NEP) wastewater totex	These costs are specifically related to the WINEP costs for the reduction of storm overflows, and they do not overlap with the infiltration reduction plans agree with the EA.
43	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater capex	Nil cost. This is not our preferred option
44	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater opex	Nil cost. This is not our preferred option
45	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater totex	Nil cost. This is not our preferred option
46	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater capex	New screens to be installed as time of works to reduce spills
47	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater opex	Nil cost in enhancement business case
48	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater totex	New screens to be installed as time of works to reduce spills
49	Treatment for chemical removal (WINEP/NEP) wastewater capex	Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
50	Treatment for chemical removal (WINEP/NEP) wastewater opex	Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
51	Treatment for chemical removal (WINEP/NEP) wastewater totex	Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
52	Chemicals and emerging contaminants monitoring, investigations, options	Portion of costs provided to companies directly by the EA.



	appraisals; (WINEP/NEP) wastewater capex	
53	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater opex	Portion of costs provided to companies directly by the EA.
54	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater totex	Portion of costs provided to companies directly by the EA.
55	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater capex	We have included all our forecast N removal costs in the “chemical” lines rather than “biological” lines. All are biological denitrification processes but with methanol dosing to chemically assist the biological process.
56	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater opex	We have included all our forecast N removal costs in the “chemical” lines rather than “biological” lines. All are biological denitrification processes but with methanol dosing to chemically assist the biological process.
57	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater totex	We have included all our forecast N removal costs in the “chemical” lines rather than “biological” lines. All are biological denitrification processes but with methanol dosing to chemically assist the biological process.
58	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater capex	We have included all our forecast N removal costs in the “chemical” lines rather than “biological” lines. All are biological denitrification processes but with methanol dosing to chemically assist the biological process.
59	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater opex	We have included all our forecast N removal costs in the “chemical” lines rather than “biological” lines. All are biological denitrification processes but with methanol dosing to chemically assist the biological process.
60	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater totex	We have included all our forecast N removal costs in the “chemical” lines rather than “biological” lines. All are biological denitrification processes but with methanol dosing to chemically assist the biological process.
61	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater capex	The trials and investigations are described in SRN42 WINEP Wider Environmental Enhancement
62	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater opex	The trials and investigations are described in SRN42 WINEP Wider Environmental Enhancement
63	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater totex	The trials and investigations are described in SRN42 WINEP Wider Environmental Enhancement



64	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater capex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in P removal (chemical) into AMP9 Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
65	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater opex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in P removal (chemical) into AMP9 Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
66	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater totex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in P removal (chemical) into AMP9 Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
67	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater capex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in P removal (biological) into AMP9 Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
68	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater opex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in P removal (biological) into AMP9 Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
69	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater totex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in P removal (biological) into AMP9 Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
70	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater capex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in treatment for nutrient or sanitary determinands through nature based solutions into AMP9. Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
71	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater opex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in treatment for nutrient or sanitary determinands through nature based solutions into AMP9. Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
72	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater totex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in treatment for nutrient or sanitary determinands through nature based solutions into AMP9. Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
73	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater capex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in treatment for tightening of sanitary determinands into AMP9. Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
74	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater opex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in treatment for tightening of sanitary determinands into AMP9. Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
75	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater totex	Our AMP8 plan includes proposals to phase some of the WINEP requirements in treatment for tightening of sanitary determinands into AMP9. Costs are described in SRN39 WINEP Enhancing Wastewater Treatment
76	Catchment management - chemicals source control; (WINEP/NEP) wastewater capex	None proposed



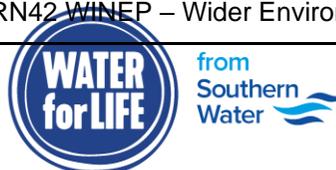
77	Catchment management - chemicals source control; (WINEP/NEP) wastewater opex	None proposed
78	Catchment management - chemicals source control; (WINEP/NEP) wastewater totex	None proposed
79	Catchment management - nutrient balancing; (WINEP/NEP) wastewater capex	None proposed
80	Catchment management - nutrient balancing; (WINEP/NEP) wastewater opex	None proposed
81	Catchment management - nutrient balancing; (WINEP/NEP) wastewater totex	None proposed
82	Catchment management - catchment permitting; (WINEP/NEP) wastewater capex	Due to our EPA score we are not able to propose catchment permitting solutions. There are no costs in this line
83	Catchment management - catchment permitting; (WINEP/NEP) wastewater opex	Due to our EPA score we are not able to propose catchment permitting solutions. There are no costs in this line
84	Catchment management - catchment permitting; (WINEP/NEP) wastewater totex	Due to our EPA score we are not able to propose catchment permitting solutions. There are no costs in this line
85	Catchment management - habitat restoration; (WINEP/NEP) wastewater capex	None proposed
86	Catchment management - habitat restoration; (WINEP/NEP) wastewater opex	None proposed
87	Catchment management - habitat restoration; (WINEP/NEP) wastewater totex	None proposed
88	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater capex	We propose to use UV disinfection at all sites on our WINEP which require microbiological treatment.
89	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater opex	We propose to use UV disinfection at all sites on our WINEP which require microbiological treatment.



90	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater totex	We propose to use UV disinfection at all sites on our WINEP which require microbiological treatment.
91	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater capex	We have phased investment at Hamsey WTW to add secondary treatment into AMP9 in line with Secretary of State's steer. We now propose no costs for this activity in our AMP8 business plan.
92	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater opex	We have phased investment at Hamsey WTW to add secondary treatment into AMP9 in line with Secretary of State's steer. We now propose no costs for this activity in our AMP8 business plan.
93	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater totex	We have phased investment at Hamsey WTW to add secondary treatment into AMP9 in line with Secretary of State's steer. We now propose no costs for this activity in our AMP8 business plan.
94	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater capex	We have phased investment at Hamsey WTW to add secondary treatment into AMP9 in line with Secretary of State's steer. We now propose no costs for this activity in our AMP8 business plan.
95	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater opex	We have phased investment at Hamsey WTW to add secondary treatment into AMP9 in line with Secretary of State's steer. We now propose no costs for this activity in our AMP8 business plan.
96	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater totex	We have phased investment at Hamsey WTW to add secondary treatment into AMP9 in line with Secretary of State's steer. We now propose no costs for this activity in our AMP8 business plan.
97	Fish outfall screens; (WINEP/NEP) wastewater capex	1 scheme at Aylesford
98	Fish outfall screens; (WINEP/NEP) wastewater opex	1 scheme at Aylesford
99	Fish outfall screens; (WINEP/NEP) wastewater totex	1 scheme at Aylesford
100	25 year environment plan; (WINEP/NEP) wastewater capex	We propose no cost for 25YEP improvements. 25YEP investigations are included in the investigations lines
101	25 year environment plan; (WINEP/NEP) wastewater opex	We propose no cost for 25YEP improvements. 25YEP investigations are included in the investigations lines
102	25 year environment plan; (WINEP/NEP) wastewater totex	We propose no cost for 25YEP improvements. 25YEP investigations are included in the investigations lines
103	Investigations, other (WINEP/NEP) - desk-based studies only wastewater capex	Costs are described in SRN42 WINEP – Wider Environmental Enhancement
104	Investigations, other (WINEP/NEP) - desk-based studies only wastewater opex	Costs are described in SRN42 WINEP – Wider Environmental Enhancement

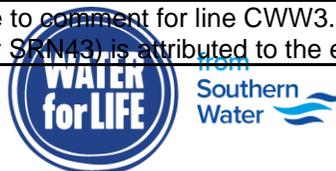


105	Investigations, other (WINEP/NEP) - desk-based studies only wastewater totex	Costs are described in SRN42 WINEP – Wider Environmental Enhancement
106	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater capex	Costs are described in SRN42 WINEP – Wider Environmental Enhancement
107	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater opex	<p>We have included the costs of our proposed 25YEP investigation (£0.5m) which was our A-WINEP groundwater remediation trials proposed for the Three Harbours area. We heard on 6th September that our A-WINEP proposal was unsuccessful, but this was too late to remove the costs from the business plan submission.</p> <p>The figures include the 210 investigations for storm overflows under the WINEP driver EnvAct_IMP2. Our checking and assurance processes identified that the costs for these investigations were included under both capex and opex, hence the cost of each investigation has been double counted. The total cost is £12m opex expenditure, which will be updated prior to final determination.</p> <p>We have one non-statutory investigation under the 25 YEP driver for the Three Harbours at a cost of £0.409m. This is a collaborative partnership with the Chichester Harbour Trust, RSPB, Local Councils and several other organisations, with wide support both within the partnership as well as the local communities. See SRN42 WINEP - Wider Environmental Enhancement business case for further details.</p>
108	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater totex	We have included the costs of our proposed 25YEP investigation (£0.5m) which was our A-WINEP groundwater remediation trials proposed for the Three Harbours area. We heard on 6 th September that our A-WINEP proposal was unsuccessful, but this was too late to remove the costs from the business plan submission.
109	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater capex	Costs are described in SRN42 WINEP – Wider Environmental Enhancement
110	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater opex	Costs are described in SRN42 WINEP – Wider Environmental Enhancement
111	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring	Costs are described in SRN42 WINEP – Wider Environmental Enhancement



	locations, and/or complex modelling wastewater totex	
112	Investigations, total; (WINEP/NEP) wastewater capex	This is a calculated sub total
113	Investigations, total; (WINEP/NEP) wastewater opex	This is a calculated sub total
114	Investigations, total; (WINEP/NEP) wastewater totex	This is a calculated sub total
115	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater capex	No costs proposed
116	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater opex	No costs proposed.
117	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater totex	No costs proposed
118	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater capex	No schemes proposed
119	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater opex	No schemes proposed
120	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater totex	No schemes proposed
121	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater capex	No schemes proposed
122	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater opex	No schemes proposed
123	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater totex	No schemes proposed
124	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater capex	No schemes proposed

125	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater opex	No schemes proposed
126	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater totex	No schemes proposed
127	Advanced WINEP (not covered elsewhere) wastewater capex	No schemes proposed
128	Advanced WINEP (not covered elsewhere) wastewater opex	No schemes proposed
129	Advanced WINEP (not covered elsewhere) wastewater totex	No schemes proposed
130	Total environmental programme expenditure; (WINEP/NEP) wastewater totex	This is a calculated total
	EA/NRW environmental programme bioresources (WINEP/NEP)	
131	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated) (WINEP/NEP) capex	Nil costs
132	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); (WINEP/NEP) opex	Nil costs
133	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); (WINEP/NEP) totex	Nil costs
134	Sludge storage -Tanks (thickened/dewatered or treated); (WINEP/NEP) capex	Nil costs
135	Sludge storage - Tanks (thickened/dewatered or treated); (WINEP/NEP) opex	Nil costs
136	Sludge storage - Tanks (thickened/dewatered or treated); (WINEP/NEP) totex	Nil costs
137	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources capex	(CWW3.137) Numbers only include proportion of our business case under regulated delivery. This does not include Kent element of the overall cake storage case which will be delivered through Alternative Delivery (CapEx £19.5m – See SUP12 Data Table)
138	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources opex	(CWW3.138) In reference to comment for line CWW3.137, all OpEx accounted for within the scheme (£1.259m as per SRN43) is attributed to the element of the scheme delivered through regulated delivery.



		No OpEx associated to Alternative Delivery.
139	Sludge storage - Cake pads / bays /other; (WINEP/NEP) bioresources totex	(CWW3.139) Numbers only include proportion of our business case under regulated delivery. This does not include Kent element of the overall cake storage case which will be delivered through Alternative Delivery (TOTEX £19.5m – See SUP12 Data Table)
140	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources capex	Rejected from WINEP but included under botex with Cost Adjustment Claim
141	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources opex	Rejected from WINEP but included under botex with Cost Adjustment Claim
142	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources totex	Rejected from WINEP but included under botex with Cost Adjustment Claim
143	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) capex	Nil costs
144	Sludge treatment -Thickening and/or dewatering; (WINEP/NEP) opex	Nil costs
145	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) totex	Nil costs
146	Sludge treatment - Other; (WINEP/NEP) bioresources capex	(CWW3.146) Although IED (Industrial Emission Directive) is not covered by WINEP, it was included within this line as it is considered as an environmental enhancement. Numbers only include proportion of our business case under regulated delivery. This does not include Ashford and Ham Hill element of the overall enhancement case which will be delivered through Alternative Delivery
147	Sludge treatment - Other; (WINEP/NEP) bioresources opex	(CWW3.147) Although IED (Industrial Emission Directive) is not covered by WINEP, it was included within this line as it is considered as an environmental enhancement. Numbers only include proportion of our business case under regulated delivery. This does not include Ashford and Ham Hill element of the overall enhancement case which will be delivered through Alternative Delivery
148	Sludge treatment -Other; (WINEP/NEP) bioresources totex	(CWW3.148) Although IED (Industrial Emission Directive) is not covered by WINEP, it was included within this line as it is considered as an environmental enhancement. Numbers only include proportion of our business case under regulated delivery. This does not include Ashford and Ham Hill element TOTEX (£17.8m – See SUP12 Data Table) of the overall enhancement case which will be delivered through Alternative Delivery
149	Sludge investigations and monitoring (WINEP/NEP) bioresources capex	Nil costs
150	Sludge investigations and monitoring (WINEP/NEP) bioresources opex	Nil costs
151	Sludge investigations and monitoring (WINEP/NEP) bioresources totex	Nil costs

152	Total environmental programme expenditure; (WINEP/NEP) bioresources totex	Calculated cell																		
Other enhancement																				
153	Growth at sewage treatment works (excluding sludge treatment); enhancement capex	<p>For a full description of AMP8 growth costs refer to the supporting enhancement case - SRN44 Wastewater growth</p> <p>There are 8 additional sites which will incur costs in AMP8 that were previously funded in AMP7.</p> <p>These costs are not included in the data table for AMP8 as per guidance. 4 of these are being delivered as part of the U_IMP5 projects where we are in discussion with the EA regarding regulatory date deferral, as described in CWW3.13 commentary.</p> <p>For clarity, the growth costs not included in the data table are:</p> <table border="1" data-bbox="748 751 1449 1430"> <thead> <tr> <th data-bbox="748 751 1055 884">WTW</th> <th data-bbox="1055 751 1449 884">Proposed deferred cost for Growth (£m) – being delivered as part of UIMP5 programme</th> </tr> </thead> <tbody> <tr> <td data-bbox="748 884 1055 954">Lidsey WTW</td> <td data-bbox="1055 884 1449 954">17.2</td> </tr> <tr> <td data-bbox="748 954 1055 1024">Oxted WTW</td> <td data-bbox="1055 954 1449 1024">8.5</td> </tr> <tr> <td data-bbox="748 1024 1055 1094">Peel Common WTW</td> <td data-bbox="1055 1024 1449 1094">15.7</td> </tr> <tr> <td data-bbox="748 1094 1055 1165">Sittingbourne WTW</td> <td data-bbox="1055 1094 1449 1165">21.9</td> </tr> <tr> <td data-bbox="748 1165 1055 1235">Alfriston WTW</td> <td data-bbox="1055 1165 1449 1235">0.8</td> </tr> <tr> <td data-bbox="748 1235 1055 1305">Billingshurst WTW</td> <td data-bbox="1055 1235 1449 1305">6.4</td> </tr> <tr> <td data-bbox="748 1305 1055 1375">Sidlesham WTW</td> <td data-bbox="1055 1305 1449 1375">9.0</td> </tr> <tr> <td data-bbox="748 1375 1055 1430">Stockbridge WTW</td> <td data-bbox="1055 1375 1449 1430">7.1</td> </tr> </tbody> </table>	WTW	Proposed deferred cost for Growth (£m) – being delivered as part of UIMP5 programme	Lidsey WTW	17.2	Oxted WTW	8.5	Peel Common WTW	15.7	Sittingbourne WTW	21.9	Alfriston WTW	0.8	Billingshurst WTW	6.4	Sidlesham WTW	9.0	Stockbridge WTW	7.1
WTW	Proposed deferred cost for Growth (£m) – being delivered as part of UIMP5 programme																			
Lidsey WTW	17.2																			
Oxted WTW	8.5																			
Peel Common WTW	15.7																			
Sittingbourne WTW	21.9																			
Alfriston WTW	0.8																			
Billingshurst WTW	6.4																			
Sidlesham WTW	9.0																			
Stockbridge WTW	7.1																			



154	Growth at sewage treatment works (excluding sludge treatment); enhancement opex	See commentary for CWW3.153
155	Growth at sewage treatment works (excluding sludge treatment); enhancement totex	For a full description of AMP8 growth costs refer to the supporting enhancement case - SRN44 Wastewater growth
156	Reduce flooding risk for properties; enhancement capex	Nil costs
157	Reduce flooding risk for properties; enhancement opex	Nil costs
158	Reduce flooding risk for properties; enhancement totex	Nil costs
159	First time sewerage; enhancement capex	Refer to SRN45 First Time Sewerage for supporting enhancement business case
160	First time sewerage; enhancement opex	Nil costs
161	First time sewerage; enhancement totex	Refer to SRN45 First Time Sewerage for supporting enhancement business case
162	Sludge enhancement (growth); enhancement capex	Included within botex
163	Sludge enhancement (growth); enhancement opex	Included within botex
164	Sludge enhancement (growth); enhancement totex	Included within botex
165	Odour and other nuisance; enhancement capex	Nil costs
166	Odour and other nuisance; enhancement opex	Nil costs
167	Odour and other nuisance; enhancement totex	Nil costs
168	Resilience; enhancement wastewater capex	Costs to enhance resilience based on 5 enhancement business cases. Refer to SRN49 to 53 for details
169	Resilience; enhancement wastewater opex	Nil costs
170	Resilience; enhancement wastewater totex	Costs to enhance resilience based on 5 enhancement business cases. Refer to SRN49 to 53 for details
171	Security - SEMD; enhancement wastewater capex	Nil costs
172	Security - SEMD; enhancement wastewater opex	Nil costs



173	Security - SEMD; enhancement wastewater totex	Nil costs																																				
174	Security - cyber; enhancement wastewater capex	Nil costs																																				
175	Security - cyber; enhancement wastewater opex	Nil costs																																				
176	Security - cyber; enhancement wastewater totex	Nil costs																																				
177	Greenhouse gas reduction (net zero); enhancement wastewater capex	Nil costs																																				
178	Greenhouse gas reduction (net zero); enhancement wastewater opex	Nil costs																																				
179	Greenhouse gas reduction (net zero); enhancement wastewater totex	Nil costs																																				
180	Total other enhancement wastewater/bioresources expenditure	Calculated Cell																																				
	Other enhancement (Freeform lines - by exception)																																					
181	Additional line 1 - AMP7 Other enhancement - waste capex	<p>Additional line for the period 2022-23 to 2024-25 contains the costs associated with schemes in AMP7 which do not have specific line references in AMP 8. The split of the totals by scheme for each year is shown in the table below:</p> <table border="1"> <thead> <tr> <th>Scheme</th> <th>2022-23</th> <th>2023-24</th> <th>2024-25</th> </tr> </thead> <tbody> <tr> <td>WFD Manage uncertainty Special case - capex</td> <td>0.819</td> <td>0.028</td> <td>0.068</td> </tr> <tr> <td>AMP 6 Bathing Water enhancement - capex</td> <td>(0.001)</td> <td>2.727</td> <td>3.044</td> </tr> <tr> <td>Alternative delivery - capex</td> <td>0.000</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>NEP - Groundwater schemes - capex</td> <td>2.009</td> <td>7.472</td> <td>8.915</td> </tr> <tr> <td>Conservation drivers</td> <td>0.000</td> <td>0.127</td> <td>0.290</td> </tr> <tr> <td>UV disinfection (or similar) - capex</td> <td>0.000</td> <td>13.844</td> <td>13.870</td> </tr> <tr> <td>NEP - Flow 1 schemes - capex</td> <td>(0.004)</td> <td>0.000</td> <td>0.000</td> </tr> <tr> <td>Total CWW3.181</td> <td>2.823</td> <td>24.198</td> <td>26.187</td> </tr> </tbody> </table>	Scheme	2022-23	2023-24	2024-25	WFD Manage uncertainty Special case - capex	0.819	0.028	0.068	AMP 6 Bathing Water enhancement - capex	(0.001)	2.727	3.044	Alternative delivery - capex	0.000	0.000	0.000	NEP - Groundwater schemes - capex	2.009	7.472	8.915	Conservation drivers	0.000	0.127	0.290	UV disinfection (or similar) - capex	0.000	13.844	13.870	NEP - Flow 1 schemes - capex	(0.004)	0.000	0.000	Total CWW3.181	2.823	24.198	26.187
Scheme	2022-23	2023-24	2024-25																																			
WFD Manage uncertainty Special case - capex	0.819	0.028	0.068																																			
AMP 6 Bathing Water enhancement - capex	(0.001)	2.727	3.044																																			
Alternative delivery - capex	0.000	0.000	0.000																																			
NEP - Groundwater schemes - capex	2.009	7.472	8.915																																			
Conservation drivers	0.000	0.127	0.290																																			
UV disinfection (or similar) - capex	0.000	13.844	13.870																																			
NEP - Flow 1 schemes - capex	(0.004)	0.000	0.000																																			
Total CWW3.181	2.823	24.198	26.187																																			
182	Additional line 1 - Alternative delivery AMP 8 - waste opex	To support affordability and deliverability challenge, a total of £497m of schemes will be delivered via a DPC/ Alternative Delivery mechanism and therefore do not appear in CWW3. The costs in this row are enabling and procurement costs to establish these arrangements. Refer to SRN 17 Direct Procurement for Customers and Alternative Delivery Model																																				
183	Additional line - Top down efficiency Capex	The negative costs in this row reflect the top down efficiency challenges we are including within our business splan. They would apply across all rows in this table but are shown here to make the costs viefficieies visbi																																				



184	Additional line - Top down efficiency Opex	The negative costs in this row reflect the top-down efficiency challenges we are including within our business plan. They would be applied across all rows in this table but are shown here to make the efficiency assumptions visible
185	Additional line 3; enhancement wastewater/bioresources capex	Nil Costs
186	Additional line 3; enhancement wastewater/bioresources opex	Nil Costs
187	Additional line 4; enhancement wastewater/bioresources capex	Nil Costs
188	Additional line 4; enhancement wastewater/bioresources opex	Nil Costs
189	Additional line 5; enhancement wastewater/bioresources capex	Nil Costs
190	Additional line 5; enhancement wastewater/bioresources opex	Nil Costs
191	Total other enhancement freeform lines wastewater/bioresources expenditure	Calculated Cell
192	Total other enhancement wastewater/bioresources expenditure	Calculated Cell
	Total enhancement	
193	Total enhancement expenditure; wastewater/bioresources capex	Calculated Cell
194	Total enhancement expenditure; wastewater/bioresources opex	Calculated Cell
195	Total enhancement expenditure; wastewater/bioresources totex	Calculated Cell



CWW4 - Wastewater network+ - Functional expenditure		
Line description		Commentary
	Costs of STWs in size bands 1 to 5	
1	Direct costs of STWs in size band 1	No commentary
2	Direct costs of STWs in size band 2	
3	Direct costs of STWs in size band 3	
4	Direct costs of STWs in size band 4	
5	Direct costs of STWs in size band 5	
6	General & support costs of STWs in size bands 1 to 5	
7	Functional expenditure of STWs in size bands 1 to 5 (excluding 3rd party services)	
	Costs of large STWs (size band 6)	
8	Service charges for STWs in size band 6	
9	Estimated terminal pumping costs size band 6 works	
10	Other direct costs of STWs in size band 6	
11	Direct costs of STWs in size band 6	
12	General & support costs of STWs in size band 6	
13	Functional expenditure of STWs in size band 6 (excluding 3rd party services)	
	Costs of STWs - all sizes	
14	Total operating functional expenditure (excluding 3rd party services)	

CWW5 - Wastewater network+ - Large sewage treatment works		
Line description		Commentary
	Sewage treatment works - Explanatory variables	
1	Works name (existing works)	<p>We have adopted a different methodology compared to APR23 so a difference is present between the APR23 published data and the 2022/23 values reported in the PR24 table. The methodology uses both the Edge (published data method) and local plan (improvement method aligned with DWMPs) to calculate population equivalent. The new method is considered more accurate because published data does not include the local plan data for growth - an important element of PR24 because we have many growth schemes aligned with local plans.</p> <p>This change in method means table CWW5 reflects Sidlesham as an additional "large" works from 2022/23 onwards when compared to the published APR and excludes Uckfield</p>



		Confidence grade B2 for all years
	Works name (new works)	Three sewage treatment works become large treatment works during the period of 2022-23 to 2029-30. They are UCKFIELD, PETERSFIELD and THORNHAM.
	Works name	
2	Classification of treatment works	Confidence grade B2 for all years
3	Population equivalent of total load received	Differs to published APR23 data due to improved methodology. Confidence grade B2 for all years
4	Suspended solids consent	Confidence grade B2 for all years
5	BOD5 consent	
6	Ammonia consent	
7	Phosphorus consent	
8	UV consent	<p>There are new UV schemes to be delivered in AMP8 at Faversham, Queenborough, Sittingbourne (30.06.2027) and Thornham (2028/29). However, UV dose rates will not be confirmed until schemes reach final design, then agreed with EA and have therefore been estimated based on the WINEP</p> <p>Confidence Grade AMP7 - A1</p> <p>Confidence Grade AMP8 - B4</p>
10	Flow passed to full treatment	<p>Flow to full treatment for 2022-23 is based on the data reported to the EA for 2022-3 derived from each catchment with MCerts flow measurement.</p> <p>The average of average daily flow of 2020, 2021 and 2022 reported to EA was calculated and used as the baseline for forecasting volume of wastewater receiving treatment for future years.</p> <p>Future years volumes of wastewater receiving treatment from the catchments are forecasted as proportional to the increase of equivalent population, i.e., Volume of wastewater receiving treatment from the catchments (2023-24) = Equivalent population (2023-24)/ Equivalent population (2022-23) * Baseline value as calculated above.</p> <p>After 2024-25, flow to treatment for many catchments will increase because of the AMP7 WINEP programme under the U_IMP5 driver raising the permitted FFT. No assessment has been carried out by SW to quantify the additional volumes of sewage receiving treatment for individual U_IMP5 schemes. To complete the data table SW carried out a study to quantify the overall impact in the region. This study determined that overall, the U_IMP5 schemes will results in an additional 0.867% of the daily average flow after completion of the U_IMP5 scheme in each catchment. Therefore, the 2025-26, 2026-27, 2027-28, 2028-29, and 2029-30 the figures for individual catchments with U_IMP5 schemes are adjusted accordingly.</p> <p>All the flow calculation is based on calendar year.</p> <p>Confidence grade B2 for all years</p>
	Sewage treatment works - Functional expenditure	
11	Service charges	No commentary



12	Estimated terminal pumping expenditure	
13	Other direct expenditure	
14	Total direct expenditure	
15	General and support expenditure	
16	Functional expenditure	
	Sewage treatment works - Functional expenditure	
17	Population equivalent of total load received (resident population and trade effluent)	Confidence grade B2 for all years



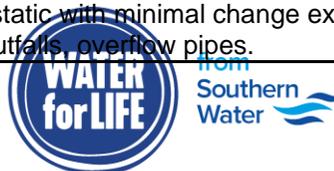
CWW6 - Wastewater network+ - Sewer and volume data		
Line description		Commentary
	Wastewater network	
1	Connectable properties served by s101A schemes completed in the report year	It is assumed the average project will run for 2-5 years with property connections under 25.
2	Number of s101A schemes delivered in the report year	<p>3 projects are reflected in the tables: Brackenhall 38, Triangle Oast 6, Ford Green – currently being assessed but is 4 properties) Brackenhall ends in AMP8 (year 2). Triangle Oast & Ford Green are still in the assessment and design phases so a programme has not been fully formed but benefit is estimated achieved AMP8 year 2.</p> <p>Confidence grade: B4 Reflecting delays in construction and applications beyond 2026-2027.</p> <p>First-time sewerage programme for existing properties is unaffected by Growth.</p>
3	Total pumping station capacity	<p>Assumptions on capacity have been made where pump data is not included in our Ellipse database. This is mainly for pumping stations which have recently been transferred into public ownership. By definition these would be smaller assets draining a small number of properties, a low KW rating has been applied to this missing dataset as explained in our annual reporting methodology.</p> <p>Data extrapolated forward assuming a constant average change rate based on historic data from APR documents 2017/18 – 2022/23. It is assumed that the % historic change in catchment area will continue into the future.</p> <p>A confidence grade of B2 is assigned to all reported years and this has been consistent for the last 3 years.</p>
4	Number of network pumping stations	<p>It is assumed that the % historic change in catchment area will continue into the future.</p> <p>For extrapolation purposes it is assumed that there is an increase on 36 wps per year, based on historical trend. The increase in pumping stations is most likely due to the adoption of small capacity stations.</p> <p>A confidence grade of B2 is assigned to all reported years and this has been consistent for the last 3 years.</p>
5	Total number of sewer blockages	The total number of sewer blockages for 2022/23 is as reported in APR23 and a 4 year rolling average has been extrapolated to calculate the future years forecasts.
6	Total number of gravity sewer collapses	Historic data - a confidence grade of A2 is applied
7	Total number of sewer rising main bursts	<p>Historic data shows that in some years there has been variation in numbers from one year to the next. This leads to greater confidence in the long term forecast but lower confidence in each annual forecast.</p> <p>The confidence grade for the forecast applied at individual years would be B2 on the basis that</p>



		<p>extrapolation has been applied to a long term dataset but that the actual number may vary from the forecast by up to 5 %</p> <p>Row 6 - To provide a forecast our analysis shows a 5% per year increase.</p> <p>Row 7 - To provide a forecast our analysis shows a 2% per year increase.</p>
8	Number of combined sewer overflows	<p>An assumption has been made that the number of CSOs, EOs and SSOs will not change. None of our current plans are expected to construct new overflows, or to remove/decommission any overflows.</p> <p>We are currently investigating some potentially unpermitted overflows, but these studies will not conclude until 2024. As it is not known how many of these, if any, will be found to be live overflows and require permits they have not been included in the reported values.</p> <p>Data Quality: Confidence Grade in 2022/23 was A1 and not likely to change because the volume of change indicated by a change to A2 would be approx 50 overflows which is unprecedented.</p>
9	Number of emergency overflows	
10	Number of settled storm overflows	
11	Sewer age profile (constructed post 2001)	<p>2022/23 - Confidence grade of A2 applied</p> <p>For future years the method of forecast is extrapolation using an average over the last 8 years data. Historic data shows that in some years there has been variation in numbers from one year to the next. This leads to greater confidence in the long term forecast but lower confidence in each annual forecast. The confidence grade for the forecast applied at individual years would be B4 on the basis that extrapolation has been applied to a long term dataset (B) but that the actual number may vary from the forecast by up to 25 %.</p>
12	Volume of Trade Effluent	<p>Assumption Trade Effluent volume data follows EDGE Trade Effluent loading profile over AMP 8 using 2022/23 as baseline. The figures are aligned to those in table CWW7c.8 so that increase from 22/23 to 23/24 of 16.19% and from 28/29 to 29/30 of 12.23%</p> <p>Confidence in our data will decrease the further we get away from 2022/23 potentially to B3/B4 depending on impact of UK economic changes.</p>
13	Volume of wastewater receiving treatment at sewage treatment works	<p>11 small WTW catchments are to be pump away to other WTW catchments in AMP7 and AMP8. The corresponding populations have been transferred. The number of WTW will change from 363 in 2022-23 to 352 in 2029-30.</p> <p>13 WTW (BILLINGSHURST WTW, GODDARDS GREEN WTW, CHARING WTW, FAVERSHAM WTW, HAWKHURST NORTH WTW, LENHAM WTW, LUDGERSHALL WTW, NORTHFLEET WTW, PADDOCK WOOD WTW, SELLINDGE WTW, STOKE WTW, THORNHAM WTW, WHITEWALL CREEK WTW) have a named growth scheme in PR24 and have substantially greater population increases predicted by Local Plans than Edge v1.3 due to large developments such as Garden Cities or Garden Villages. The Local Plan population forecasts are used.</p>



		<p>Because the measured flow in 2022 was the lowest in recent years due to exceptionally dry weather, a baseline using 3-year average flows (2020, 2021 and 2022) was used for future flow forecast. This results in a jump of the predicted volumes of wastewater receiving treatment from 2023-24.</p> <p>The volume of wastewater receiving treatment is predicted to have a step increase in 2025-26 due to the completion of U_IMP5 schemes in 2024-25 of AMP7.</p> <p>The following factors may significantly influence the future volumes of wastewater receiving treatment but have not been considered in the SW methodology.</p> <ul style="list-style-type: none"> • Climate change. • Infiltration reduction in AMP8. • Removal of surface water from sewers in AMP8. • Storm overflow reduction in AMP8. • U_IMP6 schemes of AMP7. <p>Confidence grade for 2022-23 B1. 2023/24 and onwards, B2</p>
14	Length of gravity sewers rehabilitated	<p>Lengths for 2023/24 are those expected from in-flight and planned works to be completed this year, including an average of 6km per year from Ops reactive schemes based on past two years returns. In 2024/25 only the Ops reactive length of 6 km is expected.</p> <p>AMP8 Lengths are those planned sewers rehabilitation works from structural, infiltration reduction and water source protection programmes, plus 6 km per year Ops reactive works. The profile represents anticipated delivery through the AMP.</p> <p>Confidence grade of A2 for all years</p>
15	Length of rising mains replaced or structurally refurbished	<p>Lengths for 2023/24 and 2024/25 are those expected from in-flight and planned works to be completed.</p> <p>AMP8 Rising Main lengths are taken from the internally reported schemes with the length matched to the Business Plan budget based upon a cost/m rate. The profile represents anticipated delivery through the AMP.</p> <p>Confidence grade of A2 for all years</p>
16	Length of foul (only) public sewers	<p>This figure excludes formerly private (S105a) transferred sewers and the forecast is calculated as an average annual km increase for the previous 7 years.</p> <p>We have reflected expected programmes of work and the estimated lengths/cost likely to result from those programmes which fluctuates through the AMP in line with Capital scheme delivery.</p> <p>Confidence grade of A2 for all years</p>
17	Length of surface water (only) public sewers	
18	Length of combined public sewers	
19	Length of rising mains	<p>This figure excludes formerly private transferred pipelines which are not yet mapped and the forecast is calculated as an average annual km increase for the previous 7 years.</p> <p>We have reflected expected programmes of work and the estimated lengths/cost likely to result from those programmes which fluctuates through the AMP in line with Capital scheme delivery.</p> <p>Confidence grade of A2 for all years</p>
20	Length of other wastewater network pipework	<p>This figure is static with minimal change expected in the future and includes pipelines such as sludge main, WTW outfalls, overflow pipes.</p>



		We have reflected expected programmes of work and the estimated lengths/cost likely to result from those programmes which fluctuates through the AMP in line with Capital scheme delivery. Confidence grade of A2 for all years
21	Total length of "legacy" public sewers as 31 March	Summation of Lines 16 – 19 inclusive.
22	Length of formerly private sewers and lateral drains (s105A sewers)	Static value of formerly private sewers and lateral drains (S105a) transferred into company ownership on 1 Oct 2011. Figure based upon a desktop study to determine the average lateral length per property. Confidence grade of C4 for all years



CWW6a – Transition and accelerated programme - Wastewater network+ - Sewer and volume data

Line description	Commentary
Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the guidance .	

CWW7a - Wastewater network+ - Sewage treatment works; size and consents

Line description		Commentary
Load received at sewage treatment works		
1	Load received by STWs in size band 1	As a result of the previously described and more accurate change in methodology (see CWW5), the kg/BOD5/day reported in CWW7a for 2022/23 differs to that reported in table 7D of APR23. Confidence grade B2.
2	Load received by STWs in size band 2	
3	Load received by STWs in size band 3	
4	Load received by STWs in size band 4	
5	Load received by STWs in size band 5	
6	Load received by STWs above size band 5	
7	Total load received	13 WTW (BILLINGSHURST WTW, GODDARDS GREEN WTW, CHARING WTW, FAVERSHAM WTW, HAWKHURST NORTH WTW, LENHAM WTW, LUDGERSHALL WTW, NORTHFLEET WTW, PADDOCK WOOD WTW, SELLINDGE WTW, STOKE WTW, THORNHAM WTW, WHITEWALL CREEK WTW) have a named growth scheme in PR24 and have substantially greater population increases predicted by Local Plans than Edge v1.3 due to large developments such as Garden Cities or Garden Villages. The Local Plan population forecasts are used. Confidence grade B2
Number of sewage treatment works		
9	STWs in size band 1	Decreased by 6 between 2022-23 and 2029-30. Confidence Grade B2
10	STWs in size band 2	No change between 2022-23 and 2029-30. Confidence Grade B2
11	STWs in size band 3	Decreased by 8 between 2022-23 and 2029-30. Confidence Grade B2
12	STWs in size band 4	Decreased by 1 between 2022-23 and 2029-30. Confidence Grade B2
13	STWs in size band 5	Increased by 1 between 2022-23 and 2029-30. Confidence Grade B2
14	STWs above size band 5	Increased by 3 between 2022-23 and 2029-30. Confidence Grade B2
15	Total number of works	Decreased by 11 because of pump-away to other catchments. Confidence Grade B2

CWW7b - Wastewater network+ - Sewage treatment works data; UV permits

Line description		Commentary
	Average number of days that UV permit applies per year	
1	Weighted average number of days that UV permit applies per year for STWs in size band 1	<p>There are 5 sites in WINEP with regulatory due dates in 2027/28. The large change is because the 5 new UV schemes are all completed in 2027-28 (1 in Band 4, 1 in Band 5 and 3 in Band 6) to meet regulatory dates. All the site has a full year permit (365 days). In 2026/27 there are three sites with a UV permit in Band 4, one of which had a partial year permit (153 days), and two sites with a full year permit (365 days). Therefore, adding a fourth site with a 365 day permit to 2027/28 increased the average. A confidence rating of B2 is given for data for all years.</p>
2	Weighted average number of days that UV permit applies per year for STWs in size band 2	
3	Weighted average number of days that UV permit applies per year for STWs in size band 3	
4	Weighted average number of days that UV permit applies per year for STWs in size band 4	
5	Weighted average number of days that UV permit applies per year for STWs in size band 5	
6	Weighted average number of days that UV permit applies per year for STWs above size band 6	



CWW7c - Wastewater network+ - Sewage treatment works data; treatment type		
Line description		Commentary
Load received at sewage treatment works		
1	Load received by STWs in size band 1	Please see explanation of methodology changes and material variations described in table CWW7a. Confidence grade B2.
2	Load received by STWs in size band 2	
3	Load received by STWs in size band 3	
4	Load received by STWs in size band 4	
5	Load received by STWs in size band 5	
6	Load received by STWs above size band 5	
7	Total load received	
8	Load received from trade effluent customers at treatment works	Assumption Trade Effluent volume data follows EDGE Trade Effluent loading profile over AMP 8 using 2022/23 as baseline. The figures are aligned to those in table CWW6.12. Confidence in our data will decrease the further we get away from 2022/23 potentially to B3/B4 depending on impact of UK economic changes.
Number of sewage treatment works		
9	STWs in size band 1	Please see explanation of methodology changes and material variations described in table CWW7a. Confidence grade B2.
10	STWs in size band 2	
11	STWs in size band 3	
12	STWs in size band 4	
13	STWs in size band 5	
14	STWs above size band 5	
15	Total number of works	

CWW8 - Wastewater network+ - Energy consumption and other data		
Line description		Commentary
	Other	
1	Total sewerage catchment area	It is assumed that the % historic change in catchment area from 2020-2022 will continue into the future. The catchment area reported in 2022/23 fell compared to previous years, due to the re-drawing of boundaries around sewerage systems to take account of better information on the routes of sewers. With population growth and new housing in the future, we expect the total catchment area to increase, the reduction in area for 2022/23 has therefore been discounted from the extrapolation calculation. Confidence grade B2.
2	Designated coastal bathing waters	The Environment Agency designate bathing waters we download the data directly from their website. The EA designate new bathing waters periodically. Data confidence grade A2.
3	Designated inland bathing waters	No current inland bathing waters and no inland bathing water investigations are planned in AMP8. Further, we have no knowledge of any application for inland bathing water designation by external bodies (councils, local landowners) Confidence grade AX
4	Number of intermittent discharge event duration monitors	Reported values align with the current AMP7 and AMP8 WINEPs Changes to schemes in the WINEP may be made via the EA agreed Alterations process and in later versions of WINEP as they are published. The number of schemes delivered year on year is a standalone value rather than incremental and therefore year on year variations do not indicate a pattern. 2022/23 confidence grade of A1 applicable to AMP7, B2 to AMP8 because the WINEP is not yet confirmed.
5	Number of monitors for flow monitoring at STWs	
6	Number of odour related complaints	The forecast assumes 2023/24 performance will be an average of the three best reporting years from the previous 4, and a rolling 3-year average for years following. Confidence grade A2.
	Energy consumption	
7	Energy consumption - sewage collection	Based on APR23 reported values and Carbon Accounting Workbook. Forecast used an estimated breakdown of a typical project contributions to the overall operational carbon impact by different usage categories. Please also see our Net Zero Technical Annex Data confidence grade: D4
8	Energy consumption - sewage treatment	
9	Energy consumption - wastewater network +	



CWW8a – Transition and accelerated programme - Wastewater network+ - Energy consumption and other data

Line description	Commentary
	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the guidance.

CWW9 - Enhancement expenditure (cumulative) - wastewater network+ and bioresources

Line description	Commentary
	Cumulative expenditure on water enhancement schemes completed or anticipated to complete in financial years ending March 2023 to March 2030. For details of the schemes see table CWW3



CWW10 - Wholesale wastewater local authority rates

Line description		Commentary
	Rateable value	
1	Rateable value	Actual figures from VOA provided for 2023-24 from draft revaluation in April 2023
	Wastewater wholesale local authority rates	
2	Wholesale wastewater business rates charge for current year before transitional relief	See item 4 below
3	Wholesale wastewater business rates transitional relief	See item 4 below
4	Wholesale wastewater business rates charge for current year after transitional relief	<p>Revaluation due in April 2026, unknown what that increase will be. The UBR multiplier may change over the period however unknown what the changes will be.</p> <p>Assumptions made;</p> <ul style="list-style-type: none"> • An increase for Wastewater of 10% for the revaluation in April 2026 • CWW10 Business rates charge (line 2) based on the current UBR multipliers of 0.512 and 0.499 (based on size of site). • Assumed annual changes to asset stock result from our capital investment programme
5	Adjustments to wholesale wastewater business rates charge for prior years	Nil
6	[Other wholesale wastewater business rates adjustments 1]	
7	[Other wholesale wastewater business rates adjustments 2]	
8	[Other wholesale wastewater business rates adjustments 3]	
9	Wholesale wastewater business rates forecast for Business Plan	Calculation
	Analysis of change in charge before transitional relief	
10	Change in wholesale wastewater business rates costs from prior year	Calculation
11	Change in wholesale wastewater business rates costs due to the impact of any revaluation	See comment above in row 4



12	Change in wholesale wastewater business rates costs due to change in asset stock	Increases as a result of our enhancement programme
13	[Change in wholesale wastewater business rates costs due to other 1]	Nil
14	[Change in wholesale wastewater business rates costs due to other 2]	
15	[Change in wholesale wastewater business rates costs due to other 3]	
16	Change in wholesale wastewater business rates charge before transitional relief	Calculation
17	Check difference	Calculation

CWW11 - Third party costs by business unit for the wholesale wastewater service

Line description	Commentary	
Third party costs ~ price control (operating expenditure)		
1	Rechargeable opex - third party damage	Nil Costs
2	Rechargeable opex - build over	Nil Costs
3	Other rechargeable opex	Nil Costs
4	Third party wastewater price control opex excluding developer services	Nil Costs
5	Diversions - NRSWA - opex	Nil Costs
6	Diversions - other non-section 185 diversions - opex	Nil Costs
7	Total third party wastewater service costs ~ price control (operating expenditure)	Calculated Cell
Third party costs ~ non price control (operating expenditure)		
8	Bulk supplies (wastewater) opex	Nil Costs
9	Reception and disposal of waste opex	Nil Costs
10	Other excluded charge opex	Nil Costs
11	Third party wastewater npc opex excluding developer services	Calculated Cell
12	Developer services non-s185 diversions opex	
13	Total third party wastewater service costs ~ non price control (operating expenditure)	Calculated Cell
Third party costs ~ price control (capital expenditure)		
14	Rechargeable capex - third party damage	None assumed in plan based on historic activity.
15	Rechargeable capex - build over	
16	Other rechargeable capex	



17	Third party wastewater price control capex excluding developer services	
18	Diversions - NRSWA - capex	No material variation in costs. Costs have been forecast in line with historic activity. Although the timing is anticipated to vary.
19	Diversions - other non-section 185 diversions - capex	None assumed in plan based on historic activity.
20	Total third party wastewater service costs ~ price control (capital expenditure)	Total calculation.
	Third party costs ~ non price control (capital expenditure)	
21	Bulk supplies (wastewater) capex	None assumed in plan based on historic activity. Costs for CWW11.23 in AMP 7 are not expected to continue or anticipated to be replaced with new separate agreements. Although, costs may arise but at this point they are not known.
22	Reception and disposal of waste capex	
23	Other excluded charge capex	
24	Third party wastewater npc capex excluding developer services	Calculation.
25	Developer services non-s185 diversions capex	No material variation in costs. Costs have been forecast in line with historic activity. Although the timing is anticipated to vary.
26	Total third party wastewater service costs ~ non price control (capital expenditure)	Total calculation.

CWW12 - Transitional expenditure - wastewater network+		
Line description		Commentary
	EA/NRW environmental programme wastewater (WINEP/NEP)	
1	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater capex	No transition expenditure proposed
2	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater opex	No transition expenditure proposed
3	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater totex	No transition expenditure proposed
4	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater capex	These costs are for 168 sites - Move AMP7 U_INV2 driver output to 2-minute flow monitoring. To allow for essential early enabling work to deliver this large programme of work by Dec 2026, a very early WINEP delivery date.
5	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater opex	These costs are for 168 sites - Move AMP7 U_INV2 driver output to 2-minute flow monitoring
6	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater totex	These costs are for 168 sites - Move AMP7 U_INV2 driver output to 2-minute flow monitoring. To allow for essential early enabling work to deliver this large programme of work by Dec 2026, a very early WINEP delivery date
7	Continuous river water quality monitoring (WINEP/NEP) wastewater capex	No transition expenditure proposed
8	Continuous river water quality monitoring (WINEP/NEP) wastewater opex	No transition expenditure proposed
9	Continuous river water quality monitoring (WINEP/NEP) wastewater totex	No transition expenditure proposed
10	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater capex	No transition expenditure proposed
11	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater opex	No transition expenditure proposed
12	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater totex	No transition expenditure proposed
13	Increase flow to full treatment; (WINEP/NEP) wastewater capex	No transition expenditure proposed
14	Increase flow to full treatment; (WINEP/NEP) wastewater opex	No transition expenditure proposed
15	Increase flow to full treatment; (WINEP/NEP) wastewater totex	No transition expenditure proposed
16	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater capex	No transition expenditure proposed



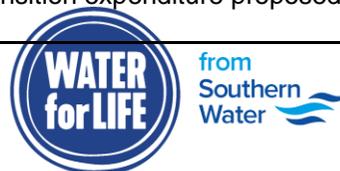
17	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater opex	No transition expenditure proposed
18	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater totex	No transition expenditure proposed
19	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater capex	No transition expenditure proposed
20	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater opex	No transition expenditure proposed
21	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater totex	No transition expenditure proposed
22	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater capex	No transition expenditure proposed
23	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater opex	No transition expenditure proposed
24	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater totex	No transition expenditure proposed
25	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater capex	No transition expenditure proposed
26	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater opex	No transition expenditure proposed
27	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater totex	No transition expenditure proposed
28	Storm overflow - discharge relocation (WINEP/NEP) wastewater capex	No transition expenditure proposed
29	Storm overflow - discharge relocation (WINEP/NEP) wastewater opex	No transition expenditure proposed
30	Storm overflow - discharge relocation (WINEP/NEP) wastewater totex	No transition expenditure proposed
31	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater capex	No transition expenditure proposed
32	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater opex	No transition expenditure proposed
33	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater totex	No transition expenditure proposed
34	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater capex	No transition expenditure proposed
35	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater opex	No transition expenditure proposed
36	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater totex	No transition expenditure proposed



37	Storm overflow - source surface water separation; (WINEP/NEP) wastewater capex	No transition expenditure proposed
38	Storm overflow - source surface water separation; (WINEP/NEP) wastewater opex	No transition expenditure proposed
39	Storm overflow - source surface water separation; (WINEP/NEP) wastewater totex	No transition expenditure proposed
40	Storm overflow - infiltration management: (WINEP/NEP) wastewater capex	No transition expenditure proposed
41	Storm overflow - infiltration management: (WINEP/NEP) wastewater opex	No transition expenditure proposed
42	Storm overflow - infiltration management: (WINEP/NEP) wastewater totex	No transition expenditure proposed
43	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater capex	No transition expenditure proposed
44	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater opex	No transition expenditure proposed
45	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater totex	No transition expenditure proposed
46	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater capex	No transition expenditure proposed
47	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater opex	No transition expenditure proposed
48	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater totex	No transition expenditure proposed
49	Treatment for chemical removal (WINEP/NEP) wastewater capex	No transition expenditure proposed
50	Treatment for chemical removal (WINEP/NEP) wastewater opex	No transition expenditure proposed
51	Treatment for chemical removal (WINEP/NEP) wastewater totex	No transition expenditure proposed
52	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater capex	No transition expenditure proposed
53	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater opex	These costs are in relation to WINEP wastewater studies and investigations. In order to meet the WINEP delivery dates we will need to start enabling and sampling in 2024/25
54	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater totex	These costs are in relation to WINEP wastewater studies and investigations. In order to meet the WINEP delivery dates we will need to start enabling and sampling in 2024/25



55	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater capex	No transition expenditure proposed
56	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater opex	No transition expenditure proposed
57	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater totex	No transition expenditure proposed
58	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater capex	No transition expenditure proposed
59	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater opex	No transition expenditure proposed
60	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater totex	No transition expenditure proposed
61	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater capex	No transition expenditure proposed
62	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater opex	No transition expenditure proposed
63	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater totex	No transition expenditure proposed
64	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater capex	No transition expenditure proposed
65	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater opex	No transition expenditure proposed
66	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater totex	No transition expenditure proposed
67	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater capex	No transition expenditure proposed
68	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater opex	No transition expenditure proposed
69	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater totex	No transition expenditure proposed
70	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater capex	No transition expenditure proposed
71	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater opex	No transition expenditure proposed
72	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater totex	No transition expenditure proposed



73	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater capex	No transition expenditure proposed
74	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater opex	No transition expenditure proposed
75	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater totex	No transition expenditure proposed
76	Catchment management - chemicals source control; (WINEP/NEP) wastewater capex	No transition expenditure proposed
77	Catchment management - chemicals source control; (WINEP/NEP) wastewater opex	No transition expenditure proposed
78	Catchment management - chemicals source control; (WINEP/NEP) wastewater totex	No transition expenditure proposed
79	Catchment management - nutrient balancing; (WINEP/NEP) wastewater capex	No transition expenditure proposed
80	Catchment management - nutrient balancing; (WINEP/NEP) wastewater opex	No transition expenditure proposed
81	Catchment management - nutrient balancing; (WINEP/NEP) wastewater totex	No transition expenditure proposed
82	Catchment management - catchment permitting; (WINEP/NEP) wastewater capex	No transition expenditure proposed
83	Catchment management - catchment permitting; (WINEP/NEP) wastewater opex	No transition expenditure proposed
84	Catchment management - catchment permitting; (WINEP/NEP) wastewater totex	No transition expenditure proposed
85	Catchment management - habitat restoration; (WINEP/NEP) wastewater capex	No transition expenditure proposed
86	Catchment management - habitat restoration; (WINEP/NEP) wastewater opex	No transition expenditure proposed
87	Catchment management - habitat restoration; (WINEP/NEP) wastewater totex	No transition expenditure proposed
88	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater capex	No transition expenditure proposed
89	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater opex	No transition expenditure proposed
90	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater totex	No transition expenditure proposed
91	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater capex	No transition expenditure proposed
92	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater opex	No transition expenditure proposed



93	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater totex	No transition expenditure proposed
94	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater capex	No transition expenditure proposed
95	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater opex	No transition expenditure proposed
96	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater totex	No transition expenditure proposed
97	Fish outfall screens; (WINEP/NEP) wastewater capex	No transition expenditure proposed
98	Fish outfall screens; (WINEP/NEP) wastewater opex	No transition expenditure proposed
99	Fish outfall screens; (WINEP/NEP) wastewater totex	No transition expenditure proposed
100	25 year environment plan; (WINEP/NEP) wastewater capex	No transition expenditure proposed
101	25 year environment plan; (WINEP/NEP) wastewater opex	No transition expenditure proposed
102	25 year environment plan; (WINEP/NEP) wastewater totex	No transition expenditure proposed
103	Investigations, other (WINEP/NEP) - desk-based studies only wastewater capex	No transition expenditure proposed
104	Investigations, other (WINEP/NEP) - desk-based studies only wastewater opex	No transition expenditure proposed
105	Investigations, other (WINEP/NEP) - desk-based studies only wastewater totex	No transition expenditure proposed
106	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater capex	No transition expenditure proposed
107	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater opex	No transition expenditure proposed
108	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater totex	No transition expenditure proposed
109	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater capex	No transition expenditure proposed
110	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater opex	These costs are in relation to WINEP wastewater studies and investigations. In order to meet the WINEP delivery dates we will need to start enabling and sampling in 2024/25
111	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater totex	These costs are in relation to WINEP wastewater studies and investigations. In order to meet the WINEP delivery dates we will need to start enabling and sampling in 2024/25
112	Investigations, total; (WINEP/NEP) wastewater capex	No transition expenditure proposed



113	Investigations, total; (WINEP/NEP) wastewater opex	No transition expenditure proposed
114	Investigations, total; (WINEP/NEP) wastewater totex	No transition expenditure proposed
115	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater capex	No transition expenditure proposed
116	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater opex	No transition expenditure proposed
117	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater totex	No transition expenditure proposed
118	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater capex	No transition expenditure proposed
119	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater opex	No transition expenditure proposed
120	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater totex	No transition expenditure proposed
121	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater capex	No transition expenditure proposed
122	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater opex	No transition expenditure proposed
123	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater totex	No transition expenditure proposed
124	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater capex	No transition expenditure proposed
125	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater opex	No transition expenditure proposed
126	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater totex	No transition expenditure proposed
127	Advanced WINEP (not covered elsewhere) wastewater capex	No transition expenditure proposed
128	Advanced WINEP (not covered elsewhere) wastewater opex	No transition expenditure proposed
129	Advanced WINEP (not covered elsewhere) wastewater totex	No transition expenditure proposed
130	Total environmental programme expenditure; (WINEP/NEP) wastewater totex	Totals
	EA/NRW environmental programme bioresources (WINEP/NEP)	
131	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated) (WINEP/NEP) capex	No transition expenditure proposed
132	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); (WINEP/NEP) opex	No transition expenditure proposed



133	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); (WINEP/NEP) totex	No transition expenditure proposed
134	Sludge storage -Tanks (thickened/dewatered or treated); (WINEP/NEP) capex	No transition expenditure proposed
135	Sludge storage - Tanks (thickened/dewatered or treated); (WINEP/NEP) opex	No transition expenditure proposed
136	Sludge storage - Tanks (thickened/dewatered or treated); (WINEP/NEP) totex	No transition expenditure proposed
137	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources capex	No transition expenditure proposed
138	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources opex	No transition expenditure proposed
139	Sludge storage - Cake pads / bays /other; (WINEP/NEP) bioresources totex	No transition expenditure proposed
140	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources capex	No transition expenditure proposed
141	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources opex	No transition expenditure proposed
142	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources totex	No transition expenditure proposed
143	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) capex	No transition expenditure proposed
144	Sludge treatment -Thickening and/or dewatering; (WINEP/NEP) opex	No transition expenditure proposed
145	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) totex	No transition expenditure proposed
146	Sludge treatment - Other; (WINEP/NEP) bioresources capex	These costs are in relation to Bioresources IED, across a number of sludge treatment centres. This should be classified within the sludge treatment business unit, however, as this is not present on the table, it has been entered as Sewage Treatment. EA guidance requires early delivery of all IED requirements. However, IED permit conditions have not been confirmed at this point which will limit the value that can be delivered within 2024/25. The funding in AMP7 will allow us to carry out detailed design of the major capital solutions (e.g. containment) as well as focus on the IED requirements with higher risks, mainly related to emissions to air.
147	Sludge treatment - Other; (WINEP/NEP) bioresources opex	No transition expenditure proposed
148	Sludge treatment -Other; (WINEP/NEP) bioresources totex	Total
149	Sludge investigations and monitoring (WINEP/NEP) bioresources capex	No transition expenditure proposed



150	Sludge investigations and monitoring (WINEP/NEP) bioresources opex	No transition expenditure proposed
151	Sludge investigations and monitoring (WINEP/NEP) bioresources totex	No transition expenditure proposed
152	Total environmental programme expenditure; (WINEP/NEP) bioresources totex	Total
	Other enhancement	
153	Growth at sewage treatment works (excluding sludge treatment); enhancement capex	No transition expenditure proposed
154	Growth at sewage treatment works (excluding sludge treatment); enhancement opex	No transition expenditure proposed
155	Growth at sewage treatment works (excluding sludge treatment); enhancement totex	No transition expenditure proposed
156	Reduce flooding risk for properties; enhancement capex	No transition expenditure proposed
157	Reduce flooding risk for properties; enhancement opex	No transition expenditure proposed
158	Reduce flooding risk for properties; enhancement totex	No transition expenditure proposed
159	First time sewerage; enhancement capex	No transition expenditure proposed
160	First time sewerage; enhancement opex	No transition expenditure proposed
161	First time sewerage; enhancement totex	No transition expenditure proposed
162	Sludge enhancement (growth); enhancement capex	No transition expenditure proposed
163	Sludge enhancement (growth); enhancement opex	No transition expenditure proposed
164	Sludge enhancement (growth); enhancement totex	No transition expenditure proposed
165	Odour and other nuisance; enhancement capex	No transition expenditure proposed
166	Odour and other nuisance; enhancement opex	No transition expenditure proposed
167	Odour and other nuisance; enhancement totex	No transition expenditure proposed
168	Resilience; enhancement wastewater capex	No transition expenditure proposed
169	Resilience; enhancement wastewater opex	No transition expenditure proposed
170	Resilience; enhancement wastewater totex	No transition expenditure proposed
171	Security - SEMD; enhancement wastewater capex	No transition expenditure proposed
172	Security - SEMD; enhancement wastewater opex	No transition expenditure proposed



173	Security - SEMD; enhancement wastewater totex	No transition expenditure proposed
174	Security - cyber; enhancement wastewater capex	No transition expenditure proposed
175	Security - cyber; enhancement wastewater opex	No transition expenditure proposed
176	Security - cyber; enhancement wastewater totex	No transition expenditure proposed
177	Greenhouse gas reduction (net zero); enhancement wastewater capex	No transition expenditure proposed
178	Greenhouse gas reduction (net zero); enhancement wastewater opex	No transition expenditure proposed
179	Greenhouse gas reduction (net zero); enhancement wastewater totex	No transition expenditure proposed
180	Total other enhancement wastewater/bioresources expenditure	No transition expenditure proposed
	Other enhancement (Freeform lines - by exception)	
181	Additional line 1; enhancement wastewater/bioresources capex	No transition expenditure proposed
182	Additional line 1; enhancement wastewater/bioresources opex	No transition expenditure proposed
183	Additional line 2; enhancement wastewater/bioresources capex	No transition expenditure proposed
184	Additional line 2; enhancement wastewater/bioresources opex	No transition expenditure proposed
185	Additional line 3; enhancement wastewater/bioresources capex	No transition expenditure proposed
186	Additional line 3; enhancement wastewater/bioresources opex	No transition expenditure proposed
187	Additional line 4; enhancement wastewater/bioresources capex	No transition expenditure proposed
188	Additional line 4; enhancement wastewater/bioresources opex	No transition expenditure proposed
189	Additional line 5; enhancement wastewater/bioresources capex	No transition expenditure proposed
190	Additional line 5; enhancement wastewater/bioresources opex	No transition expenditure proposed
191	Total other enhancement freeform lines wastewater/bioresources expenditure	No transition expenditure proposed
192	Total other enhancement and enhancement freeform lines wastewater/bioresources expenditure	No transition expenditure proposed



	Total enhancement	
193	Total enhancement expenditure; wastewater/bioresources capex	Calculated Cell
194	Total enhancement expenditure; wastewater/bioresources opex	Calculated Cell
195	Total enhancement expenditure; wastewater/bioresources totex	Calculated Cell



CWW13 - Best value analysis (enhancement expenditure) - wastewater network+ and bioresources

Line description		Commentary
	EA/NRW environmental programme (WINEP/NEP)	
1	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater capex	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
2	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater opex	Best value = least cost
3	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater totex	Best value = least cost
4	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
5	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater capex	Best value = least cost
6	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater opex	Best value = least cost
7	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater totex	Best value = least cost
8	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
9	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater capex	Best value = least cost
10	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater opex	Best value = least cost
11	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater totex	Best value = least cost
12	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
13	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater capex	Best value = least cost
14	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater opex	Best value = least cost
15	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater totex	Best value = least cost
16	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost



17	Increase flow to full treatment; BVA (WINEP/NEP) wastewater capex	Best value = least cost
18	Increase flow to full treatment; BVA (WINEP/NEP) wastewater opex	Best value = least cost
19	Increase flow to full treatment; BVA (WINEP/NEP) wastewater totex	Best value = least cost
20	Increase flow to full treatment; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
21	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater capex	The overall Storm Overflow programme is based on a best value plan. This assumes the use of nature based options as opposed to grey storage solutions, costs may be higher but they are offset by improved environmental benefits. Refer to SRN40 WINEP Storm Storage. For this line the least cost solution increases as there are additional storage solutions required.
22	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater opex	Best value = least cost
23	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater totex	The overall Storm Overflow programme is based on a best value plan. This assumes the use of nature based options as opposed to grey storage solutions, costs may be higher but they are offset by improved environmental benefits. Refer to SRN40 WINEP Storm Storage. For this line the least cost solution increases as there are additional storage solutions required.
24	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
25	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater capex	Best value = least cost
26	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater opex	Best value = least cost
27	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater totex	Best value = least cost
28	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
29	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater capex	The overall Storm Overflow programme is based on a best value plan. This assumes the use of nature based options as opposed to grey storage solutions, costs may be higher but they are offset by improved environmental benefits. Refer to SRN40 WINEP Storm Storage. For this line the least cost solution increases as there are additional storage solutions required.
30	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater opex	Best value = least cost
31	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater totex	The overall Storm Overflow programme is based on a best value plan. This assumes the use of nature based options as opposed to grey storage solutions, costs may be higher but they are offset by improved environmental benefits. Refer to SRN40 WINEP Storm Storage. For this line the least cost solution increases as there are additional storage solutions required.



32	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
33	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater capex	Best value = least cost
34	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater opex	Best value = least cost
35	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater totex	Best value = least cost
36	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
37	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater capex	Best value = least cost
38	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater opex	Best value = least cost
39	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater totex	Best value = least cost
40	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
41	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater capex	Best value = least cost
42	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater opex	Best value = least cost
43	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater totex	Best value = least cost
44	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
45	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater capex	The best value Storm Overflow plan assumes a large proportion of sustainable drainage, which gets swapped for more traditional storage solutions for the least cost plan. Costs decrease in this line for the least cost plan
46	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater opex	Best value = least cost
47	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater totex	The best value Storm Overflow plan assumes a large proportion of sustainable drainage, which gets swapped for more traditional storage solutions for the least cost plan. Costs decrease in this line for the least cost plan. Refer to SRN40 WINEP Storm Overflows
48	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost



49	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater capex	The best value Storm Overflow plan assumes a large proportion of surface water separation, which gets swapped for more traditional storage solutions for the least cost plan. Costs decrease in this line for the least cost plan. Refer to SRN40 WINEP Storm Overflows
50	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater opex	Best value = least cost
51	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater totex	The best value Storm Overflow plan assumes a large proportion of surface water separation, which gets swapped for more traditional storage solutions for the least cost plan. Costs decrease in this line for the least cost plan. Refer to SRN40 WINEP Storm Overflows
52	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
53	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater capex	Best value = least cost
54	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater opex	Best value = least cost
55	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater totex	Best value = least cost
56	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
57	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater capex	Best value = least cost
58	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater opex	Best value = least cost
59	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater totex	Best value = least cost
60	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
61	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater capex	Best value = least cost
62	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater opex	Best value = least cost
63	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater totex	Best value = least cost
64	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
65	Treatment for chemical removal; BVA (WINEP/NEP) wastewater capex	Best value = least cost
66	Treatment for chemical removal; BVA (WINEP/NEP) wastewater opex	Best value = least cost
67	Treatment for chemical removal; BVA (WINEP/NEP) wastewater totex	Best value = least cost



68	Treatment for chemical removal; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
69	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater capex	Best value = least cost
70	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater opex	Best value = least cost
71	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater totex	Best value = least cost
72	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
73	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater capex	Best value = least cost
74	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater opex	Best value = least cost
75	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater totex	Best value = least cost
76	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
77	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater capex	Best value = least cost
78	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater opex	Best value = least cost
79	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater totex	Best value = least cost
80	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
81	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater capex	Best value = least cost
82	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater opex	Best value = least cost
83	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater totex	Best value = least cost
84	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost



85	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater capex	Best value = least cost
86	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater opex	Best value = least cost
87	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater totex	Best value = least cost
88	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
89	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater capex	Best value = least cost
90	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater opex	Best value = least cost
91	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater totex	Best value = least cost
92	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
93	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater capex	Best value = least cost
94	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater opex	Best value = least cost
95	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater totex	Best value = least cost
96	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
97	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater capex	Best value = least cost
98	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater opex	Best value = least cost
99	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater totex	Best value = least cost
100	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
101	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater capex	Best value = least cost
102	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater opex	Best value = least cost
103	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater totex	Best value = least cost



104	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
105	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater capex	Best value = least cost
106	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater opex	Best value = least cost
107	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater totex	Best value = least cost
108	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
109	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater capex	Best value = least cost
110	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater opex	Best value = least cost
111	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater totex	Best value = least cost
112	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
113	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater capex	Best value = least cost
114	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater opex	Best value = least cost
115	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater totex	Best value = least cost
116	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
117	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater capex	Best value = least cost
118	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater opex	Best value = least cost
119	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater totex	Best value = least cost
120	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
121	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater capex	Best value = least cost
122	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater opex	Best value = least cost
123	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater totex	Best value = least cost



124	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
125	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater capex	Best value = least cost
126	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater opex	Best value = least cost
127	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater totex	Best value = least cost
128	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
129	Fish outfall screens; BVA (WINEP/NEP) wastewater capex	Best value = least cost
130	Fish outfall screens; BVA (WINEP/NEP) wastewater opex	Best value = least cost
131	Fish outfall screens; BVA (WINEP/NEP) wastewater totex	Best value = least cost
132	Fish outfall screens; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
133	25 year environment plan; BVA (WINEP/NEP) wastewater capex	Best value = least cost
134	25 year environment plan; BVA (WINEP/NEP) wastewater opex	Best value = least cost
135	25 year environment plan; BVA (WINEP/NEP) wastewater totex	Best value = least cost
136	25 year environment plan; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
137	Investigations, other (WINEP/NEP) - desk-based studies only wastewater capex	Best value = least cost
138	Investigations, other - desk-based studies only; BVA (WINEP/NEP) wastewater opex	Best value = least cost
139	Investigations, other - desk-based studies only; BVA (WINEP/NEP) wastewater totex	Best value = least cost
140	Investigations, other - desk-based studies only; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
141	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater capex	Best value = least cost
142	Investigations, other - survey, monitoring or simple modelling; BVA (WINEP/NEP) wastewater opex	Best value = least cost
143	Investigations, other - survey, monitoring or simple modelling; BVA (WINEP/NEP) wastewater totex	Best value = least cost



144	Investigations, other - survey, monitoring or simple modelling; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
145	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater capex	Best value = least cost
146	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling; BVA (WINEP/NEP) wastewater opex	Best value = least cost
147	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling; BVA (WINEP/NEP) wastewater totex	Best value = least cost
148	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling; BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
149	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater capex	Best value = least cost
150	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater opex	Best value = least cost
151	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater totex	Best value = least cost
152	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
153	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater capex	Best value = least cost
154	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater opex	Best value = least cost
155	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater totex	Best value = least cost
156	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
157	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater capex	Best value = least cost
158	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater opex	Best value = least cost
159	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater totex	Best value = least cost
160	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost



161	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater capex	Best value = least cost
162	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater opex	Best value = least cost
163	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater totex	Best value = least cost
164	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
165	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater capex	Best value = least cost
166	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater opex	Best value = least cost
167	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater totex	Best value = least cost
168	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater third party contributions	Best value = least cost
169	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater capex	Best value = least cost
170	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater opex	Best value = least cost
171	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater totex	Best value = least cost
172	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater third party contributions	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
	EA/NRW environmental programme bioresources (WINEP/NEP)	Best value = least cost
173	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); BVA (WINEP/NEP) bioresources capex	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
174	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); BVA (WINEP/NEP) bioresources opex	Best value = least cost
175	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); BVA (WINEP/NEP) bioresources totex	Best value = least cost
176	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
177	Sludge storage -Tanks (thickened/dewatered or treated); BVA (WINEP/NEP) bioresources capex	Best value = least cost



178	Sludge storage - Tanks (thickened/dewatered or treated); BVA (WINEP/NEP) bioresources opex	Best value = least cost
179	Sludge storage - Tanks (thickened/dewatered or treated); BVA (WINEP/NEP) bioresources totex	Best value = least cost
180	Sludge storage - Tanks (thickened/dewatered or treated); BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
181	Sludge storage - Cake pads / bays; BVA (WINEP/NEP) bioresources capex	Best value = least cost
182	Sludge storage - Cake pads / bays; BVA (WINEP/NEP) bioresources opex	Best value = least cost
183	Sludge storage - Cake pads / bays; BVA (WINEP/NEP) bioresources totex	Best value = least cost
184	Sludge storage - Cake pads / bays; BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
185	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; BVA (WINEP/NEP) bioresources capex	Best value = least cost
186	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; BVA (WINEP/NEP) bioresources opex	Best value = least cost
187	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; BVA (WINEP/NEP) bioresources totex	Best value = least cost
188	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
189	Sludge treatment - Thickening and/or dewatering; BVA (WINEP/NEP) bioresources capex	Best value = least cost
190	Sludge treatment - Thickening and/or dewatering; BVA (WINEP/NEP) bioresources opex	Best value = least cost
191	Sludge treatment - Thickening and/or dewatering; BVA (WINEP/NEP) bioresources totex	Best value = least cost
192	Sludge treatment - Thickening and/or dewatering; BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
193	Sludge treatment - Other; BVA (WINEP/NEP) bioresources capex	Best value = least cost
194	Sludge treatment - Other; BVA (WINEP/NEP) bioresources opex	Best value = least cost
195	Sludge treatment - Other; BVA (WINEP/NEP) bioresources totex	Best value = least cost
196	Sludge treatment - Other; BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost



197	Sludge investigations and monitoring; BVA (WINEP/NEP) bioresources capex	Best value = least cost
198	Sludge investigations and monitoring; BVA (WINEP/NEP) bioresources opex	Best value = least cost
199	Sludge investigations and monitoring; BVA (WINEP/NEP) bioresources totex	Best value = least cost
200	Sludge investigations and monitoring; BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
201	Total bioresources programme expenditure; BVA (WINEP/NEP) bioresources capex	Best value = least cost
202	Total bioresources programme expenditure; BVA (WINEP/NEP) bioresources opex	Best value = least cost
203	Total bioresources programme expenditure; BVA (WINEP/NEP) bioresources totex	Best value = least cost
204	Total bioresources programme expenditure; BVA (WINEP/NEP) bioresources third party contributions	Best value = least cost
	Other enhancement	
205	Growth at sewage treatment works (excluding sludge treatment); BVA wastewater capex	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
206	Growth at sewage treatment works (excluding sludge treatment); BVA wastewater opex	Best value = least cost
207	Growth at sewage treatment works (excluding sludge treatment); BVA wastewater totex	Best value = least cost
208	Growth at sewage treatment works (excluding sludge treatment); BVA wastewater third party contributions	Best value = least cost
209	Reduce flooding risk for properties; BVA wastewater capex	Best value = least cost
210	Reduce flooding risk for properties; BVA wastewater opex	Best value = least cost
211	Reduce flooding risk for properties; BVA wastewater totex	Best value = least cost
212	Reduce flooding risk for properties; BVA wastewater third party contributions	Best value = least cost
213	First time sewerage; BVA wastewater capex	Best value = least cost
214	First time sewerage; BVA wastewater opex	Best value = least cost
215	First time sewerage; BVA wastewater totex	Best value = least cost
216	First time sewerage; BVA wastewater third party contributions	Best value = least cost



217	Sludge enhancement (growth); BVA wastewater capex	Best value = least cost
218	Sludge enhancement (growth); BVA wastewater opex	Best value = least cost
219	Sludge enhancement (growth); BVA wastewater totex	Best value = least cost
220	Sludge enhancement (growth); BVA wastewater third party contributions	Best value = least cost
221	Odour and other nuisance; BVA wastewater capex	Best value = least cost
222	Odour and other nuisance; BVA wastewater opex	Best value = least cost
223	Odour and other nuisance; BVA wastewater totex	Best value = least cost
224	Odour and other nuisance; BVA wastewater third party contributions	Best value = least cost
225	Resilience; BVA wastewater capex	Best value = least cost
226	Resilience; BVA wastewater opex	Best value = least cost
227	Resilience; BVA wastewater totex	Best value = least cost
228	Resilience; BVA wastewater third party contributions	Best value = least cost
229	Security - SEMD; BVA wastewater capex	Best value = least cost
230	Security - SEMD; BVA wastewater opex	Best value = least cost
231	Security - SEMD; BVA wastewater totex	Best value = least cost
232	Security - SEMD; BVA wastewater third party contributions	Best value = least cost
233	Security - cyber; BVA wastewater capex	Best value = least cost
234	Security - cyber; BVA wastewater opex	Best value = least cost
235	Security - cyber; BVA wastewater totex	Best value = least cost
236	Security - cyber; BVA wastewater third party contributions	Best value = least cost
237	Greenhouse gas reduction (net zero); BVA wastewater capex	Best value = least cost
238	Greenhouse gas reduction (net zero); BVA wastewater opex	Best value = least cost
239	Greenhouse gas reduction (net zero); BVA wastewater totex	Best value = least cost
240	Greenhouse gas reduction (net zero); BVA wastewater third party contributions	Best value = least cost
241	Corporate overheads; BVA wastewater capex	Best value = least cost



242	Corporate overheads; BVA wastewater opex	Best value = least cost
243	Corporate overheads; BVA wastewater totex	Best value = least cost
244	Corporate overheads; BVA wastewater third party contributions	Best value = least cost
245	Top down efficiency; BVA wastewater capex	Best value = least cost
246	Top down efficiency; BVA wastewater opex	Best value = least cost
247	Top down efficiency; BVA wastewater totex	Best value = least cost
248	Top down efficiency; BVA wastewater third party contributions	Best value = least cost
249	Additional line 3; BVA wastewater capex	Best value = least cost
250	Additional line 3; BVA wastewater opex	Best value = least cost
251	Additional line 3; BVA wastewater totex	Best value = least cost
252	Additional line 3; BVA wastewater third party contributions	Best value = least cost
253	Additional line 4; BVA wastewater capex	Best value = least cost
254	Additional line 4; BVA wastewater opex	Best value = least cost
255	Additional line 4; BVA wastewater totex	Best value = least cost
256	Additional line 4; BVA wastewater third party contributions	Best value = least cost
257	Additional line 5; BVA wastewater capex	Best value = least cost
258	Additional line 5; BVA wastewater opex	Best value = least cost
259	Additional line 5; BVA wastewater totex	Best value = least cost
260	Additional line 5; BVA wastewater third party contributions	Best value = least cost
261	Total other expenditure; BVA wastewater capex	Best value = least cost
262	Total other expenditure; BVA wastewater opex	Best value = least cost
263	Total other expenditure; BVA wastewater totex	Best value = least cost
264	Total other expenditure; BVA wastewater third party contributions	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included



	Total enhancement	
265	Total enhancement expenditure; BVA wastewater capex	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
266	Total enhancement expenditure; BVA wastewater opex	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
267	Total enhancement expenditure; BVA wastewater totex	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included
268	Total enhancement expenditure; BVA wastewater third party contributions	Calculations in CWW13 are in line with Environment Agency WINEP Options development guidelines, using a WACC of 3.29%. All calculations based on 30 years. No third party contributions have been included



CWW14 - Best value analysis (enhancement expenditure) - wastewater network+ and bioresources

Line description		Commentary
	EA/NRW environmental programme (WINEP/NEP)	
1	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
2	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
3	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
4	Event duration monitoring at intermittent discharges; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
5	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
6	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
7	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
8	Flow monitoring at sewage treatment works; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
9	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
10	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
11	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
12	Continuous river water quality monitoring; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
13	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
14	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
15	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
16	MCERTs monitoring at emergency sewage pumping station overflows; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
17	Increase flow to full treatment; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)



18	Increase flow to full treatment; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
19	Increase flow to full treatment; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
20	Increase flow to full treatment; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
21	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater capex	This solution classification uses the 'Least Cost' solution used in the Regional Storm Overflow Programme. A notable increase in cost for this solution classification is seen, SuDS and Separation is in most locations the more costly solution.
22	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater opex	
23	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater totex	
24	Increase storm tank capacity - grey solution; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
25	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater capex	The majority of our investment in green infrastructure including SuDS is proposed to be delivered through DPC or alternative delivery routes. The costs in this line do not include the investment through the DPC and/or alternative delivery routes. This line is used for network wetlands which are funded through DPC, through zero values.
26	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater opex	
27	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater totex	
28	Increase storm system attenuation / treatment on a STW - green solution; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
29	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater capex	This solution classification uses the 'Least Cost' solution used in the Regional Storm Overflow Programme. A notable increase in cost for this solution classification is seen, SuDS and Separation is in most locations the more costly solution.
30	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater opex	
31	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater totex	
32	Storage schemes to reduce spill frequency at CSOs etc - grey solution; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
33	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater capex	The majority of our investment in green infrastructure including SuDS is proposed to be delivered through DPC or alternative delivery routes. The costs in this line do not include the investment through the DPC and/or alternative delivery routes. This line is used for network wetlands which are funded through DPC, through zero values.
34	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater opex	
35	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater totex	



36	Storage to reduce spill frequency at CSOs etc - green solution; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
37	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
38	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
39	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
40	Storm overflow - discharge relocation; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
41	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
42	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
43	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
44	Storm overflow - increase in combined sewer / trunk sewer capacity; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
45	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater capex	This solution classification uses the 'Least Cost' solution used in the Regional Storm Overflow Programme. A notable decrease in cost is seen for this solution classification, SuDS and Separation is in most locations the more costly solution.
46	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater opex	
47	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater totex	
48	Storm overflow - sustainable drainage / attenuation in the network; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
49	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater capex	This solution classification uses the 'Least Cost' solution used in the Regional Storm Overflow Programme. A notable decrease in cost is seen for this solution classification, SuDS and Separation is in most locations the more costly solution.
50	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater opex	
51	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater totex	
52	Storm overflow - source surface water separation; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
53	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)



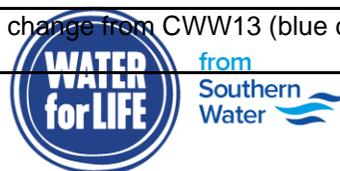
54	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
55	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
56	Storm overflow - infiltration management; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
57	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
58	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
59	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
60	Storm overflow - sewer flow management and control; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
61	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
62	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
63	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
64	Storm overflow - new / upgraded screens; BVA (WINEP/NEP) wastewater third party contributions	No third party contributions, therefore zero values.
65	Treatment for chemical removal; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
66	Treatment for chemical removal; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
67	Treatment for chemical removal; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
68	Treatment for chemical removal; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
69	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
70	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
71	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)



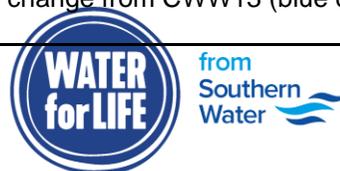
72	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
73	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
74	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
75	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
76	Treatment for total nitrogen removal (chemical); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
77	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
78	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
79	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
80	Treatment for total nitrogen removal (biological); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
81	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
82	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
83	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
84	Nitrogen technically achievable limit monitoring, investigation or options appraisal; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
85	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
86	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
87	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
88	Treatment for phosphorus removal (chemical); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)



89	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
90	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
91	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
92	Treatment for phosphorus removal (biological); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
93	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
94	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
95	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
96	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
97	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
98	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
99	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
100	Treatment for tightening of sanitary parameters; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
101	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
102	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
103	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
104	Catchment management - chemicals source control; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
105	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
106	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)



107	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
108	Catchment management - nutrient balancing; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
109	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
110	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
111	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
112	Catchment management - catchment permitting; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
113	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
114	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
115	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
116	Catchment management - habitat restoration; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
117	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
118	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
119	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
120	Microbiological treatment - bathing waters, coastal and inland; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
121	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
122	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
123	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
124	Septic tank replacements - treatment solution; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
125	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)



126	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
127	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
128	Septic tank replacements - flow diversion; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
129	Fish outfall screens; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
130	Fish outfall screens; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
131	Fish outfall screens; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
132	Fish outfall screens; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
133	25 year environment plan; BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
134	25 year environment plan; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
135	25 year environment plan; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
136	25 year environment plan; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
137	Investigations, other (WINEP/NEP) - desk-based studies only wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
138	Investigations, other - desk-based studies only; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
139	Investigations, other - desk-based studies only; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
140	Investigations, other - desk-based studies only; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
141	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
142	Investigations, other - survey, monitoring or simple modelling; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
143	Investigations, other - survey, monitoring or simple modelling; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
144	Investigations, other - survey, monitoring or simple modelling; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)



145	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
146	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling; BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
147	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling; BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
148	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling; BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
149	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
150	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
151	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
152	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
153	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
154	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
155	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
156	River connectivity (e.g. for fish passage); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
157	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
158	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
159	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
160	Restoration management (marine conservation zones etc); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)



161	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
162	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
163	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
164	Access and amenity for WINEP/NEP only (not covered elsewhere); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
165	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater capex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
166	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater opex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
167	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater totex	No change from CWW13 (blue cells are pre-populated with formulas from the template)
168	Advanced WINEP (not covered elsewhere); BVA (WINEP/NEP) wastewater third party contributions	No change from CWW13 (blue cells are pre-populated with formulas from the template)
169	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater capex	Cells are pre-populated with formulas from the template.
170	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater opex	Cells are pre-populated with formulas from the template.
171	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater totex	Cells are pre-populated with formulas from the template.
172	Total environmental programme expenditure; BVA (WINEP/NEP) wastewater third party contributions	Cells are pre-populated with formulas from the template.
	EA/NRW environmental programme bioresources (WINEP/NEP)	Rows 173 - 204
173-204		No change from CWW13 (blue cells are pre-populated with formulas from the template)
	Other enhancement	Rows 205 - 264
205-264		No change from CWW13 or cells are pre-populated with formulas from the template
	Total enhancement	
265	Total enhancement expenditure; BVA wastewater capex	Calculated Cell
266	Total enhancement expenditure; BVA wastewater opex	Calculated Cell
267	Total enhancement expenditure; BVA wastewater totex	Calculated Cell
268	Total enhancement expenditure; BVA wastewater third party contributions	Calculated Cell



**CWW15 - Best value analysis (benefits) - wastewater network+ and bioresources and
CWW16 - Best value analysis of alternative option (benefits) - wastewater network+ and bioresources
Best value analysis (benefits) - wastewater network+ and bioresources**

Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: [Updated short-term traded carbon values used for UK public policy appraisal: 2018, \(publishing.service.gov.uk\)](#).

Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.

Annual benefits are point estimates meaning that uncertainty and sensitivity of benefits are not available.

Improvements from base year 2020 as a result of investments in AMP7 are excluded from the benefits quantification.

For details about the methodology and assumptions, please see Performance Commitments methodologies Technical annex.

Carbon - emissions/benefits quantified by engineering consultants using standard assumptions in the industry.

River Quality - P reduction through partnerships is assumed to be zero in both AMP8 and in the base year 2020.

Storm overflows - Annual impact / benefits of unmonitored storm overflows adjustment component on the PC is assumed to be flat in AMP8 and AMP9 hence nil impact on spills avoided (benefits). The number of storm overflows remains unchanged. This is because the schemes enhance existing storm overflows and do not create new storm overflows. The assumption is that no storm overflows will be closed over time.

Sewer flooding - Annual benefits are calculated by dividing the enhancement expenditure in the business plan with a positive impact on sewer flooding by the unit cost rate used in the DWMP.

DPC - Annual benefits were calculated as the estimated reduction in the number of failed works as compared to a 'do nothing' scenario as follows. We estimated the number of sites that would fail discharge compliance if investment to accommodate growth was not made. We did so by using our internal models which account for dry weather flow (DWF) exceedance and process capacity measured by population increase (PE) forecasts at each of our 365 sites. The number of sites that would fail discharge compliance in a 'do nothing' scenario would range increase from 2 in 2025/26 to 29 in 2029/30. We assumed that each treatment works that failed would result in a 0.27 percentage points (or 1/365 sites) detriment in the PC level.

Investment to accommodate growth at wastewater treatment works is an enhancement business case, hence we allocate these benefits to enhancement.

Biodiversity - Quantification of annual Biodiversity benefits from WINEP was done through a SWS desktop exercise to quantify the baseline and the biodiversity uplift on SWS's own estate.

CWW15 - Best value analysis (benefits) - wastewater network+ and bioresources

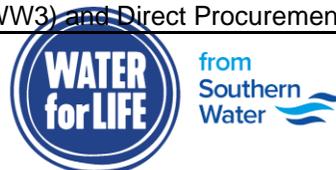
Line description		Commentary
	EA/NRW environmental programme (WINEP/NEP)	
1-10	Event Duration Monitoring at intermittent discharges	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
11	Event Duration Monitoring at intermittent discharges Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
12-21	Flow monitoring at sewage treatment works	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
22	Flow monitoring at sewage treatment works Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
23-32	Continuous river water quality monitoring	No data available
33	Continuous river water quality monitoring Total	Calculated Cell
34-43	MCERTs monitoring at emergency sewage pumping station overflows	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.



		Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
44	MCERTs monitoring at emergency sewage pumping station overflows Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
45-54	Increase flow to full treatment	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
55	Increase flow to full treatment Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
56-65	Increase storm tank capacity -grey solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
66	Increase storm tank capacity -grey solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
67-76	Increase storm system attenuation / treatment on a STW - green solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12).



		Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
77	Increase storm system attenuation / treatment on a STW - green solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
78-87	Storage schemes to reduce spill frequency at CSOs etc - grey solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
88	Storage schemes to reduce spill frequency at CSOs etc - grey solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
89-98	Storage to reduce spill frequency at CSOs etc - green solution	No data available
99	Storage to reduce spill frequency at CSOs etc - green solution Total	Calculated Cell
100-109	Storm overflow - discharge relocation	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
110	Storm overflow - discharge relocation Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12).



		Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
111-120	Storm overflow - increase in combined sewer / trunk sewer capacity	No data available
121	Storm overflow - increase in combined sewer / trunk sewer capacity Total	Calculated Cell
122-131	Storm overflow - sustainable drainage / attenuation in the network	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
132	Storm overflow - sustainable drainage / attenuation in the network Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
133-142	Storm overflow - source surface water separation	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
143	Storm overflow - source surface water separation Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
144-153	Storm overflow - infiltration management	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.



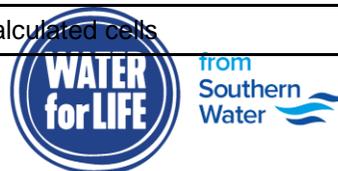
		Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
154	Storm overflow - infiltration management Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
155-164	Storm overflow - sewer flow management and control	No data available
165	Storm overflow - sewer flow management and control Total	Calculated cells
166-175	Storm overflow - new / upgraded screens	No data available
176	Storm overflow - new / upgraded screens Total	Calculated cells
177-186	Treatment for chemical removal	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
187	Treatment for chemical removal Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
188-197	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals	No data available
198	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals Total	Calculated cells
199-208	Treatment for total nitrogen removal (chemical)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) .



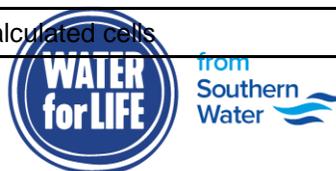
		Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
209	Treatment for total nitrogen removal (chemical) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
210-219	Treatment for total nitrogen removal (biological)	No data available
220	Treatment for total nitrogen removal (biological) Total	Calculated cells
221-230	Nitrogen Technically Achievable Limit monitoring, investigation or options appraisal	No data available
231	Nitrogen Technically Achievable Limit monitoring, investigation or options appraisal Total	Calculated cells
232-241	Treatment for phosphorus removal (chemical)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
242	Treatment for phosphorus removal (chemical) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
243-252	Treatment for phosphorus removal (biological)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
253	Treatment for phosphorus removal (biological) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.



		Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
254-263	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
264	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
265-274	Treatment for tightening of sanitary parameters	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
275	Treatment for tightening of sanitary parameters Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
276-285	Catchment management - chemicals source control	No data available
286	Catchment management - chemicals source control Total	Calculated cells
287-296	Catchment management - nutrient balancing	No data available
297	Catchment management - nutrient balancing Total	Calculated cells
298-307	Catchment management - catchment permitting	No data available
308	Catchment management - catchment permitting Total	Calculated cells



309-318	Catchment management - habitat restoration	No data available
319	Catchment management - habitat restoration Total	Calculated cells
320-329	Microbiological treatment - bathing waters, coastal and inland	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
330	Microbiological treatment - bathing waters, coastal and inland Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
331-340	Septic Tank Replacements - Treatment Solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
341	Septic Tank Replacements - Treatment Solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
342-351	Septic Tank Replacements - Flow diversion	No data available
352	Septic Tank Replacements - Flow diversion Total	Calculated cells
353-362	Fish Outfall screens	No data available
363	Fish Outfall screens Total	Calculated cells
364-373	25 Year Environment Plan	No data available
374	25 Year Environment Plan Total	Calculated cells



374-384	Investigations, other (WINEP/NEP) - desk-based studies only	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
385	Investigations, other (WINEP/NEP) - desk-based studies only Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
386-395	Investigations, other - survey, monitoring or simple modelling	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
396	Investigations, other - survey, monitoring or simple modelling Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
397-406	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling	No data available
407	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling Total	Calculated cells
408-417	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere)	No data available
418	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) Total	Calculated cells
419-228	River connectivity (e.g. for fish passage)	No data available
429	River connectivity (e.g. for fish passage) Total	Calculated cells
430-439	Restoration management (marine conservation zones etc)	No data available



440	Restoration management (marine conservation zones etc) Total	Calculated cells
441-450	Access and amenity for WINEP/NEP only (not covered elsewhere)	No data available
451	Access and amenity for WINEP/NEP only (not covered elsewhere) Total	Calculated cells
542-461	Advanced WINEP (not covered elsewhere)	No data available
462	Advanced WINEP (not covered elsewhere) Total	Calculated cells
463-472	Total environmental programme benefit	Calculated cells
	EA/NRW environmental programme bioresources (WINEP/NEP)	
473	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated)	No data available
474	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated) Total	Calculated cells
475-484	Sludge storage -Tanks (thickened/dewatered or treated)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
485	Sludge storage -Tanks (thickened/dewatered or treated) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
486-495	Sludge storage - Cake pads / bays	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
496	Sludge storage - Cake pads / bays Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12).



		Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
497-506	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion	No data available
507	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion Total	Calculated cells
508-517	Sludge treatment - Thickening and/or dewatering	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
518	Sludge treatment - Thickening and/or dewatering Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
519-528	Sludge treatment - Other	No data available
529	Sludge treatment – Other Total	Calculated cells
530-539	Sludge investigations and monitoring	No data available
540	Sludge investigations and monitoring Total	Calculated cells
541-550	Total bioresources programme benefit	Calculated cells
551	Other enhancement	
552	Growth at sewage treatment works (excluding sludge treatment)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.



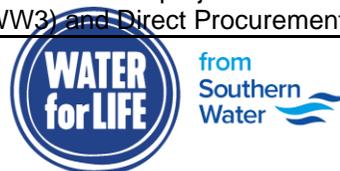
	Growth at sewage treatment works (excluding sludge treatment) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
553-562	Reduce flooding risk for properties	No data available
563	Reduce flooding risk for properties Total	No data available
564-573	First time sewerage	No data available
574	First time sewerage Total	No data available
575-584	Sludge enhancement (growth)	No data available
585	Sludge enhancement (growth) Total	No data available
586-595	Odour and other nuisance	No data available
596	Odour and other nuisance Total	No data available
597-606	Resilience	No data available
607	Resilience Total	No data available
608-617	Security - SEMD	No data available
618	Security – SEMD Total	No data available
619-628	Security Cyber	No data available
629	Security Cyber Total	No data available
630-639	Greenhouse gas reduction (net zero)	No data available
640	Greenhouse gas reduction (net zero) Total	No data available
641-650	Additional line 1	No data available
651	Additional line 1 Total	No data available
652-661	Additional line 2	No data available
662	Additional line 2 Total	No data available
663-672	Additional line 3	No data available



673	Additional line 3 Total	No data available
674-683	Additional line 4	No data available
684	Additional line 4 Total	No data available
685-694	Additional line 5	No data available
695	Additional line 5 Total	No data available
696	Total other enhancement benefit	Calculated cells
	Total enhancement	
697	Total enhancement expenditure	Calculated cells

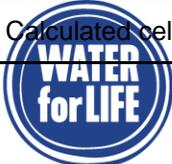


CWW16 - Best value analysis of alternative option (benefits) - wastewater network+ and bioresources		
Line description		Commentary
	EA/NRW environmental programme (WINEP/NEP)	
1-10	Event Duration Monitoring at intermittent discharges	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
11	Event Duration Monitoring at intermittent discharges Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
12-21	Flow monitoring at sewage treatment works	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
22	Flow monitoring at sewage treatment works Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
23-32	Continuous river water quality monitoring	No data available
33	Continuous river water quality monitoring Total	Calculated cells
34-43	MCERTs monitoring at emergency sewage pumping station overflows	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12).



		Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
44	MCERTs monitoring at emergency sewage pumping station overflows Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
45-54	Increase flow to full treatment	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
55	Increase flow to full treatment Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
56-65	Increase storm tank capacity -grey solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
66	Increase storm tank capacity -grey solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e.



		<p>Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
67-76	Increase storm system attenuation / treatment on a STW - green solution	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
77	Increase storm system attenuation / treatment on a STW - green solution Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
78-87	Storage schemes to reduce spill frequency at CSOs etc - grey solution	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
88	Storage schemes to reduce spill frequency at CSOs etc - grey solution Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
89-98	Storage to reduce spill frequency at CSOs etc - green solution	No data available
99	Storage to reduce spill frequency at CSOs etc - green solution Total	<p>Calculated cells</p>  

100-109	Storm overflow - discharge relocation	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
110	Storm overflow - discharge relocation Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
111-120	Storm overflow - increase in combined sewer / trunk sewer capacity	No data available
121	Storm overflow - increase in combined sewer / trunk sewer capacity Total	Calculated cells
122-131	Storm overflow - sustainable drainage / attenuation in the network	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
132	Storm overflow - sustainable drainage / attenuation in the network Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
133-142	Storm overflow - source surface water separation	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.</p>



		Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
143	Storm overflow - source surface water separation Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
144-153	Storm overflow - infiltration management	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
154	Storm overflow - infiltration management Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
155-164	Storm overflow - sewer flow management and control	No data available
165	Storm overflow - sewer flow management and control Total	Calculated cells
166-175	Storm overflow - new / upgraded screens	No data available
176	Storm overflow - new / upgraded screens Total	Calculated cells
177-186	Treatment for chemical removal	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.



		Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
187	Treatment for chemical removal Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
188-197	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals	No data available
198	Chemicals and emerging contaminants monitoring/ investigations/ options appraisals Total	Calculated cells
199-208	Treatment for total nitrogen removal (chemical)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
209	Treatment for total nitrogen removal (chemical) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
210-219	Treatment for total nitrogen removal (biological)	No data available
220	Treatment for total nitrogen removal (biological) Total	Calculated cells
221-230	Nitrogen Technically Achievable Limit monitoring, investigation or options appraisal	No data available
231	Nitrogen Technically Achievable Limit monitoring, investigation or options appraisal Total	Calculated cells
232-241	Treatment for phosphorus removal (chemical)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.



		<p>Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> • Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
242	Treatment for phosphorus removal (chemical) Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> • Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
243-252	Treatment for phosphorus removal (biological)	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> • Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
253	Treatment for phosphorus removal (biological) Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> • Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
254-263	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> • Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
264	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e.</p>



		<p>Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</p> <ul style="list-style-type: none"> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
265-274	Treatment for tightening of sanitary parameters	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk). Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.</p>
275	Treatment for tightening of sanitary parameters Total	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk). Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.</p>
276-285	Catchment management - chemicals source control	No data available
286	Catchment management - chemicals source control Total	Calculated cells
287-296	Catchment management - nutrient balancing	No data available
297	Catchment management - nutrient balancing Total	Calculated cells
298-307	Catchment management - catchment permitting	No data available
308	Catchment management - catchment permitting Total	Calculated cells
309-318	Catchment management - habitat restoration	No data available
319	Catchment management - habitat restoration Total	Calculated cells
320-329	Microbiological treatment - bathing waters, coastal and inland	<p>Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk). Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.</p>



330	Microbiological treatment - bathing waters, coastal and inland Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
331-340	Septic Tank Replacements - Treatment Solution	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
341	Septic Tank Replacements - Treatment Solution Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
342-351	Septic Tank Replacements - Flow diversion	No data available
352	Septic Tank Replacements - Flow diversion Total	Calculated cells
353-362	Fish Outfall screens	No data available
363	Fish Outfall screens Total	Calculated cells
364-373	25 Year Environment Plan	No data available
374	25 Year Environment Plan Total	Calculated cells
374-384	Investigations, other (WINEP/NEP) - desk-based studies only	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
385	Investigations, other (WINEP/NEP) - desk-based studies only Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12).



		Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
386-395	Investigations, other - survey, monitoring or simple modelling	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
396	Investigations, other - survey, monitoring or simple modelling Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
397-406	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling	No data available
407	Investigations, other - multiple surveys, and/or monitoring locations, and/or complex modelling Total	Calculated cells
408-417	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere)	No data available
418	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) Total	Calculated cells
419-228	River connectivity (e.g. for fish passage)	No data available
429	River connectivity (e.g. for fish passage) Total	Calculated cells
430-439	Restoration management (marine conservation zones etc)	No data available
440	Restoration management (marine conservation zones etc) Total	Calculated cells
441-450	Access and amenity for WINEP/NEP only (not covered elsewhere)	No data available
451	Access and amenity for WINEP/NEP only (not covered elsewhere) Total	Calculated cells
542-461	Advanced WINEP (not covered elsewhere)	No data available



462	Advanced WINEP (not covered elsewhere) Total	Calculated cells
463-472	Total environmental programme benefit	Calculated cells
473	EA/NRW environmental programme bioresources (WINEP/NEP)	
474	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated)	No data available
	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated) Total	Calculated cells
475-484	Sludge storage -Tanks (thickened/dewatered or treated)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
485	Sludge storage -Tanks (thickened/dewatered or treated) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
486-495	Sludge storage - Cake pads / bays	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
496	Sludge storage - Cake pads / bays Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO2e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.



497-506	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion	No data available
507	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion Total	Calculated cells
508-517	Sludge treatment - Thickening and/or dewatering	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
518	Sludge treatment - Thickening and/or dewatering Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
519-528	Sludge treatment - Other	No data available
529	Sludge treatment – Other Total	Calculated cells
530-539	Sludge investigations and monitoring	No data available
540	Sludge investigations and monitoring Total	Calculated cells
541-550	Total bioresources programme benefit	Calculated cells
551	Other enhancement	
552	Growth at sewage treatment works (excluding sludge treatment)	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e. Source: Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk) . Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
	Growth at sewage treatment works (excluding sludge treatment) Total	Benefits refer to projects started in AMP8 funded through both enhancement allowances (table CWW3) and Direct Procurement for Customers (SUP12). Benefits are monetised using Ofwat's ODI rate, except for operational carbon where we use the UK's Department for Business, Energy and Industrial Strategy's £175 per tonne of CO ₂ e.



		Source: <u>Updated short-term traded carbon values used for UK public policy appraisal: 2018, (publishing.service.gov.uk).</u> Present value of benefits is calculated using the HMRC's Green Book discount rate of 3.5%.
553-562	Reduce flooding risk for properties	No data available
563	Reduce flooding risk for properties Total	Calculated cells
564-573	First time sewerage	No data available
574	First time sewerage Total	Calculated cells
575-584	Sludge enhancement (growth)	No data available
585	Sludge enhancement (growth) Total	Calculated cells
586-595	Odour and other nuisance	No data available
596	Odour and other nuisance Total	Calculated cells
597-606	Resilience	No data available
607	Resilience Total	Calculated cells
608-617	Security - SEMD	No data available
618	Security – SEMD Total	Calculated cells
619-628	Security Cyber	No data available
629	Security Cyber Total	Calculated cells
630-639	Greenhouse gas reduction (net zero)	No data available
640	Greenhouse gas reduction (net zero) Total	Calculated cells
641-650	Additional line 1	No data available
651	Additional line 1 Total	Calculated cells
652-661	Additional line 2	No data available
662	Additional line 2 Total	Calculated cells



663-672	Additional line 3	No data available
673	Additional line 3 Total	Calculated cells
674-683	Additional line 4	No data available
684	Additional line 4 Total	Calculated cells
685-694	Additional line 5	No data available
695	Additional line 5 Total	Calculated cells
696	Total other enhancement benefit	Calculated cells
	Total enhancement	
697	Total enhancement expenditure	Calculated cells



CWW17 - Accelerated programme expenditure - wastewater network+		
Line description		Commentary
	EA/NRW environmental programme wastewater (WINEP/NEP)	
1	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater capex	Nil costs
2	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater opex	Nil costs
3	Event duration monitoring at intermittent discharges (WINEP/NEP) wastewater totex	Nil costs
4	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater capex	Nil costs
5	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater opex	Nil costs
6	Flow monitoring at sewage treatment works; (WINEP/NEP) wastewater totex	Nil costs
7	Continuous river water quality monitoring (WINEP/NEP) wastewater capex	Nil costs
8	Continuous river water quality monitoring (WINEP/NEP) wastewater opex	Nil costs
9	Continuous river water quality monitoring (WINEP/NEP) wastewater totex	Nil costs
10	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater capex	Nil costs
11	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater opex	Nil costs
12	MCERTs monitoring at emergency sewage pumping station overflows (WINEP/NEP) wastewater totex	Nil costs
13	Increase flow to full treatment; (WINEP/NEP) wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows
14	Increase flow to full treatment; (WINEP/NEP) wastewater opex	Nil Costs
15	Increase flow to full treatment; (WINEP/NEP) wastewater totex	Calculated cell
16	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows



17	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater opex	Nil Costs
18	Increase storm tank capacity at STWs - grey solution; (WINEP/NEP) wastewater totex	Calculated cell
19	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater capex	Nil costs
20	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater opex	Nil costs
21	Increase storm system attenuation / treatment on a STW - green solution; (WINEP/NEP) wastewater totex	Nil costs
22	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows
23	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater opex	Nil Costs
24	Storage schemes to reduce spill frequency at CSOs etc - grey solution; (WINEP/NEP) wastewater totex	Calculated cell
25	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater capex	Nil costs
26	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater opex	Nil costs
27	Storage to reduce spill frequency at CSOs etc - green solution; (WINEP/NEP) wastewater totex	Nil costs
28	Storm overflow - discharge relocation (WINEP/NEP) wastewater capex	Nil costs
29	Storm overflow - discharge relocation (WINEP/NEP) wastewater opex	Nil costs
30	Storm overflow - discharge relocation (WINEP/NEP) wastewater totex	Nil costs
31	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater capex	Nil costs
32	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater opex	Nil costs
33	Storm overflow - increase in combined sewer / trunk sewer capacity; (WINEP/NEP) wastewater totex	Nil costs
34	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows



35	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater opex	Nil Costs
36	Storm overflow - sustainable drainage / attenuation in the network; (WINEP/NEP) wastewater totex	Calculated cell
37	Storm overflow - source surface water separation; (WINEP/NEP) wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows
38	Storm overflow - source surface water separation; (WINEP/NEP) wastewater opex	Nil costs
39	Storm overflow - source surface water separation; (WINEP/NEP) wastewater totex	Calculated cells
40	Storm overflow - infiltration management: (WINEP/NEP) wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows
41	Storm overflow - infiltration management: (WINEP/NEP) wastewater opex	Nil costs
42	Storm overflow - infiltration management: (WINEP/NEP) wastewater totex	Calculated cells
43	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater capex	Nil costs
44	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater opex	Nil costs
45	Storm overflow - sewer flow management and control; (WINEP/NEP) wastewater totex	Nil costs
46	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater capex	Nil costs
47	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater opex	Nil costs
48	Storm overflow - new / upgraded screens (WINEP/NEP) wastewater totex	Nil costs
49	Treatment for chemical removal (WINEP/NEP) wastewater capex	Nil costs
50	Treatment for chemical removal (WINEP/NEP) wastewater opex	Nil costs
51	Treatment for chemical removal (WINEP/NEP) wastewater totex	Nil costs
52	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater capex	Nil costs
53	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater opex	Nil costs
54	Chemicals and emerging contaminants monitoring, investigations, options appraisals; (WINEP/NEP) wastewater totex	Nil costs



55	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater capex	Nil costs
56	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater opex	Nil costs
57	Treatment for total nitrogen removal (chemical) (WINEP/NEP) wastewater totex	Nil costs
58	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater capex	Nil costs
59	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater opex	Nil costs
60	Treatment for total nitrogen removal (biological) (WINEP/NEP) wastewater totex	Nil costs
61	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater capex	Nil costs
62	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater opex	Nil costs
63	Nitrogen technically achievable limit monitoring, investigation or options appraisal; (WINEP/NEP) wastewater totex	Nil costs
64	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater capex	Nil costs
65	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater opex	Nil costs
66	Treatment for phosphorus removal (chemical) (WINEP/NEP) wastewater totex	Nil costs
67	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater capex	Nil costs
68	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater opex	Nil costs
69	Treatment for phosphorus removal (biological) (WINEP/NEP) wastewater totex	Nil costs
70	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater capex	Nil costs
71	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater opex	Nil costs
72	Treatment for nutrients (N or P) and / or sanitary determinands, nature based solution (WINEP/NEP) wastewater totex	Nil costs
73	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater capex	Nil costs
74	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater opex	Nil costs



75	Treatment for tightening of sanitary parameters (WINEP/NEP) wastewater totex	Nil costs
76	Catchment management - chemicals source control; (WINEP/NEP) wastewater capex	Nil costs
77	Catchment management - chemicals source control; (WINEP/NEP) wastewater opex	Nil costs
78	Catchment management - chemicals source control; (WINEP/NEP) wastewater totex	Nil costs
79	Catchment management - nutrient balancing; (WINEP/NEP) wastewater capex	Nil costs
80	Catchment management - nutrient balancing; (WINEP/NEP) wastewater opex	Nil costs
81	Catchment management - nutrient balancing; (WINEP/NEP) wastewater totex	Nil costs
82	Catchment management - catchment permitting; (WINEP/NEP) wastewater capex	Nil costs
83	Catchment management - catchment permitting; (WINEP/NEP) wastewater opex	Nil costs
84	Catchment management - catchment permitting; (WINEP/NEP) wastewater totex	Nil costs
85	Catchment management - habitat restoration; (WINEP/NEP) wastewater capex	Nil costs
86	Catchment management - habitat restoration; (WINEP/NEP) wastewater opex	Nil costs
87	Catchment management - habitat restoration; (WINEP/NEP) wastewater totex	Nil costs
88	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater capex	Nil costs
89	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater opex	Nil costs
90	Microbiological treatment - bathing waters, coastal and inland (WINEP/NEP) wastewater totex	Nil costs
91	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater capex	Nil costs
92	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater opex	Nil costs
93	Septic tank replacements - treatment solution; (WINEP/NEP) wastewater totex	Nil costs
94	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater capex	Nil costs
95	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater opex	Nil costs



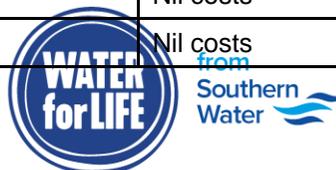
96	Septic tank replacements - flow diversion; (WINEP/NEP) wastewater totex	Nil costs
97	Fish outfall screens; (WINEP/NEP) wastewater capex	Nil costs
98	Fish outfall screens; (WINEP/NEP) wastewater opex	Nil costs
99	Fish outfall screens; (WINEP/NEP) wastewater totex	Nil costs
100	25 year environment plan; (WINEP/NEP) wastewater capex	Nil costs
101	25 year environment plan; (WINEP/NEP) wastewater opex	Nil costs
102	25 year environment plan; (WINEP/NEP) wastewater totex	Nil costs
103	Investigations, other (WINEP/NEP) - desk-based studies only wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows
104	Investigations, other (WINEP/NEP) - desk-based studies only wastewater opex	Nil costs
105	Investigations, other (WINEP/NEP) - desk-based studies only wastewater totex	Calculated cells
106	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater capex	Nil costs
107	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater opex	Nil costs
108	Investigations, other (WINEP/NEP) - survey, monitoring or simple modelling wastewater totex	Nil costs
109	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater capex	All of these costs are in relation to our CSO taskforce, reflecting the acceleration plan agreed with Ofwat. Costs based on costs and options methodology described in SRN38 WINEP methodology and SRN40 WINEP Storm Overflows
110	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater opex	Nil costs
111	Investigations, other (WINEP/NEP) - multiple surveys, and/or monitoring locations, and/or complex modelling wastewater totex	Calculated cells
112	Investigations, total; (WINEP/NEP) wastewater capex	Nil costs
113	Investigations, total; (WINEP/NEP) wastewater opex	Nil costs
114	Investigations, total; (WINEP/NEP) wastewater totex	Nil costs
115	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater capex	Nil costs



116	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater opex	Nil costs
117	Contribution to third party schemes under WINEP/NEP only (not covered elsewhere) wastewater totex	Nil costs
118	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater capex	Nil costs
119	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater opex	Nil costs
120	River connectivity (e.g. for fish passage); (WINEP/NEP) wastewater totex	Nil costs
121	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater capex	Nil costs
122	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater opex	Nil costs
123	Restoration management (marine conservation zones etc) (WINEP/NEP) wastewater totex	Nil costs
124	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater capex	Nil costs
125	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater opex	Nil costs
126	Access and amenity for WINEP/NEP only (not covered elsewhere) wastewater totex	Nil costs
127	Advanced WINEP (not covered elsewhere) wastewater capex	Nil costs
128	Advanced WINEP (not covered elsewhere) wastewater opex	Nil costs
129	Advanced WINEP (not covered elsewhere) wastewater totex	Nil costs
130	Total environmental programme expenditure; (WINEP/NEP) wastewater totex	Calculated cells
EA/NRW environmental programme bioresources (WINEP/NEP)		
131	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated) (WINEP/NEP) capex	Nil costs
132	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); (WINEP/NEP) opex	Nil costs
133	Sludge storage -Tanks (pre-thickening, pre-dewatering or untreated); (WINEP/NEP) totex	Nil costs
134	Sludge storage -Tanks (thickened/dewatered or treated); (WINEP/NEP) capex	Nil costs
135	Sludge storage - Tanks (thickened/dewatered or treated); (WINEP/NEP) opex	Nil costs
136	Sludge storage - Tanks (thickened/dewatered or treated); (WINEP/NEP) totex	Nil costs



137	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources capex	Nil costs
138	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources opex	Nil costs
139	Sludge storage - Cake pads / bays / other; (WINEP/NEP) bioresources totex	Nil costs
140	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources capex	Nil costs
141	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources opex	Nil costs
142	Sludge treatment - Anaerobic digestion and/or advanced anaerobic digestion; (WINEP/NEP) bioresources totex	Nil costs
143	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) capex	Nil costs
144	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) opex	Nil costs
145	Sludge treatment - Thickening and/or dewatering; (WINEP/NEP) totex	Nil costs
146	Sludge treatment - Other; (WINEP/NEP) bioresources capex	Nil costs
147	Sludge treatment - Other; (WINEP/NEP) bioresources opex	Nil costs
148	Sludge treatment - Other; (WINEP/NEP) bioresources totex	Nil costs
149	Sludge investigations and monitoring (WINEP/NEP) bioresources capex	Nil costs
150	Sludge investigations and monitoring (WINEP/NEP) bioresources opex	Nil costs
151	Sludge investigations and monitoring (WINEP/NEP) bioresources totex	Nil costs
152	Total environmental programme expenditure; (WINEP/NEP) bioresources totex	Calculated cell
	Other enhancement	
153	Growth at sewage treatment works (excluding sludge treatment); enhancement capex	Nil costs
154	Growth at sewage treatment works (excluding sludge treatment); enhancement opex	Nil costs
155	Growth at sewage treatment works (excluding sludge treatment); enhancement totex	Nil costs
156	Reduce flooding risk for properties; enhancement capex	Nil costs
157	Reduce flooding risk for properties; enhancement opex	Nil costs
158	Reduce flooding risk for properties; enhancement totex	Nil costs
159	First time sewerage; enhancement capex	Nil costs



160	First time sewerage; enhancement opex	Nil costs
161	First time sewerage; enhancement totex	Nil costs
162	Sludge enhancement (growth); enhancement capex	Nil costs
163	Sludge enhancement (growth); enhancement opex	Nil costs
164	Sludge enhancement (growth); enhancement totex	Nil costs
165	Odour and other nuisance; enhancement capex	Nil costs
166	Odour and other nuisance; enhancement opex	Nil costs
167	Odour and other nuisance; enhancement totex	Nil costs
168	Resilience; enhancement wastewater capex	Nil costs
169	Resilience; enhancement wastewater opex	Nil costs
170	Resilience; enhancement wastewater totex	Nil costs
171	Security - SEMD; enhancement wastewater capex	Nil costs
172	Security - SEMD; enhancement wastewater opex	Nil costs
173	Security - SEMD; enhancement wastewater totex	Nil costs
174	Security - cyber; enhancement wastewater capex	Nil costs
175	Security - cyber; enhancement wastewater opex	Nil costs
176	Security - cyber; enhancement wastewater totex	Nil costs
177	Greenhouse gas reduction (net zero); enhancement wastewater capex	Nil costs
178	Greenhouse gas reduction (net zero); enhancement wastewater opex	Nil costs
179	Greenhouse gas reduction (net zero); enhancement wastewater totex	Nil costs
180	Total other enhancement wastewater/bioresources expenditure	Calculated cell
	Other enhancement (Freeform lines - by exception)	
181	Additional line - Corporate overheads for Alternative delivery Capex	Nil costs
182	Additional line - Corporate overheads for Alternative delivery Opex	Nil costs
183	Additional line - Top down efficiency Capex	Nil costs



184	Additional line - Top down efficiency Opex	Nil costs
185	Additional line 3; enhancement wastewater/bioresources capex	Nil costs
186	Additional line 3; enhancement wastewater/bioresources opex	Nil costs
187	Additional line 4; enhancement wastewater/bioresources capex	Nil costs
188	Additional line 4; enhancement wastewater/bioresources opex	Nil costs
189	Additional line 5; enhancement wastewater/bioresources capex	Nil costs
190	Additional line 5; enhancement wastewater/bioresources opex	Nil costs
191	Total other enhancement wastewater expenditure	Calculated cells
192	Total other enhancement and enhancement freeform lines wastewater/bioresources expenditure	Calculated cells
	Total enhancement	
193	Total enhancement expenditure; wastewater/bioresources capex	Calculated cells
194	Total enhancement expenditure; wastewater/bioresources opex	Calculated cells
195	Total enhancement expenditure; wastewater/bioresources totex	Calculated cells

CWW18 - Cost adjustment claims - base expenditure: wastewater network+ and bioresources

Please see our cost adjustment claims for

- > Regional Labour Costs
- > Wastewater Growth
- > Advanced Anaerobic digestion at Ashford and Ham Hill and
- > Coastal Population



CWW19 - Wastewater network+ - WINEP phosphorus removal scheme costs and cost drivers

Line description		Commentary
1-200	<i>WINEP scheme 1 to 200</i>	<p>We have used design population equivalent data to complete the column called “population equivalent after 2029-30”</p> <p>We have completed the table to include all schemes that feature on the PR24 WINEP with P and N permits, even though some of them are no build solutions due to existing permit levels being the same as or tighter than AMP8 permit levels, and therefore they have no AMP8 totex.</p> <p>In the permit change only column we have flagged with a “Y” where there is no capital investment required and we do not provide a solution type.</p> <p>The methodology used to split costs between P and N drivers was to review the main items of scope and determine which driver they related to (e.g. ferric dosing and tertiary solids removal would be for P, methanol dosing and tertiary denitrification would be for N). The overall CAPEX value was then split proportional to the value of the driver specific scope, rounded to the nearest 10%. On sites where the majority of the scope was common to both drivers (e.g. where the solution to meet both drivers is conversion of a filter works to ASP), a 50/50 split was assumed.</p> <p>We can confirm that neither bioresources-related costs nor business rates are included in the opex figures provided. Business rates are not included in our level 1 costings, but are factored in to the level 2 costing exercise. For the P and N removal sites that were costed through our level 2 approach we have removed the business rates element before including the opex figures in the table.</p> <p>Under cost driver 10 “solution type” we have shown all nitrogen removal solutions as combined chemical and biological because they are all biological denitrification solutions which are chemically assisted using methanol dosing.</p> <p>We have used solution type “other” where the solution is to pump away to a neighbouring treatment works.</p>

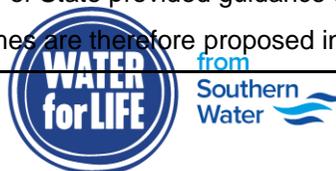


CWW20 - Wastewater network+ - Sewage treatment works population, capacity and network data

Line description		Commentary
	Sewage treatment data	
1	Current population equivalent served by STWs	<p>We have adopted a different methodology compared to APR23 so a difference is present between the APR23 published data and the 2022/23 value reported in the PR24 table.</p> <p>The new methodology uses both the Edge (published data method) and local plan (improvement method aligned with DWMPs) and is considered more accurate because published data does not include the local plan data for growth which is an important element of PR24; we have many growth schemes aligned with local plans.</p> <p>Population equivalent (pe) from Edge v1.3 is used for all catchments in the data table for 2022-23 to 2029-30 except for catchments with a named growth scheme in the PR24 plan. Edge v1.3 is for adjusted where investment solutions involve pump-away.</p> <p>Confidence grade B1</p>
2	Current population equivalent served by STWs with tightened/new P permits	PE does not include holiday population, as stipulated in guidance for CWW20.1.
3	Current population equivalent served by STWs with tightened/new N permits	Sites where a tightening of P consent, N permits or sanitary parameters are driven by an increase in DWF due to load standstill requirements are included.
4	Current population equivalent served by STWs with tightened/new sanitary parameter permits	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Large increases can be seen in the final years of each AMP period (2024/25 and 2029/30) in line with the regulatory commitment date for WINEP schemes. Small increase between these years in AMP8 are due to phasing of growth schemes, which have a tightening of P consent N permits and sanitary parameters because of DWF consent increase and load standstill.</p> <p>Confidence grade B2</p>
5	Current population equivalent served by STWs with tightened/new microbiological standards	<p>PE does not include holiday population, as stipulated in guidance for CWW20.1</p> <p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Large increases can be seen in 2023/24 and 2027/28 in line with the regulatory commitment date for WINEP schemes.</p> <p>Confidence grade B2</p>
6	Population equivalent served by STWs with enhanced treatment capacity	No Planned growth schemes identified for completion in 2023/24



		<p>Increase in capacity is recorded respective to the forecast PE served in the preceding year the scheme is forecast to be delivered. Therefore, the figures do not capture any sites which are 'overperforming' i.e., where PE exceeds design capacity.</p> <p>PE does not include holiday population, as specified in guidance for CWW20.1</p> <p>Confidence grade B2</p>
7	Current population equivalent served by STWs with tightened/new permits for chemicals / hazardous substances	<p>PE does not include holiday population, as stipulated in guidance for CWW20.1.</p> <p>It is assumed all tightening of chemical/hazardous substance permits required under WINEP are considered to be a 'scheme', whether delivered through Capex or Opex.</p> <p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>APR23 identified 0 schemes were delivered through capex in 2022/23, 6 schemes were delivered through opex. Therefore Step 2 of the Methodology was followed to obtain the PE for 2022/23 for these 6 sites.</p> <p>Confidence grade B2</p>
8	Current population equivalent served by septic tank replacement projects	<p>It is assumed 'septic tank replacement projects' are those required to be delivered under the U_IMP7 WINEP driver</p> <p>No schemes have been identified under the U_IMP7 driver in AMP8, therefore null return.</p> <p>Confidence grade B1</p>
9	Number of new wetland treatment solutions for tightened sanitary or nutrient (N or P) permits	<p>2 schemes have been identified as having a preferred solution as Wetlands, both with a regulatory date of 31/03/2030.</p> <p>Solutions are subject to change in detailed optioneering.</p> <p>Confidence grade assessed as B3</p>
10	Total area of new wetlands for tightened sanitary or nutrient (N or P) permits	<p>2 schemes have been identified as having a preferred solution as Wetlands, both with a regulatory date of 31/03/2030.</p> <p>Solutions are subject to change in detailed optioneering. Confidence grade has been assessed as B4</p>
11	Total number of septic tank replacement projects	<p>It is assumed 'septic tank replacement projects' are those required to be delivered under the U_IMP7 WINEP driver. One site was identified under this driver for Hamsey WTW, however the Defra Secretary of State provided guidance that this scheme can be phased into AMP9.</p> <p>No schemes are therefore proposed in our PR24 business plan to replace septic tanks. Null return.</p>



		Confidence grade has been assessed as B1
12	Total number of STW outfall screens	<p>Guidance states 'total number of outfall screens being installed at sewage treatment works to prevent the entrainment of fish'. This is taken to mean schemes delivered under the EE_IMP driver for AMP7. Description of EE_IMP driver from EA: 'Schemes to improve abstractions and outfall to prevent the entrainment of fish'</p> <p>It is assumed 'outfall screens being installed at sewage treatment works to prevent the entrainment of fish' are those required to be delivered under the EE_IMP AMP7 WINEP driver</p> <p>No schemes have been identified under the EE_IMP driver in AMP8, therefore null return.</p> <p>Confidence grade has been assessed as B1</p>
13	Cumulative shortfall in FFT addressed by WINEP / NEP schemes to increase STW capacity	<p>There are currently no planned FFT increase schemes in the WINEP for AMP8, hence reporting "0" for all years apart from 2024/25 when AMP7 schemes are expected to complete</p> <p>Confidence Grade: B1 – not all increases in FFT have been agreed with EA</p>
14	Additional storm tank capacity provided at STWs - grey infrastructure	<p>Relevant AMP7 drivers: New DWF permit; U_IMP6; SW_ND;</p> <p>Relevant AMP8 drivers: New DWF permit; SW_ND; Storm overflow drivers</p> <p>It is assumed where storm storage increase is identified under multiple drivers that the net increase is recorded i.e. storage is not double counted</p> <p>It is assumed WINEP schemes will be delivered on their required regulatory date.</p> <p>Only storage capacity provided at treatment works is counted (i.e. network CSO storage for spill reduction not counted)</p> <p>Woolston AMP7 SW_ND increased FFT to reduce the storm storage volume necessary to be provided. ETS have estimated this as a 5000m3 reduction in capacity, which has been added to the total storage being provided.</p> <p>Confidence grade is assessed as B3</p>
15	Additional volume of effective storm storage at STWs - nature based/green solution	<p>Relevant AMP7 drivers: New DWF permit; U_IMP6; SW_ND;</p> <p>Relevant AMP8 drivers: New DWF permit; SW_ND; Storm overflow drivers</p> <p>It is assumed where storm storage increase is identified under multiple drivers that the net increase is recorded i.e. storage is not double counted</p> <p>It is assumed WINEP schemes will be delivered on their required regulatory date.</p>

		<p>Only storage capacity provided at treatment works is counted (i.e. network CSO storage for spill reduction not counted)</p> <p>Effective volume of storm storage replaced by green infrastructure calculated assuming 12mm of rainfall.</p> <p>Confidence grade assessed as B3</p>
16	Total number of STW sites where additional storage has been delivered	<p>Relevant AMP7 drivers: New DWF permit; U_IMP6; SW_ND;</p> <p>Relevant AMP8 drivers: New DWF permit; SW_ND; Storm overflow drivers</p> <p>It is assumed where storm storage increase is identified under multiple drivers that the net increase is recorded i.e. storage is not double counted</p> <p>It is assumed WINEP schemes will be delivered on their required regulatory date.</p> <p>Only storage capacity provided at treatment works is counted (i.e. network CSO storage for spill reduction not counted)</p> <p>Confidence grade assessed as B2</p>
17	Number of STW sites where additional storage has been delivered with pumping	<p>None reported.</p> <p>Confidence grade assessed as B4</p>
18	Number of STW sites benefitting from green infrastructure replacing the need for storm tank storage	<p>Relevant AMP7 drivers: New DWF permit; U_IMP6; SW_ND;</p> <p>Relevant AMP8 drivers: New DWF permit; SW_ND; Storm overflow drivers</p> <p>It is assumed where storm storage increase is identified under multiple drivers that the net increase is recorded i.e. storage is not double counted</p> <p>It is assumed WINEP schemes will be delivered on their required regulatory date.</p> <p>Only storage capacity provided at treatment works is counted (i.e. network CSO storage for spill reduction not counted)</p> <p>Confidence grade assessed as B2</p>
19	Total number of schemes with tightened / new P permits (met by biological treatment)	<p>'Ferric and Caustic Storage AMP7' file used to determine whether tightened P consents in AMP7 are being met through chemical or biological solutions. Where biological solutions only (without chemical dosing forming part of the solution) the scheme is recorded under this data table line.</p> <p>Sites where a tightening of P consent is driven by an increase in DWF due to load standstill requirements are included.</p>



		<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>3 sites with biological treatment solutions only in AMP7.</p> <p>4 sites with biological treatment solutions only in AMP8.</p> <p>Tightened P consents which are to be met through pump away are not recorded against either this line or CWW 20.20.</p> <p>Confidence grade assessed as B2</p>
20	Total number of schemes with tightened / new P permits (met by chemical treatment)	<p>Ferric and Caustic Storage AMP7' file used to determine whether tightened P consents in AMP7 are being met through chemical or biological solutions. Where chemical dosing forms part of the solution, the scheme is recorded under this data table line.</p> <p>Sites where a tightening of P consent is driven by an increase in DWF due to load standstill requirements are included.</p> <p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>72 sites with chemical treatment solutions in AMP7.</p> <p>71 sites with chemical treatment solutions in AMP8</p> <p>Tightened P consents which are to be met through pump away are not recorded against either this line or CWW 20.19.</p> <p>Confidence Grade assessed as B2</p>
21	Total number of schemes with tightened / new N permits (met by biological treatment)	<p>All N removal solutions in Southern Water are provided through biological treatment.</p> <p>Sites where a tightening of N consent is driven by an increase in DWF due to load standstill requirements are included.</p> <p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Tightened N consents which are to be met through pump away are not recorded against either this line or CWW 20.22.</p> <p>Confidence grade assessed as B2</p>
22	Total number of schemes with tightened / new N permits (met by chemical treatment)	<p>Nil return as all solutions to reduce N are delivered through biological rather than chemical treatment.</p> <p>Confidence grade assessed as B1</p>



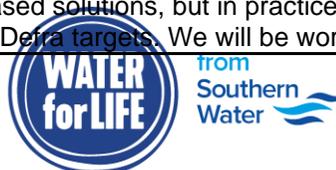
23	Total number of schemes with tightened/new sanitary parameter permits	<p>Sites where a tightening of sanitary parameter consents is driven by an increase in DWF due to load standstill requirements are included.</p> <p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Confidence grade assessed as B2</p>
24	Total number of schemes with tightened/new microbiological standards (UV, ozone etc)	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Confidence grade assessed as B2</p>
25	Total number of STWs with microbiological treatment - new and existing (UV, ozone etc)	N/A
26	Total number of schemes with tightened/new chemicals/hazardous substances permits	<p>It is assumed all tightening of chemical/hazardous substance permits required under WINEP are considered to be a 'scheme', whether delivered through Capex or Opex.</p> <p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>6 schemes identified in 2022/23 were delivered through Opex rather than Capex using a different methodology to the APR meaning the value reported differs to APR23</p> <p>Confidence grade C5</p>
27	Total number of schemes with new chemical dosing installations	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>One scheme is counted for new ferric and/or alkalinity dosing, not individual chemical dosing systems.</p> <p>If ferric dosing is currently installed but alkalinity is not, and alkalinity is being provided under a scheme then it is counted in this data table line.</p> <p>For AMP8 solutions, where proposed solutions are uncertain on whether alkalinity dosing is required they are included.</p> <p>Confidence grade assessed as B3</p>
28	Volume of chemical dosing storage installed (m3)	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>One scheme is counted for new ferric and/or alkalinity dosing, not individual chemical dosing systems.</p>



		<p>If ferric dosing is currently installed but alkalinity is not, and alkalinity is being provided under a scheme then it is counted in this data table line.</p> <p>For AMP8 solutions, where proposed solutions are uncertain on whether alkalinity dosing is required they are included.</p> <p>For AMP8 solutions, volume data is not available where an increase in existing capacity is provided. In these cases no volume has been recorded.</p> <p>Confidence grade assessed as B4,</p>
29	Total number of schemes with new tertiary solids removal	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>It is assumed tertiary solids removal is only considered for sites with a P permit of less than 0.5mg/l, a BOD permit of less than 10mg/l, or a Iron permit less than 4mg/l AA.</p> <p>It is assumed 'maximum daily volume' is the theoretical maximum flow that can be passed through tertiary treatment i.e. the capacity of the tertiary treatment plant, rather than actual recorded daily flows</p> <p>For sites with storm separation it is assumed all flows up to FFT pass through tertiary treatment</p> <p>For sites without storm separation maximum daily volume is determine from 98%ile flows over the last 5 years.</p> <p>Where solutions are outline only and include the potential need for tertiary solids removal, they are included</p> <p>Constructed wetlands are considered to provide tertiary solids removal</p> <p>Confidence grade assessed as B3</p>
30	Flow volume to tertiary solids removal (l/s)	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>It is assumed tertiary solids removal is only considered for sites with a P permit of less than 0.5mg/l, a BOD permit of less than 10mg/l, or a Iron permit less than 4mg/l AA.</p> <p>It is assumed 'maximum daily volume' is the theoretical maximum flow that can be passed through tertiary treatment i.e. the capacity of the tertiary treatment plant, rather than actual recorded daily flows</p> <p>For sites with storm separation it is assumed all flows up to FFT pass through tertiary treatment</p> <p>For sites without storm separation maximum daily volume is determine from 98%ile flows over the last 5 years</p>



		<p>Where solutions are outline only and include the potential need for tertiary solids removal, they are included</p> <p>Constructed wetlands are considered to provide tertiary solids removal</p> <p>Maximum daily volume is calculated by multiplying permitted FFT (l/s) by 86.4 to get m³/day, for sites with storm separation. Change in permitted FFT due to fore example U_IMP5 drivers are taken into account.98%ile flows over the last 5 years are multiplied by 86.4 to determine maximum daily flow at treat all flows sites (those without storm separation)</p> <p>Confidence grade assessed as B3</p>
31	Total number of N-TAL trials	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Confidence grade assessed as A1</p>
32	Number of STW flow monitors installed	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>It is assumed flow monitor installed under WINEP MON drivers at WTWs (U_MON3; U_MON4) only are to be included.</p> <p>Where there are multiple drivers at the same site, each driver is counted separately.</p> <p>Only flow monitors installed at WTWs are considered, as per data table guidance.</p> <p>CWW20.32 does not contain any duplicate sites for 2024/25. I.e. there are 79 schemes at 79 different sites.</p> <p>CWW20.32 contains duplicates at 210 sites for 2026/27. I.e. there are 426 schemes at 216 sites.</p> <p>Confidence grade assessed as B2</p>
33	Number of STW flow monitoring schemes requiring permit changes only	
34	Number of STW flow monitoring schemes requiring simple meter installations	
35	Number of STW flow monitoring schemes requiring complex civils installations	
Network / Storm overflow data		
<p>Implementation of solutions (CWW20.36 -CWW20.40) are expected to be completed in the final year of AMP8, 2029-30, therefore values are only entered for that year. CWW20.39 will have no entries, the design stage has not incorporated any pumping solutions. Confidence grade C5</p>		
36	Additional volume of network storage at CSOs etc to reduce spill frequency - grey infrastructure	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Our approach to reducing discharges from storm overflows is set out in our DWMP: a0003_dwmp_regional_plan_final.pdf (southernwater.co.uk). We will focus on green, catchment and nature-based solutions, but in practice all storm overflows will require green and grey solutions to meet the Defra targets. We will be working with partner organisations and communities to design and</p>



		<p>implement a package of measures to manage rainwater and separate it from combined sewers where possible.</p> <p>Additional volume of network storage was determined from the modelled spill volume for the appropriate spill target (e.g. for a spill target of 10, the modelled spill volume of the 11th largest spill is taken as the required storage volume).</p> <p>Where storm overflow spills are not represented in a hydraulic model:</p> <ul style="list-style-type: none"> (a) The storage volume required is estimated based on the storage volume required for modelled overflows with similar properties to the overflow considered. This estimate is made by comparing spill counts and durations, as well as estimated pass forward flows and number of properties upstream of the overflow. (b) A nominal increase in spill volume is applied to account for future catchment and climate conditions. Estimated spill volumes were increased by a factor of 1.16 which was the average increase from the hydraulic model data underlying the spill volume estimation methodology. <p>AMP7 figures are based on the work being delivered by our Cleaner Rivers and Seas team as a result of the accelerated funding (i.e. AMP8 funding being brought forward into AMP7). The accelerated programme is focusing on green solutions, hence the figures in AMP7 are zero.</p>
37	Additional volume of effective network storage to reduce CSO spill frequency - nature based/green solution	<p>Total volume of additional storage provided, calculated based on hydraulic modelling where available – see method statement.</p> <p>Green solutions for provision of network storage are in the form of wetlands at network pumping stations where the storm overflows can be treated within a wetland before being discharged to the environment.</p>
38	Number of individual sites delivering additional network storage - grey infrastructure	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>AMP7 figures are based on the work being delivered by our Cleaner Rivers and Seas team as a result of the accelerated funding (i.e. AMP8 funding being brought forward into AMP7).</p> <p>The accelerated programme is focusing on green solutions, hence the figures in AMP7 are zero.</p> <p>For storm overflows, the number of sites is equivalent to the number of storm overflows.</p>
39	Number of individual sites delivering additional network storage - grey infrastructure - which include pumping	<p>No sites have been identified that require additional network storage with pumping.</p> <p>For storm overflows, the number of sites is equivalent to the number of storm overflows.</p>



40	Number of individual sites delivering additional network storage through green infrastructure	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>AMP7 figures are based on the work being delivered by our Cleaner Rivers and Seas team as a result of the accelerated funding (i.e. AMP8 funding being brought forward into AMP7). This team will be developing wetlands in AMP7, although full delivery in operation may not occur before AMP9.</p> <p>The 8 sites in AMP8 are the wetlands associated with the network storm overflows, where wetlands are being proposed to treat the spills to reduce harm to the environment. These will be delivered by 2030.</p> <p>For storm overflows, the number of sites is equivalent to the number of storm overflows.</p>
Implementation of solutions (CWW20.41-CWW20.44) are expected to be completed in the final year of AMP8, 2029-30, therefore values are only entered for that year. Confidence grade C5		
41	Surface water separation drainage area removed	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>Separation is our highest priority. We will focus on getting rainwater out of sewers and applying Defra's key principle that rainwater should be returned to the environment as close to where it falls. It is much more challenging to achieve than attenuation, but attenuation means that the rainwater is still taking up critical capacity within the system, diluting effluent and reducing efficacy of treatment processes, and increasing pumping costs (high carbon emissions).</p>
42	Total number of surface water separation schemes to reduce storm overflows	Implementation of solutions are expected to be completed in the final year of AMP8, 2029-30, therefore values are only entered for that year. Confidence grade C5
43	Total number of sustainable drainage / attenuation schemes	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>We will be constructing and installing Sustainable Drainage Systems (SuDS) and other surface water management devices to provide additional effective network storage to reduce CSO spills where they are rainfall driven. We have sized the SuDS on the basis of providing sufficient storage volume to accommodate 12mm of rainfall on the contributing catchment.</p> <p>AMP7 figures are based on the work being delivered by our Cleaner Rivers and Seas team as a result of the accelerated funding (i.e. AMP8 funding being brought forward into AMP7).</p> <p>We have assumed that there is one SuDS scheme per storm overflow. In reality, we will implement SuDS, re-measure to understand impact on reducing spills, then implement further SuDS if necessary. We will also be working with partner organisations and with schools, hospitals, government estate, so there could be multiple schemes for each site. This level of information is unknown at this stage.</p>



		For storm overflows, the number of schemes is equivalent to the number of storm overflows, i.e. we have assumed that each storm overflow has one scheme to deliver the WINEP actions. One scheme may have many components and delivered through different routes, but all components are needed to deliver the desire outcomes (reduction in spills)
44	Total number of surface water separation schemes to reduce storm overflows	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>AMP7 figures are based on the work being delivered by our Cleaner Rivers and Seas team as a result of the accelerated funding (i.e. AMP8 funding being brought forward into AMP7).</p> <p>We have assumed that there is one SuDS scheme per storm overflow. In reality, we will implement SuDS, re-measure to understand impact on reducing spills, then implement further SuDS if necessary. We will also be working with partner organisations and with schools, hospitals, government estate, so there could be multiple schemes for each site. This level of information is unknown at this stage.</p> <p>For storm overflows, the number of schemes is equivalent to the number of storm overflows, i.e. we have assumed that each storm overflow has one scheme to deliver the WINEP actions. One scheme may have many components and delivered through different routes, but all components are needed to deliver the desire outcomes (reduction in spills)</p>
45	Flow volume diverted to reduce storm overflow spills	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>These are being undertaken as part of operational (base) expenditure, not enhancement</p>
	Implementation of solutions (CWW20.45-CWW20.48) are expected to be completed in the final year of AMP9, 2029-30, therefore values are only entered for that year. See Annex 1 for further assumptions Confidence grade C5	
46	Total number of sewer flow management / control schemes to reduce storm overflow spills	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>These are being undertaken as part of operational (base) expenditure, not enhancement</p>
47	Total storm overflow spill volume avoided	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>The spills reduction has been calculated for our storm overflow programme based on the solution type and size, the delivery programme and the expected number of storms per annum. We have calculated the volume of spills avoided and added to the data table in this row.</p>



48	Total number of new storm overflow screens installed	<p>It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before.</p> <p>In order to satisfy the EnvAct_IMP5 driver it is necessary to ensure that all overflows are appropriately screened. For the purposes of the regional plan, a screen upgrade has been assigned to all overflows that are not currently have 6mm 2D screens. For overflows where no screening information is currently available, it has been assumed that screen upgrades are also required.</p> <p>New or upgraded screens are required to be delivered by 2050, but for overflows where other investment is planned (i.e. in the majority of cases) the screen upgrade should be delivered together with the other investment. For this reason, overflows that only require screen upgrades (i.e. no core investment for spills reduction) are categorised separately. This allows them to be prioritised accordingly.</p> <p>Our focus for AMP8 is on green infrastructure, so grey will be phased to later in AMP8 or in AMP9. We have assumed that all screens will be delivered alongside works on the storm overflows at the WTWs, including where flows to full treatment are increased.</p>
49	Number of continuous water quality monitor installations	<p>We initially intended to implement these requirements of the Env Act through a national service provider. We proposed to 'buy' the data through a contract with a service provider, who would install, maintain, manage the data calibration and acquisition, and publication online in near real time.</p> <p>However, following updated guidance from the EA we will be reviewing and our plans for continuous water quality monitoring and will update the AMP8 WINEP and these numbers accordingly.</p>
50	Number of new MCERTs event duration monitors installed at SPS emergency overflows	<p>Site lists originally derived using current annual EDM reporting to the EA and list of known un-permitted discharges.</p> <p>The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.</p> <p>Confidence grade B4.</p>
51	Number of new MCERTs flow monitors (PFF) installed at SPSs with combined emergency and storm overflows.	<p>Calculation of number of sites where installation is needed is based on current annual EDM reporting to the EA and list of known un-permitted discharges.</p> <p>The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.</p> <p>Confidence grade B3</p>
52	Number of event duration monitors installed (to include at STWs and in network)	<p>The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.</p>



		<p>Calculation of number of sites where installation may be needed is based on current annual EDM reporting to the EA and list of known un-permitted discharges.</p> <p>Assumptions made around numbers of sites with new monitors needing to be installed vs number of sites with permit changes only needed.</p> <p>Confidence grade B5.</p>
53	Number of event duration monitoring schemes requiring permit changes only (at STWs and in network)	<p>The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.</p> <p>Calculation of number of sites where installation may be needed is based on current annual EDM reporting to the EA and list of known un-permitted discharges.</p> <p>Assumptions made around numbers of sites with new monitors needing to be installed vs number of sites with permit changes only needed.</p> <p>Confidence grade B5.</p>
54	Number of event duration monitoring schemes requiring simple meter installations (at STWs and in network)	<p>The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.</p> <p>Assumptions about breakdown on numbers of sites that as simple and complex comes from the PR24 Scorecards, OARs and EA guidance.</p> <p>Calculation of number of sites where installation may be needed is based on current annual EDM reporting to the EA and list of known un-permitted discharges.</p> <p>Assumptions made around numbers of sites with new monitors needing to be installed vs number of sites with permit changes only needed.</p> <p>Confidence grade C5.</p>
55	Number of event duration monitoring schemes requiring complex civils installations (at STWs and in network)	<p>The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA.</p> <p>Assumptions about breakdown on numbers of sites that as simple and complex comes from the PR24 Scorecards, OARs and EA guidance.</p> <p>Calculation of number of sites where installation may be needed is based on current annual EDM reporting to the EA and list of known un-permitted discharges.</p> <p>Confidence grade C5.</p>



56	Total number of schemes to increase combined or trunk sewer capacity to reduce storm overflow spills	No schemes have been identified that are specifically to increase sewer capacity to reduce storm overflow spills.
57	Total number of infiltration management schemes to reduce storm overflow spills	Our Cleaner Rivers and Seas team is delivering AMP8 works early with accelerated funding. Infiltration management schemes for 33 storm overflows in AMP7 – assumes one scheme per storm overflow. For storm overflows, the number of schemes is equivalent to the number of storm overflows, i.e. we have assumed that each storm overflow has one scheme to deliver the WINEP actions. One scheme may have many components and delivered through different routes, but all components are needed to deliver the desired outcomes (reduction in spills)
58	Length of new rising main installed to reduce storm overflow spills (km)	None to report.
59	Total length of sewer installed to reduce storm overflow spills (km)	None to report (there are some sewers being constructed to connect storm tanks, but these lengths of sewer are included under storage reporting)
60	Other data	
61	Number of WINEP/NEP investigations - desk-based studies only	We have 358 investigations under the three categories listed in CWW20 proposed for AMP8. Of these we have categorised 78 as desk-based, considering the scope of the investigations and the complexity of the site. These need to be delivered by 2027 (either 31/3/2027 or 30/04/2027).
62	Number of WINEP/NEP investigations - survey, monitoring or simple modelling	We have 358 investigations under the three categories listed in CWW20 proposed for AMP8. Of these we have categorised 56 as involving survey, monitoring or simple modelling based on the scope of the investigations and the complexity of the site. These need to be delivered by 2027 (either 31/3/2027 or 30/04/2027).
63	Number of WINEP/NEP investigations - multiple surveys and/or monitoring locations, and/or complex modelling	We have 358 investigations under the three categories listed in CWW20 proposed for AMP8. Of these we have categorised 224 as complex based on the scope of the investigations and the complexity of the site. These need to be delivered by 2027 (either 31/3/2027 or 30/04/2027). There are 139 investigations still to deliver in AMP7 as shown.
64	Total number of WINEP/NEP investigations	We have 358 investigations under the three categories listed in CWW20 proposed for AMP8.
65	Total number of catchment management chemical source control schemes	N/A - we are not progressing any schemes under this driver.
66	Total number of catchment management nutrient balancing schemes	N/A - we are not progressing any schemes under this driver.
67	Total number of catchment management catchment permitting schemes	N/A - we are not progressing any schemes under this driver.
68	Total number of catchment management habitat restoration schemes	N/A - we are not progressing any schemes under this driver.



69	Number of river connectivity schemes (fish passes etc)	N/A - we are not progressing any schemes under this driver.
70	Number of marine conservation zones (new and existing)	There are 20 MCZs that Southern Water has duties / responsibilities to maintain or restore towards meeting favourable condition.
71	Total number of contribution to 3rd party WINEP/NEP schemes	N/A - we are not proposing to make any contributions to other water company schemes under WINEP.
72	Total number of 25 yr Environment Plan schemes	N/A - we are not progressing any schemes under this driver.
73	Additional line 1; wastewater network+ cost driver	No drivers to report in these additional lines
74	Additional line 2; wastewater network+ cost driver	No drivers to report in these additional lines
75	Additional line 3; wastewater network+ cost driver	No drivers to report in these additional lines
76	Additional line 4; wastewater network+ cost driver	No drivers to report in these additional lines
77	Additional line 5; wastewater network+ cost driver	No drivers to report in these additional lines



CWW20a – Transition and accelerated programme Wastewater network+ - Sewage treatment works population, capacity and network data		
Line description		Commentary
	Sewage treatment data	Rows 1 – 14
1-14	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .	
15	Additional volume of effective storm storage at STWs - nature based/green solution	As per CWW20
16	Total number of STW sites where additional storage has been delivered	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .
17	Number of STW sites where additional storage has been delivered with pumping	
18	Number of STW sites benefitting from green infrastructure replacing the need for storm tank storage	As per CWW20
Rows 19 – 35		
	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .	
	Network / Storm overflow data	
	Implementation of solutions (CWW20.36 -CWW20.40) are expected to be completed in the final year of AMP8, 2029-30, therefore values are only entered for that year. CWW20.39 will have no entries, the design stage has not incorporated any pumping solutions. Confidence grade C5	
36	Additional volume of network storage at CSOs etc to reduce spill frequency - grey infrastructure	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .
37	Additional volume of effective network storage to reduce CSO spill frequency - nature based/green solution	
38	Number of individual sites delivering additional network storage - grey infrastructure	
39	Number of individual sites delivering additional network storage - grey infrastructure - which include pumping	
40	Number of individual sites delivering additional network storage through green infrastructure	
	Implementation of solutions (CWW20.41-CWW20.44) are expected to be completed in the final year of AMP8, 2029-30, therefore values are only entered for that year. Confidence grade C5	
41	Surface water separation drainage area removed	As per CWW20



42	Total number of surface water separation schemes to reduce storm overflows	As per CWW20
43	Sustainable drainage / attenuation schemes (green) area removed / attenuated	As per CWW20
44	Total number of sustainable drainage / attenuation schemes	As per CWW20
45	Flow rate diverted to reduce storm overflow spills	As per CWW20
	Implementation of solutions (CWW20.45-CWW20.48) are expected to be completed in the final year of AMP8, 2029-30, therefore values are only entered for that year. See Annex 1 for further assumptions Confidence grade C5	
46	Total number of sewer flow management / control schemes to reduce storm overflow spills	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .
47	Total storm overflow spill volume avoided	As per CWW20
48	Total number of new storm overflow screens installed	As per CWW20
49	Number of continuous water quality monitor installations	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .
50	Number of new MCERTs event duration monitors installed at SPS emergency overflows	Rows 50 – 55 It is assumed all WINEP schemes will be delivered on their regulatory commitment date, and not before. The phasing of delivery across the years of the AMP is based on the PR24 Profiling guidance provided by the EA. Calculation of number of sites where installation is needed is based on current annual EDM reporting to the EA and list of known un-permitted discharges.
51	Number of new MCERTs flow monitors (PFF) installed at SPSs with combined emergency and storm overflows.	
52	Number of event duration monitors installed (to include at STWs and in network)	
53	Number of event duration monitoring schemes requiring permit changes only (at STWs and in network)	
54	Number of event duration monitoring schemes requiring simple meter installations (at STWs and in network)	
55	Number of event duration monitoring schemes requiring complex civils installations (at STWs and in network)	
56	Total number of storm overflow discharge relocation schemes	
57	Total number of schemes to increase combined or trunk sewer capacity to reduce storm overflow spills	As per CWW20
58	Total number of infiltration management schemes to reduce storm overflow spills	



59	Length of new rising main installed to reduce storm overflow spills (km)	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .
60	Total length of sewer installed to reduce storm overflow spills (km)	No data available
	Other data	Rows 61 – 77
61-77	Transition and accelerated programme have no impact on these values, they have been left blank intentional as per the <u>guidance</u> .	



CWW21 - Wastewater sewers; asset condition		
Line description		Commentary
	Length of sewer by Condition Grade	
1	Foul sewers	The number reported here partially follows the OFWAT methodology, however, as only around 50% of collapses are closed at Asset ID, a full cohort analysis has not been possible and the total collapses does not match the annual reported numbers. An alternative approach would be to calculate condition grades by pro-rata of results from CCTV surveys as these would provide a more extensive data set.
2	Combined sewers	
3	Surface water sewers	
4	Other wastewater network pipes	This line has been populated by assuming the data from CCTV surveys is more representative than cohort analysis.
5	"legacy" public sewers as at 31 March	This is the total of lines 1-4 above
6	Formerly private sewers and lateral drains (s105A sewers)	This line has been populated by applying results from CCTV condition surveys. It is assumed that the majority of the S105a stock are less than 225mm diameter. The proportion of known condition of this cohort from legacy assets has been applied to the S105 data set.
7	Sewage pumping mains	The numbers reported here follows the OFWAT methodology to a degree as required. However, as only around 50% of bursts are closed at Asset ID a full cohort analysis has not been possible and the total burst does not match the annual reported numbers.
<p>Additional commentary:</p> <ul style="list-style-type: none"> > This is the first time that we have applied the cohort methodology to sewers a comparison is not therefore applicable. However, included in the relevant other information section we have compared the results of the cohort analysis with that using data from sewer condition surveys. > Reported collapse data for the previous 5 years has been used for the purpose of the cohort analysis. In this period there has been no change to the collapse reporting methodology which would affect the approach. > the present coverage of company asset surveys - 5074 km of sewer have been surveyed in the last 10 years. > Although we have adopted the OFWAT cohort methodology our analysis does not fully comply with prescribed method. This is because not all sewer collapses are closed out at Asset ID resulting in a mis-match between the number of collapses reported and the number of collapses able to be used in this method; only 493 of 1098 collapses have an Asset ID. In addition to the Asset ID issue, it is not possible to group all cohorts to the 2.5 collapses per year target grouping criteria. > Due to our concerns regarding the methodology only using a very small 24 km (0.06%) sample base we have created a table for comparison purposes based on results of CCTV sewer condition surveys totalling 5074 km of sewer. In this approach we grouped known condition grades from surveys by sewer type and then pro-rated the lengths to the total length of sewer in each cohort assuming that the survey sample was large enough to be representative. This shows that the length of sewer in grade 4 or 5 condition and at greatest risk of collapse is 2957 km of Legacy assets compared with 117 km using the Ofwat methodology. > As most sewer collapses occur on small diameter sewers there is a concern that the cohort analysis approach may lead investment towards pro-active rehabilitation of low impacting assets rather than to ensure that the condition of critical sewers is known and potential rehabilitation undertaken ahead of failure. > We have assigned a B2 confidence grade. The sewer condition grading for CCTV survey data follows national guidance on scoring based on the sewer rehabilitation manual. > The condition grading reported in Table CWW 21 has followed the Ofwat reporting methodology. Any shortcomings with this approach have been noted above. 		



> The data used in the analysis only utilises known asset data and the results are then extrapolated to cover the whole of the asset base as per the calculations in Copy of Sewer_Ofwat_CWW21_TableChartGradeOnly.xlsx

CWW22 - Wastewater - net zero enhancement schemes	
Line description	Commentary
	Nil return for SRN – we have no applicable schemes

